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U.S. DEPARTMENT OF ENERGY INTERIM MIXED WASTE INVENTORY REPORT: WASTE STREAMS, TREATMENT CAPACITIES AND TECHNOLOGIES VOLUME 2: SITE SPECIFIC-CALIFORNIA THROUGH IDAHO APRIL 1993

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U.S. Department of Energy Interim Mixed Waste Inventory Report: Waste Streams, Treatment Capacities and Technologies

April 1993

Volume 2

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DOE/NBM/1100

U.S. Department of Energy Interim Mixed Waste Inventory Report: Waste Streams, Treatment Capacities and Technologies

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8.0 CALIFORNIA

There are eight California facilities that generate, expect to generate, and/or store DOE-managed mixed waste.

- 8.1 Energy Technology Engineering Center
- 8.2 General Atomics
- 8.3 General Electric Vallecitos Nuclear Center (General Electric Corp.)
- 8.4 Lawrence Berkeley Laboratory
- 8.5 Lawrence Livermore National Laboratory
- 8.6 Laboratory for Energy-Related Health Research
- 8.7 Mare Island Naval Shipyard
- 8.8 Sandia National Laboratories/California

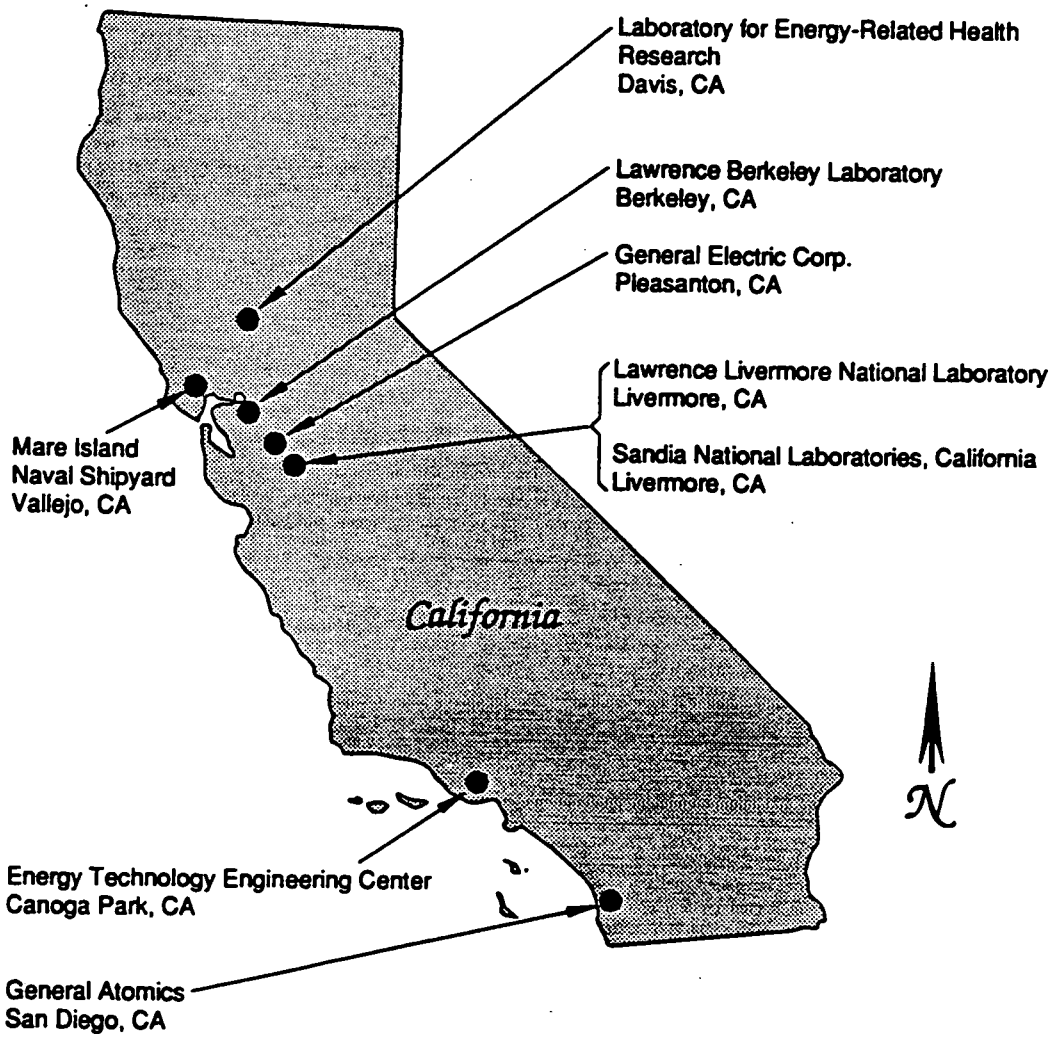

Figure 8-1. California Facilities that Generate, Expect to Generate, and/or Store DOE-managed Mixed Waste.

8.1 Energy Technology Engineering Center

Site Description

The Energy Technology Engineering Center (ETEC), located in southern California, develops energy technologies and engineers, tests, and develops components related to liquid-metals technology in support of the DOE. Of the total ETEC mixed transuranic (MTRU) wastes and mixed low-level wastes (MLLW), approximately 620 m^3 currently exist, and 20 m^3 (does not include environmental restoration waste) are projected to be generated over the next 5 years.

Transuranic (TRU) Waste. ETEC currently stores about 0.02 m^3 of MTRU waste. This waste, like other MTRU waste, will be processed as needed (characterized, repackaged, immobilized) to meet the waste acceptance criteria of the Waste Isolation Pilot Plant (WIPP). Planned disposal of TRU waste is at WIPP.

There are no existing facilities at ETEC that can treat TRU. Currently the ETEC MTRU inventory is not being treated.

Mixed Low-Level Waste. ETEC currently stores about 620 m^3 of MLLW, which includes low-level waste and TRU waste reclassified as MLLW. Roughly 20 m^3 of MLLW is projected to be generated through the end of 1997.

There is 1 existing MLLW treatment facility at ETEC, the Radioactive Material Disposal Facility (RMDF).

Currently, 1 ETEC MLLW stream is being treated at the RMDF.

Treatment technology options have not been analyzed for all of the ETEC MLLW.

General

The ETEC, a division of the Santa Susana Field Laboratory, is located near Canoga Park, 72 km northwest of Los Angeles (Figure 8-1). ETEC is operated for the DOE by the Rocketdyne Division of Rockwell International Corp. The primary mission of ETEC is to engineer, test, and develop components related to liquid-metals technology and to conduct applied engineering development of emerging energy technologies. The ETEC occupies a 0.36-km^2 site and employs 120 people.

8.1.1 Mixed Waste

ETEC reports almost 620 m^3 of mixed waste from 13 distinct waste streams. Almost all the waste is classified as MLLW except for 1 MTRU stream. The wastes stored on site are all subject to the LDR requirements. The waste inventory summarized in Table 8.1-1 is grouped by type and matrix category. The table includes all wastes in the stored inventory and waste streams expected to be generated waste in the next 5 years. All the future generated waste may be contact-handled during waste management. Only 4 of the 13 waste streams are expected to generate waste in the next 5 years. The data quoted for the site are through December 3, 1992.

Table 8.1-1
Mixed Wastes at Energy Technology Engineering Center

Waste Type/Matrix	Number of Waste Streams	Inventory (m^3)	Inventory (kg)	Number of Waste Streams	Five-Year Projection (m^3)	Five-Year Projection (kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	1	0.10	60.00	0	0.00	0.00
CH, Aqueous Liquid	2	0.21	145.00	0	0.00	0.00
CH, Soils	1	600.00	1,200,000.00	0	0.00	0.00
CH, Organic Debris	2	0.40	30.00	0	0.00	0.00
CH, Inorganic Debris	1	1.00	250.00	0	0.00	0.00
CH, Heterogeneous Debris	2	10.70	3,890.00	1	20.00	8,100.00
CH, Liquid Mercury	1	<0.10	3.20	1	<0.10	3.20
CH, Elemental Lead	2	5.02	56,020.00	2	0.23	730.00
Sub-Total MLLW:	12	617.43	1,260,398.20	4	20.23	8,833.20
WASTE TYPE -- MTRU						
CH -alpha, Elemental Lead	1	<0.10	38.60	0	0.00	0.00
Sub-Total MTRU:	1	<0.10	38.60	0	0.00	0.00
TOTAL:	13	617.45	1,260,436.80	4	20.23	8,833.20

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8.1.1.1 High-Level Waste

There is no high-level waste and none is expected to be generated at ETEC.

8.1.1.2 Mixed Transuranic Waste

ETEC is storing a small volume (0.02 m^3) of MTRU waste generated by past site operations. All of the waste is subject to the LDR requirements. The waste consists of nearly 40 kg of transuranic contaminated lead solids generated during fuel decladding operations and decontamination of facilities. The current plan is to ship the waste for disposal to the WIPP in New Mexico. The waste is packaged to meet the WIPP waste acceptance criteria (WAC) and is stored in a 17C, Type A container at the RMDF until the disposal issue is resolved. The waste is no longer being generated.

ETEC has a total of 2.3 m^3 (11 each 15C, Type A containers) of TRU waste packaged to WIPP WAC in storage at the RMDF. This volume is not listed as mixed waste. The waste was generated by the SNAP reactor project at ETEC. The waste is fully characterized and also meets the Idaho National Engineering Laboratory WAC. The current plan is to ship the waste, including the 1 drum of mixed TRU waste mentioned above off-site for disposal. These data have previously been reported to the Hazardous Waste Remedial Actions Program (HAZWRAP) data base.

8.1.1.3 Mixed Low Level Waste

The MLLW in storage at ETEC is reported as 12 separate streams accounting for over 99 percent (almost 620 m^3) of the total mixed waste inventory. All MLLW in the inventory is subject to the LDR requirements. The matrix categories in the stored inventory include elemental lead, liquid mercury, heterogeneous debris, organic and inorganic debris, aqueous liquid, organic liquids, and soils. The soils category accounts for over 97 percent of the stored volume. The soil is from decontamination of a toxic waste pit that is no longer in use. The waste is stored on site at the RMDF. The soil is contaminated with California-listed hazardous constituents. There are no RCRA wastes in the soil.

Heterogeneous debris is the next largest MLLW matrix category, representing less than 2 percent of the inventory. Two streams produced this waste, the majority consisting of used high efficiency particulate air (HEPA) filters. The filters were exposed to dioctylphthalate (DOP) during efficiency certification. The filters will be sampled to determine the contamination levels. If contamination exceeds limits, treatment will be required prior to disposal. ETEC no longer uses HEPA filters subjected to the DOP filter efficiency tests. The radionuclides listed for this stream are cesium-137, strontium-90, cobalt-60, and cesium-134.

The projected 5-year generation of MLLW at ETEC is just over 20 m^3. This figure does not include contaminated soil that will be classified as environmental-restoration waste. The bulk (>99 percent) of the mixed waste production expected in the next 5 years will be in the heterogeneous debris category and will be produced by 1 waste stream (ID #1116). The stream consists of used HEPA filters from laboratory-exhaust systems.

Over 98 percent of the total MLLW inventory is managed as RCRA mixed waste because it contains State of California- or State of Washington-listed hazardous constituents. The used HEPA filters and paper towels containing acetone are in this category. Other RCRA wastes in storage currently amount to less than 2 percent of the MLLW inventory. It consists of thorium nitrate-contaminated waste from gamma spectroscopy waste, solid lead shielding materials, liquid mercury, an acidic electropolish solution, lead-

paint chips, and a quantity of towels and rags impregnated with solvents. The thoriumnitrate is a naturally occurring radiation source and was not generated by laboratory activities.

More than 97 percent of the waste streams are characterized by sampling and analysis. The balance has only been characterized by process knowledge. It is expected that waste streams may be contact-handled during waste management.

8.1.2 Treatment Facilities

The ETEC does not treat any of the MTRU waste (ID#382) generated on site. The treatment capacity for MLLW is limited to preliminary treatment processes such as: neutralization, oxidation, and evaporation of a few waste streams. Treatment of some waste streams (ID #1117 and 1118) may not be necessary pending more complete characterization.

8.1.2.1 Existing Treatment Facilities

The ETEC operates the RMDF for the treatment and storage of radioactive waste. The RMDF is operated under RCRA Part A Interim Status. The processes used at the ETEC include evaporation, neutralization, and reduction. Table 8.1-2 summarizes the ETEC mixed waste streams currently being treated.

The ETEC electropolish solution waste stream is neutralized to balance the pH and convert hexavalent chromium to trivalent chromium. Trivalent chromium is less mobile in the environment than hexavalent chromium and is the preferred state for long-term disposal. Treatment capacity for the neutralization/reduction unit is less than 1 m^3/yr.

ETEC has treated nearly 0.25 m^3 of MLLW oil under the RMDF Part A interim status using molten salt oxidation under a small-scale treatability-study exemption. All MLLW oils on site have been processed. There are no plans to generate more oil wastes, but during facility decontamination and decommissioning, additional contaminated oil may be found. These wastes will be handled on a case-by-case basis.

8.1.2.2 Planned Treatment Facilities

Table 8.1-3 summarizes the planned treatment facility at ETEC. The amalgamation process mixes liquid mercury waste and mercury-contaminated soil with sulfur to form a stable product. Mixing is done in a Spin Ball Mixer. The process bonds the mercury to the sulfur to form an amalgam. Treatment capacity for the ETEC mercury amalgamation process is less than 1 m^3/yr. The amalgamated mercury will be analyzed for listed inorganics and further immobilized in a concrete matrix as required for disposal at an off-site facility.

8.1.2.3 Treatment Facility Summary

Table 8.1-4 summarizes the capabilities of current and planned treatment facilities at ETEC. The table lists the physical form of both feed and treatment products, the current operating status of the plant, and whether the facility is intended for high-level, TRU, or low-level waste or a combination of these. The table also summarizes other relevant waste-acceptance parameters for the facility, with an "✓" marking acceptable parameters. The assumption has been made that the legal limitations and the technological

Table 8.1-2
Energy Technology Engineering Center
Mixed Waste Treatment Facilities
Currently in Use for Mixed Waste

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Radioactive Materials Disposal Facility / Neutralization Process	Neutralization	MLLW, CH	Aqueous Liquid	1124	1.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g

Table 8.1-3
Energy Technology Engineering Center
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Radioactive Materials Disposal Facility / Amalgamation Process	Amalgamation	MLLW, CH	Liquid Mercury	383	1.0	1994

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Table 8.1-4
Energy Technology Engineering Center
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Radioactive Materials Disposal Facility / Amalgamation Process	Planned, 1994	Liquid Mercury	Solid	MLLW		CH	√		
Radioactive Materials Disposal Facility / Neutralization Process	Operating	Aqueous Liquid	Liquid	MLLW		CH			

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

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limitations of facility will be identical. This table indicates whether a facility is capable of treating remote-handled waste, as opposed to contact-handled waste only. The table also summarizes relevant waste-acceptance parameters related to the chemical composition of the waste, such as presence of transuranic isotopes, toxic metals, toxic organics and mercury. Parameters marked as acceptable are stile subject to concentration limitations. For example, a facility may accept waste with uranium but only if the uranium is present below a certain concentration. .

8.1.3 Technology Development

There are no site-specific technology development activities for ETEC.

8.1.4 Environmental Restoration Program

DOE operations are conducted in Rockwell International-owned and DOE-owned facilities on the site identified as Area IV. Radioactivity at Area IV resulted from the operation of 10 reactors and 7 criticality test facilities, fuel fabrication, reactor and used fuel disassembly activities, small-scale laboratory work, and the on-site storage of nuclear material.

The ETEC facilities are used to test non-nuclear systems and components for use in energy, power conversion, and liquid metal development programs. Included are steam generators, pumps, valves, instrumentation and other components in support of powerplant design. The types of testing done include reliability, seismic, and performance demonstration. Waste management and environmental restoration activities are ongoing at a number of facilities at these sites. An Agreement in Principle is in place with the State of California that establishes state oversight to ensure environmental compliance.

Environmental restoration operations include the development and implementation of a comprehensive site-wide characterization plan following RCRA guidelines; ongoing site characterization consisting of the assessment of radioactive contaminants, as well as chemical pollutants in surface water and ground water, soil, biota, and air; decontamination and decommission (D&D) activities; cleanup of outside areas where low levels of contamination exist; continuous surveillance and maintenance of areas that have radioactive contamination; and environmental monitoring of the entire DOE portion of the site. More detailed information on contaminated media with environmental restoration activities is found in Chapter 2.

Specific environmental restoration accomplishments for Area IV include completing remediation of the Lower Pond area of the Sodium Disposal Facility and, constructing 6 off-site ground water wells, completion of a significant portion of site characterization related to the sources of pollution, completion of a draft environmental monitoring plan for submittal, and D&D of several buildings on-site.

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Energy Technology Engineering Center

ETEC-WPS-1

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next 5 years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: California | ID #: 381
Site: ENERGY TECHNOLOGY ENGINEERING CENTER
Waste Stream Name: LEAD - LLW
Matrix: Elemental Lead | Waste Type: MLLW

Waste Stream Description and Source:
Material is lead shielding resulting from the D&D of facilities. The lead inventory is in storage as equipment and is used occasionally (shielding, etc...). The lead will eventually be disposed of or recycled.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	5.0	56,000.0	5.0	56,000.0	0.100	600.0

Treatability Group:
MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time. This lead shielding is stored in 55-gallon drums, and generated in small quantities. Lead will be sold to a recycler for decontamination and/or canning prior to re-use.

Technology Status:
Technology assessment has not started. Technology options have not been analyzed.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
1) None.

The radionuclide analysis is pending.

Waste Minimization Activities:
1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

Lead will be sold to a recycler for decontamination and/or canning prior to re-use.

State: California **ID #: 381**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: LEAD - LLW

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: California	**ID #: 382**
Site: ENERGY TECHNOLOGY ENGINEERING CENTER	
Waste Stream Name: LEAD - TRU	
Matrix: Elemental Lead	**Waste Type: MTRU**

Waste Stream Description and Source:

Generated during DOE fuel decladding operations and decontamination of facilities. Considered a D&D waste. Lead has transuranic contamination.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.020	38.6	0.020	38.6	0.000	0.000

Treatability Group:

MTRU CH/AL, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Transuranic contaminants
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: California **ID #: 382**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: LEAD - TRU

Matrix: Elemental Lead **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: California	**ID #: 383**
Site: ENERGY TECHNOLOGY ENGINEERING CENTER	
Waste Stream Name: MERCURY (D009)	
Matrix: Liquid Mercury	**Waste Type: MLLW**

Waste Stream Description and Source:
This waste is mercury, generated during decontamination of DOE facilities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.001	3.2	0.001	3.2	0.001	3.2

Treatability Group:
MLLW CH, Liquid Mercury, Toxic Metals w/ Mercury

Treatment Status:
Plan to treat on-site at the existing Radioactive Materials Disposal Facility. This waste will be treated at SSFL using a sulfur amalgamation per EPA approved method. After amalgamation, the mercury contaminated waste will be disposed of at a DOE approved site.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
1) None.

The radionuclide contaminant is Cs-137 at a concentration of 2.0E-12 Ci/g.

Waste Minimization Activities:
1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009D	Tech.	Amalgamation

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State: California	**ID #: 1115**
Site: ENERGY TECHNOLOGY ENGINEERING CENTER	
Waste Stream Name: LEAD & ASBESTOS (LLW)	
Matrix: Elemental Lead	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream consists of radioactive contaminated lead and asbestos. Generated during decontamination and decommissioning (D&D) of inactive former nuclear DOE facilities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.019	20.0	0.019	20.0	0.130	130.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. The waste is in the form of lead shot used for radiation shielding, asbestos originated from thermal insulation in equipment. Lead is in the form of shot, asbestos is in the form of particulates and floor sweepings. The lead will be separated from the asbestos and sold to a recycler. The asbestos will be packaged for off-site disposal.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

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State: California **ID #: 0000001116**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: CONTAMINATED HEPA FILTERS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

Waste Stream Description and Source:

HEPA air filters are contaminated with Cs-137, Sr/Y-90, Co-60, and Cs-134, and have been exposed to Dioctylphthalate (DOP), a hazardous component in the state of Washington.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	6.2	490.0	6.2	490.0	20.0	8,100.0

Treatability Group:

MLLW CH, Heterogeneous Debris

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

This waste constitutes a small quantity of very low level contamination. There is no significant potential for personnel exposure.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Activity ranges from 4.0E-09 Ci/g (Cs-137), to 4.0E-11 Ci/g (Cs-134). Waste is a state of Washington hazardous waste.

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California **ID #: 0000001117**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: THORIUM NITRATE SOLUTION

Matrix: Aqueous Liquid **Waste Type: MLLW**

Waste Stream Description and Source:

Material used for standard laboratory procedures for gamma spectroscopy standard. Contains Th-232 with daughters in equilibrium.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.100	5.0	0.100	5.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment options have not been evaluated and may not be necessary.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Th-232 in a concentration of 4.0 E-08 Ci/g.

State: California **ID #: 0000001117**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: THORIUM NITRATE SOLUTION

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation

State: California **ID #: 0000001118**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: PAPER CONTAMINATED WITH SOLVENT

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Paper towels (kimwips) used with acetone to clean glassware. This waste contains a California listed hazardous constituent. Waste is contaminated with Co-60.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.200	20.0	0.200	20.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Kimwips were used with acetone and have been stored pending disposition. RCRA waste analysis is pending.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

This waste constitutes a small quantity of very low-level contamination. There is no significant potential for personnel exposure.

Waste Minimization Activities:

Not reported.

General Comments:

Activity of Co-60 is estimated at 4.0 E-08 Ci/g. Waste is a state of California hazardous waste.

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California | ID #: 0000001119
Site: ENERGY TECHNOLOGY ENGINEERING CENTER
Waste Stream Name: ASBESTOS FLOOR TILES
Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:
Floor tiles containing asbestos from building undergoing D&D activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.000	250.0	1.000	250.0	0.000	0.000

Treatability Group:
MLLW CH, Inorganic Debris

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
This waste constitutes a small quantity of very low-level contamination. There is no significant potential for personnel exposure.

Waste Minimization Activities:
Not reported.

General Comments:
Contaminated with Cs-137, Co-60, and Sr/Y-90. This is a state of California hazardous waste.

EPA CODES
Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California **ID #: 0000001120**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: CONTAMINATED PAINT CHIPS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Paint chips from sandblasting activities of radiologically contaminated cell walls during D&D. Paint is suspected of containing lead.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	4.5	3,400.0	4.5	3,400.0	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. If this waste form is determined to be hazardous, it will be treated before disposal.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification. Technology options have not been analyzed. Because of the form of this waste, it is unclear if it will have to be treated.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Estimated activity is from Cs-137, Co-60, and Sr/Y-90, at 1.0 E-08 Ci/g.

State: California **ID #: 0000001120**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: CONTAMINATED PAINT CHIPS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California | ID #: 0000001121
Site: ENERGY TECHNOLOGY ENGINEERING CENTER
Waste Stream Name: CONTAMINATED SOIL
Matrix: Soils | Waste Type: MLLW

Waste Stream Description and Source:
Soil and rock contaminated with California hazardous constituents. The waste is from D&D of a pit. There are no RCRA constituents at action levels.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	600.0	1,200,000.0	600.0	1,200,000.0	0.000	0.000

Treatability Group:
MLLW CH, Soils, Toxic Organics and Metals w/ Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time. Current plan is to treat on-site using combination of thermal treatment and stabilization with additives.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Other (explain in Comments section)
2) Activation Products
3) Alpha emitter, < 10 nCi/g
4) Beta/gamma emitter
5) Contact-handled

Waste-Specific Radiation Effects on Treatment:
The radioactive component is very low-level. Treatment will be performed in a closed system with HEPA filtration. There is no significant potential for for personnel exposure.

Waste Minimization Activities:
Not reported.

General Comments:
Soil is contaminated with Cs-137, Sr/Y-90, U-234, U-235, and U-238.

State: California **ID #: 0000001121**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: CONTAMINATED SOIL

Matrix: Soils **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.

State: California **ID #: 0000001122**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: TOWELS, RAGS, AND ABSORB-ALL WITH OIL

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Various towels, rags, and absorb-all used to clean surfaces and soak up oils inside radioactive contaminated areas. Acetone was used during clean-up activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.200	10.0	0.200	10.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Waste will be treated by molten salt oxidization.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Co-60 contaminant at 2.0 E-12 Ci/g.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration

State: California	**ID #: 0000001122**
Site: ENERGY TECHNOLOGY ENGINEERING CENTER	
Waste Stream Name: TOWELS, RAGS, AND ABSORB-ALL WITH OIL	
Matrix: Organic Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California **ID #: 0000001123**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: OIL AND GREASE

Matrix: Organic Liquids **Waste Type: MLLW**

Waste Stream Description and Source:

Liquid and paste type hydraulic lubricants used in machinery and equipment. Does not contain PCBs. This waste contains a California hazardous constituent. Waste was generated during the D&D activities for the former nuclear facilities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.100	60.0	0.100	60.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Waste has been tested using the molten salt oxidation process under a small scale treatability study exemption and the existing RMDF Part A interim status permit.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Beta/gamma emitter
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Contaminants include Cs-137, Pu-238, Pu-239, Pu-240, Pu-241, and Am-241. Waste is a state of California hazardous waste.

EPA CODES

Waste Characterization Basis: Process Knowledge

State: California	**ID #: 0000001123**
Site: ENERGY TECHNOLOGY ENGINEERING CENTER	
Waste Stream Name: OIL AND GREASE	
Matrix: Organic Liquids	**Waste Type: MLLW**

No applicable RCRA Codes have been identified.

State: California **ID #: 0000001124**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: ELECTROPOLISH SOLUTION

Matrix: Aqueous Liquid **Waste Type: MLLW**

Waste Stream Description and Source:

Solution is known as Power Kleen 500 & GJ-389 Descaler, manufactured by Molectyics, Inc. Chemical family of phosphoric/sulfuric acids and is liquid. Was used to electropolish (radiologically decontaminate) steel drain pipes in D&D activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.110	140.0	0.110	140.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Currently being treated at the Radioactive Materials Disposal Facility. Neutralization is the preferred treatment and will be done on-site at Bldg. 022.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Radiological analysis is pending.

State: California **ID #: 0000001124**

Site: ENERGY TECHNOLOGY ENGINEERING CENTER

Waste Stream Name: ELECTROPOLISH SOLUTION

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

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8.2 General Atomics

General Atomics (GA), a privately owned and operated nuclear facility located in San Diego, California (Figure 8-1), has supported government nuclear-energy contracts, primarily for the Atomics Energy Commission and the DOE, since the late 1950s. GA is currently generating and staging mixed waste resulting from GA's Fuel Fabrication Facility decontamination and decommissioning (D&D).

For over 30 years, the Hot Cell Facility (HCF), Building 23, performed a wide range of investigations of irradiated items. Under contract to the DOE, GA sponsored the fabrication, irradiation, and examination of experimental uranium-thorium dicarbide/uranium-zirconium hydride (TRIGA)/uranium dioxide fuels for the High Temperature Gas-Cooled Reactor (HTGR), the Reduced Enriched Research Test Reactor (REWRTR), and the TFE Verification Programs. The facility includes 3 hot cells, an operating gallery, and hot and cold auxiliary areas.

Contaminated equipment in the HCF will be removed, surfaces will be decontaminated, and the building walls razed. The site will be decontaminated and released by the Nuclear Regulatory Commission and the State of California for unrestricted occupancy. The estimated volume of radioactive materials to be disposed of is 630 m^3 of low-level waste and 120 m^3 of low-level but high-specific activity waste. Since the volumes of hazardous materials on-site have not been characterized potential mixed waste volumes are unknown. In addition, preliminary testing examinations resulted in approximately 1 m^3 of waste consisting of program-abandoned irradiated fuel rods. Most of the rods are intact, but some were sectioned for examination in the Hot Cell Laboratory. More detailed information on contaminated media associated with environmental restoration activities is provided in Chapter 2.

D&D planning activities that will result in the release of the facility for future use by the owner have been initiated. Milestones to be reached in 1993 include the disposal of Special Nuclear Materials (SNM) and the start of site and waste characterization.

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8.3 General Electric

The General Electric Vallecitos Nuclear Center (GE) is a privately owned and operated nuclear facility located in Pleasanton, California (Figure 8-1). DOE may generate MLLW and MTRU waste as a result of upcoming decontamination activities on a high-level alpha hot cell.

The GE Alpha High Level Hot Cell (Cell 4) and the Emission Spectrographic Enclosure (Glovebox) were used primarily on projects for the DOE and the Atomic Energy Commission. Cell 4 was constructed in 1958 for post-irradiation examination of uranium fuel and irradiated reactor components. The glovebox was installed in 1968 for emission spectrographic analysis of uranium. The activities performed in Cell 4 and the glovebox in support of government projects contaminated the facilities. The DOE will now decontaminate the facilities and certify Cell 4 free of transuranic contamination and suitable for support of other GE activities.

The waste and the facilities have not been fully characterized, either by hazardous constituent or quantity. The volume of mixed waste to be generated is not known. No estimates of mixed waste generation have been included in Chapter 2 of this report. Facility and waste characterization will begin in 1994.

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8.4 Lawrence Berkeley Laboratory

Site Description

The Lawrence Berkeley Laboratory (LBL), located in the Berkeley hills of the San Francisco Bay Area, is a multiprogram DOE laboratory managed by the University of California. LBL's primary mission is to conduct basic and applied research appropriate for an energy-research laboratory. About 22 m^3 of mixed wastes have been generated as a result of operations conducted in performing this mission.

Mixed Low-Level Waste. LBL currently stores about 22 m^3 of mixed low-level waste (MLLW). Roughly 31 m^3 of MLLW is projected to be generated through the end of 1997.

LBL has 2 existing MLLW treatment facilities: Building 75 Units 131E and 131AFH which are used for the pretreatment of MLLW. There are no existing treatment facilities for creating final waste forms. However, LBL plans to construct 2 additional treatment facilities, Building 85 Units MW-6 and Unit MW-7. One treatment facility, Building 75A Scintillation Vial Crusher, is not currently in operation and will not be used in the future.

Approximately 94 percent of the LBL MLLW inventory is not presently being treated. Further waste characterization is necessary before treatment options and technologies can be selected for the LBL MLLW. Plans for disposal of treated wastes have not been finalized.

General

In addition to conducting energy-related research for the DOE, LBL supports nationwide university research by operating national facilities, such as the National Center for Electron Microscopy, 3 large accelerators and several small ones, radiochemical laboratories, gamma irradiators, and a tritium-labeling laboratory. The LBL population of approximately 4000 includes 600 visiting scientists and engineers. The 0.54-km^2 site is owned by the University of California and located on the UC Berkeley campus about 24 km east of San Francisco (Figure 8-1). Some LBL facilities are located off-site, adjacent to the University campus.

All of the 13 mixed waste streams generated and stored at the LBL are MLLW. These wastes were generated by activities associated with research operations and include scintillation counting solutions, laboratory wastes, and shielding materials. The total stored volume is around 22 m^3. An estimated 31 m^3 of MLLW (12 of the 13 waste streams) will be generated during the next 5 years. Detailed information for each waste stream can be found in the WPS at the end of the site section.

All of the stored waste streams were characterized by process knowledge to determine the applicable RCRA hazardous waste code, as noted in the WPS. Most of the waste streams contain volatile radionuclides, and all can be contact-handled. On-going waste minimization activity reported at LBL includes promoting good operating procedures across the site.

Two waste streams are currently treated on-site by neutralization. Treatment options are still being analyzed for about 94 percent of the mixed waste. Further waste characterization is needed before treatment options can be selected for these wastes. Current plans are to send most of the waste to the Hanford site for storage.

8.4.1 Mixed Waste

LBL reports inventory levels of approximately 22 m^3 [22.15 m^3] of operations waste generated from 13 waste streams. The entire volume of waste stored on-site is subject to the LDR and is classified as MLLW. The LBL mixed waste streams have been characterized using process knowledge. Twelve of the 13 waste streams are assigned EPA waste codes. One waste stream (the tritiated pump oil) is a California-only hazardous waste and, therefore, has no EPA waste codes assigned to it. The data presented are verified through December 31, 1992.

8.4.1.1 High-Level Waste

There is no high-level waste currently stored at LBL and none is expected to be generated in the next 5 years.

8.4.1.2 Mixed Transuranic Waste

There is no mixed transuranic waste currently stored at LBL and none is expected to be generated in the next 5 years.

8.4.1.3 Mixed Low-Level Waste

The LBL waste streams are grouped into physical and chemical matrix categories summarized in Table 8.4-1. The waste matrices for the site include organic liquids, aqueous liquids, organic debris, laboratory packs with metals, liquid mercury, and elemental lead. The largest matrix category of mixed waste is organic liquids, accounting for around 58 percent [12.9 m^3] of the total volume. Scintillation fluid returned from a commercial facility comprises approximately 29 percent of the current volume of organic liquids, but this waste stream is no longer being generated. Current plans are to ship the waste to the Hanford site for storage. Another stream of scintillation fluids, accounting for about 43 percent of the organic liquids, is generated in the LBL research laboratories. Flammable liquids represent another 16 percent of the volume of the organic liquids matrix category.

The organic-debris matrix represents approximately 14 percent (3.2 m^3) of the total MLLW volume in inventory. Charcoal filter elements from laboratory exhaust systems make up the largest portion of this category; the remainder is a small amount of contaminated plastic and paper generated from routine clean-up activities in the laboratories. A waste stream consisting of contaminated acid solutions, which is shown in the figure as labpacks-with-metals matrix category, accounts for another 16 percent (3.6 m^3) of the total volume.

An estimated 31 m^3 [31.1 m^3] of MLLW will be generated in the next 5 years. The largest portion (53 percent) of the future mixed waste volume will be organic liquids from research activities. The stream of scintillation fluids that is still being generated is projected to contribute around 33 percent (10.5 m^3) of the future waste. Labpacks are expected to account for approximately 29 percent (9 m^3) of the volume.

Table 8.4-1
Mixed Waste at Lawrence Berkeley Laboratory

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	3	10.80	6,861.00	2	12.50	7,521.00
CH -alpha, Organic Liquids	1	2.10	2,100.00	1	2.00	2,000.00
CH -alpha, Aqueous Liquid	3	1.67	1,588.00	3	3.20	3,100.00
CH, Organic Debris	1	2.40	497.00	1	1.00	210.00
CH -alpha, Organic Debris	1	0.80	290.00	1	2.00	725.00
CH -alpha, Lab Packs With Metals	1	3.60	800.00	1	9.00	2,000.00
CH, Liquid Mercury	1	0.14	32.00	1	0.20	46.00
CH, Elemental Lead	2	0.64	1,271.00	2	1.20	2,272.00
Sub-Total MLLW:	13	22.15	13,439.00	12	31.10	17,874.00
TOTAL:	13	22.15	13,439.00	12	31.10	17,874.00

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8.4.2 Treatment Facilities and Technology

Treatment options are being analyzed for approximately 94 percent of the LBL mixed waste volume. The waste must be further characterized for treatment. Two aqueous mixed waste streams consisting of acid and alkali solutions are proposed to be treated on-site by neutralization.

Building 75 at the LBL contains operating pretreatment units for mixed waste, which perform consolidation, solidification, and neutralization. No permitted mixed waste treatment capacity currently exists. Most of the site's mixed waste streams are processed for storage in Building 75. Building 85 is a planned facility that will expand mixed waste pre-treatment capacity. Tables 8.4-2 and 8.4-3 summarize the LBL treatment capacity and specific waste streams to be treated on-site.

8.4.2.1 Existing Treatment Facilities

The 3 existing waste-treatment units at the LBL are the Mixed Waste Treatment Unit 131AFH, the Mixed Waste Treatment Unit 131E, and the Scintillation Vial Crusher. These perform pre-treatment only and do not produce a final treated waste form. Units 131E and 131AFH are currently operating under interim status. A RCRA Part B permit application is under review by the State of California for these 2 facilities.

Unit 131AFH treats corrosive acids and bases, cyanide solutions, flammable liquids and solids, mercury wastes, radioactive contaminated lead, contaminated debris, and tritiated pump oil. The unit neutralizes and consolidates the waste it receives. The maximum operating capacity for the unit is 50 m^3/yr. Under normal operating conditions, the 131AFH treats around 1 m^3/yr.

The 131E unit treats corrosive acids and bases, flammable liquids, and toxic materials by consolidation and solidification of waste in 55-gallon drums. The maximum operating capacity for the 131E is 500 m^3/yr. Under normal operating conditions, the 131E can treat about 50 m^3/yr.

The scintillation vial crusher, located in Building 75A, is a volume-reduction unit for glass vials containing scintillation fluids with low-level radiocontaminants. The vials are crushed and then separated via filtration from the scintillation fluid. Fluid and broken glass are placed into separate, compatible containers for storage, shipment, and disposal. Flammable vapors are contained. The maximum treatment capacity for the scintillation vial crusher is 100 m^3/year. Under normal operating conditions the treatment capacity is approximately 5 m^3/year. The vial crusher is currently non-operational and will not be used in the future.

8.4.2.2 Planned Treatment Facilities

Two mixed waste treatment units are planned at the LBL. The Mixed Waste Storage and Treatment Unit MW-6 will consolidate and neutralize corrosive acids and bases containing low-level radioactivity. The Mixed Waste Treatment Unit MW-7 will consolidate and solidify corrosive acids, bases, and flammable liquids. Operating capacity for MW-6 is expected to be 10 m^3/yr under normal operating conditions (68 m^3/yr design capacity). The operating capacity for MW-7 is expected to be 100 m^3/yr (550 m^3/yr design capacity).

Table 8.4-2
Lawrence Berkeley Laboratory
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Currently in use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Building 75 / Unit 131 AFH	Neutralization, Consolidation	MLLW, ALPHA, CH	Aqueous Liquids, Elemental Lead, Lab Packs With Metals, Liquid Mercury, Organic Debris, Organic Liquids	1102, 1103, 1104, 1105, 1107, 1109, 1110, 1112, 2421, 2422	1.0
Building 75 / Unit 131 E	Consolidation, Solidification	MLLW, CH	Aqueous Liquids, Elemental Lead, Organic Liquids	1003, 1102, 1104, 1105, 1107	50.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g

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Table 8.4-3
Lawrence Berkeley Laboratory
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Building 85 / Unit MW-6	Consolidation, Neutralization	MLLW, CH	Aqueous Liquids, Elemental Lead, Lab Packs With Metals, Liquid Mercury, Organic Debris, Organic Liquids	1102, 1103, 1104, 1107, 1109, 1110, 1112, 2421, 2422	68.0	1995
Building 85 / Unit MW-7	Consolidation, Solidification	MLLW, ALPHA, CH	Aqueous Liquids, Organic Liquids	1102, 1103, 1105	550.0	1995

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

8.4.2.3 Treatment Facility Summary

Table 8.4-4 summarizes the capabilities of current and planned treatment facilities at the LBL. The table lists the physical form of both feed and treatment products, the current operating status of the facility, and whether the facility is intended for mixed forms of high-level, TRU, or low-level waste, or a combination of these. The table also summarizes other relevant waste acceptance parameters for the facility, with a "✓" marking acceptable parameters. The table assumes no change to the legal and technological limitations of a facility. This table indicates whether a facility is capable of treating either remotely-handled waste, or contact-handled waste. The table also summarizes other relevant waste-acceptance parameters related to the chemical composition of the waste, such as presence of transuranic isotopes, toxic metals, and toxic organics. Parameters marked as acceptable are still subject to concentration limitations. For example, a facility may accept waste with uranium but only if the uranium is present below a certain concentration.

8.4.3 Technology Development

There are no site-specific technology development activities for LBL.

Table 8.4-4
Lawrence Berkeley Laboratory
Current and Planned Facilities - Treatment Category
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Building 75 / Unit 131 AFH	Operating	Aqueous Liquids, Elemental Lead, Lab Packs With Metals, Liquid Mercury, Organic Debris, Organic Liquids	Liquids	MLLW	√	CH			
Building 75 / Unit 131 E	Operating	Aqueous Liquids, Elemental Lead, Organic Liquids	Liquids	MLLW		CH			
Building 85 / Unit MW-6	Planned, 1995	Aqueous Liquids, Elemental Lead, Lab Packs With Metals, Liquid Mercury, Organic Debris, Organic Liquids	Solids	MLLW		CH			
Building 85 / Unit MW-7	Planned, 1995	Aqueous Liquids,	Solids	MLLW	√	CH			

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

Table 8.4-4 (Continued)
Lawrence Berkeley Laboratory
Current and Planned Facilities - Treatment Category
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
		Organic Liquids							

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

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WASTE

PROFILE

SHEETS

Lawrence Berkeley Laboratory

LBL-WPS-1

April 1993

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next 5 years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: California	**ID #: 306**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: SCINTILLATION LIQUID	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Stream Description and Source:

The source is site-wide radiation counting in research laboratories. This waste is liquid scintillation counting solution. Normally, this waste is managed by crushing the scintillation vials, separating the liquid and sending the liquid to a commercial facility for incineration. The crushed vials are rinsed & disposed as non-hazardous, non-radioactive waste. While at the commercial facility, the liquid became contaminated with F solvent wastes. The commercial facility returned the contaminated liquid to LBL.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	3.8	2,544.0	3.8	2,544.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.
2) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: California **ID #: 306**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: SCINTILLATION LIQUID

Matrix: Organic Liquids **Waste Type: MLLW**

General Comments:

This waste contains carbon-14 and tritium and smaller amounts of S-35, I-125, and P-32. This is a one-time stream due to its return from a commercial processing facility.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: California | ID #: 1102
Site: LAWRENCE BERKELEY LABORATORY
Waste Stream Name: CORROSIVE LIQUIDS (ACIDS)
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:
This waste stream consists of acidic aqueous solutions with radionuclides. These wastes are generated from several research laboratories.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.800	800.0	0.800	800.0	2.0	2,000.0

Treatability Group:
MLLW CH/AL, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only

Treatment Status:
Plan to treat on-site at the planned Building 75 facility.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Alpha emitter, 10-100 nCi/g
2) Transuranic contaminants
3) Volatile radionuclide
4) Contact-handled

Waste-Specific Radiation Effects on Treatment:
1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 1102**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: CORROSIVE LIQUIDS (ACIDS)	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation

State: California | ID #: 1103
Site: LAWRENCE BERKELEY LABORATORY
Waste Stream Name: CORROSIVE LIQUIDS (BASES)
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:
This waste stream consists of alkaline solutions containing radionuclides. Laboratory waste from research operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.800	716.0	0.800	716.0	1.000	895.0

Treatability Group:
MLLW CH/AL, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only

Treatment Status:
Plan to treat on-site at the planned Building 75 facility.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Alpha emitter, < 10 nCi/g
2) Transuranic contaminants
3) Beta/gamma emitter
4) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:
1) Certain isotopes of U, Pu, Am, Cm, Cf, Np and Th are non-accountable if present below specific levels, and require different levels of safeguards, depending on the amount present. Treatments resulting in concentration of the material can result in the "roll up" of large volumes of non-accountable wastes into a smaller volume of accountable waste or change a mixed low-level waste to a TRU waste.
2) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
3) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

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State: California **ID #: 1103**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: CORROSIVE LIQUIDS (BASES)

Matrix: Aqueous Liquid **Waste Type: MLLW**

General Comments:
contains carbon-14, plutonium-239, phosporus-32 and rubidium-86

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002B	Tech.	Deactivation

State: California | ID #: 1104
Site: LAWRENCE BERKELEY LABORATORY
Waste Stream Name: CYANIDE SOLUTIONS
Matrix: Aqueous Liquids | Waste Type: MLLW

Waste Stream Description and Source:
Cyanide solutions containing neptunium-237. Cyanide Solutions are generated during research operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.070	72.0	0.070	72.0	0.200	205.0

Treatability Group:
MLLW CH/AL, Aqueous Liquids

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology assessment has not started.

Radiation Characteristics:
1) Alpha emitter, < 10 nCi/g
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:
1) Daughter products of alpha emitters may cause problems, i.e., production of radon gas, emissions from short-lived daughter products, and potential chemical incompatibility of daughter products.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 1104**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: CYANIDE SOLUTIONS

Matrix: Aqueous Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003A	Conc.	Chemical Oxidation followed by Alkaline Chlorination
P030	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation

State: California | ID #: 1105

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: FLAMMABLE LIQUIDS

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

Flammable liquids including cyclohexanone, methyl ethyl ketone, phenol, tetrahydrofuran, toluene. Different solvents generated during research operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	2.1	2,100.0	2.1	2,100.0	2.0	2,000.0

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Transuranic contaminants
2) Beta/gamma emitter
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Certain isotopes of U, Pu, Am, Cm, Cf, Np and Th are non-accountable if present below specific levels, and require different levels of safeguards, depending on the amount present. Treatments resulting in concentration of the material can result in the "roll up" of large volumes of non-accountable wastes into a smaller volume of accountable waste or change a mixed low-level waste to a TRU waste.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.
3) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

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State: California **ID #: 1105**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: FLAMMABLE LIQUIDS

Matrix: Organic Liquids **Waste Type: MLLW**

General Comments:

Contains carbon-14, cesium-137, uranium-238, tritium, sulfur-35, germanium-67

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
U002	Conc.	Incineration
U003	Tech.	Incineration
U025	Conc.	Incineration
U057	Tech.	Fuel Substitution; or Incineration
U080	Conc.	Incineration
U092	Tech.	Incineration
U154	Tech.	Fuel Substitution; or Incineration
U188	Conc.	Incineration
U213	Tech.	Fuel Substitution; or Incineration
U220	Conc.	Incineration

State: California	**ID #: 1106**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: FLAMMABLE SOLIDS	
Matrix: Organic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:
This waste stream is charcoal with radionuclides. Charcoal generated during research operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	2.4	497.0	2.4	497.0	1.000	210.0

Treatability Group:
MLLW CH, Organic Debris

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology assessment has not started.

Radiation Characteristics:
1) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:
1) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:
1) Contains iodine-125 at 1.0 E03 picoCuries/gram.
2) This waste is regulated by the state of California as hazardous waste.

EPA CODES
Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California **ID #: 1107**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: RADIOACTIVELY CONTAMINATED LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

Waste Stream Description and Source:
Blocks and sheets of lead metal contaminated during accelerator operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.400	728.0	0.400	728.0	1.000	1,820.0

Treatability Group:
MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology assessment has not started.

Radiation Characteristics:
1) Other (explain in Comments section)

Waste-Specific Radiation Effects on Treatment:
1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:
Cm-244, Pu-242, Ra-226 with a contamination level <2.0E-07 Ci/gm.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: California **ID #: 1109**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: LAB PACKED CHEMICALS

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Waste Stream Description and Source:

Labpacks with contaminated acid solutions. Some contaminants are non-RCRA. Several types of small containers contaminated with low level waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	3.6	800.0	3.6	800.0	9.0	2,000.0

Treatability Group:

MLLW CH/AL, Lab Packs with Metals, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Transuranic contaminants
2) Beta/gamma emitter
3) Volatile radionuclide
4) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Certain isotopes of U, Pu, Am, Cm, Cf, Np and Th are non-accountable if present below specific levels, and require different levels of safeguards, depending on the amount present. Treatments resulting in concentration of the material can result in the "roll up" of large volumes of non-accountable wastes into a smaller volume of accountable waste or change a mixed low-level waste to a TRU waste.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Contains:
C-14
Th-229
Np-237

State: California **ID #: 1109**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: LAB PACKED CHEMICALS

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Pu-238
H-3
I-125

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D002A	Tech.	Deactivation
D003E	Tech.	Deactivation
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F003	Conc.	Incineration
P015	Tech.	Metals Recovery; or Thermal Recovery of Metals
P030	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
U002	Conc.	Incineration
U003	Tech.	Incineration
U043	Conc.	Incineration
U044	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration

State: California **ID #: 1109**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: LAB PACKED CHEMICALS

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U220	Conc.	Incineration
U226	Conc.	Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

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State: California	**ID #: 1110**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: MERCURY INDUCED WASTE	
Matrix: Liquid Mercury	**Waste Type: MLLW**

Waste Stream Description and Source:

Liquid mercury is generated from maintenance of diffusion pumps and equipment associated with acceleration operations. Mercury and mercury induced waste from equipment and operations in accelerator areas.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.140	32.0	0.140	32.0	0.200	46.0

Treatability Group:

MLLW CH, Liquid Mercury, Toxic Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Contains induced mercury (Hg-203) originally at 100 pCi/gm; it has been decayed to 10 half-lives (<10%).

State: California ID #: 1110

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: MERCURY INDUCED WASTE

Matrix: Liquid Mercury Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009B	Tech.	Mercury Roast/Retort
U151	Tech.	Amalgamation

State: California | ID #: 1111

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: SCINTILLATION FLUID (U239,U220)

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

Scintillation vials are used for biomedical research. This waste stream consists of drums of these liquids contaminated with xylene and toluene. Liquid generated from scintillation counting operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	5.5	3,064.0	5.5	3,064.0	10.5	5,850.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Beta/gamma emitter
2) Volatile radionuclide
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 1111**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: SCINTILLATION FLUID (U239,U220)

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U220	Conc.	Incineration
U239	Conc.	Incineration

State: California **ID #: 1112**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: INDUCED LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

Waste Stream Description and Source:

Blocks and sheets of lead contaminated with radioactive isotopes. Material used as shielding in accelerators or near radioactive sources.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.240	543.0	0.240	543.0	0.200	452.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Induced with Bi-212 and Po-212.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: California **ID #: 2421**

Site: LAWRENCE BERKELEY LABORATORY

Waste Stream Name: CONTAMINATED DEBRIS

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste is paper, plastic and glass contaminated with organic volatiles and radionuclides. This waste stream was generated from cleanup during research activities; routine cleanup.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.800	290.0	0.800	290.0	2.0	725.0

Treatability Group:

MLLW CH/AL, Organic Debris, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Transuranic contaminants
3) Beta/gamma emitter
4) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) None.

This waste constitutes a small quantity of very low level contamination. There is no significant potential for personnel exposure.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Contains the following radionuclides:
Th-228, Np-237, U-238, Am-243, Tc-99, Pu-238, Pu-239, P-32, Ru-86, Cs-137, H-3, S-35, I-125, Ge-67, Sb-125, Au-194, Hg-194, Bi-209, Th-229.

State: California	**ID #: 2421**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: CONTAMINATED DEBRIS	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001B	Tech.	Deactivation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California | ID #: 0000002422
Site: LAWRENCE BERKELEY LABORATORY
Waste Stream Name: TRITIATED PUMP OIL
Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:
Vacuum pump oil contaminated with tritium generated during normal maintenance activities in the research areas. The oil is a California listed waste (#221).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.5	1,253.0	1.5	1,253.0	2.0	1,671.0

Treatability Group:
MLLW CH, Organic Liquids

Treatment Status:
Have not identified a planned facility for this waste stream at this time. Treatment options have not been analyzed.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled
2) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:
1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:
No RCRA Codes because it is only a California listed waste.

EPA CODES
Waste Characterization Basis: Process Knowledge

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State: California	**ID #: 0000002422**
Site: LAWRENCE BERKELEY LABORATORY	
Waste Stream Name: TRITIATED PUMP OIL	
Matrix: Organic Liquids	**Waste Type: MLLW**

No applicable RCRA Codes have been identified.

8.5 Lawrence Livermore National Laboratory

Site Summary

The Lawrence Livermore National Laboratory (LLNL), is an energy and defense research facility whose primary mission is to conduct nuclear-weapons research and development. About 214 m^3 (Table 8.5-1) of mixed wastes are currently stored at LLNL, having been generated as a result of laboratory operations conducted in performing these missions.

Transuranic Waste. LLNL currently stores about 2 m^3 of mixed transuranic (MTRU) waste and projects that 4 m^3 of additional MTRU wastes will be generated through the end of 1997. This waste, like other MTRU, will be processed as needed (characterized, repackaged, immobilized) to meet the waste acceptance criteria of the Waste Isolation Pilot Plant (WIPP). Planned disposal of TRU waste is at WIPP. There are no existing facilities at LLNL that can treat TRU waste.

Mixed Low-Level Waste. LLNL currently stores about 212 m^3 of mixed low-level waste (MLLW), which includes low-level waste and TRU waste reclassified as MLLW. Roughly 430 m^3 of MLLW is projected to be generated through the end of 1997, with a small portion of this coming from environmental restoration activities.

There are 4 existing MLLW treatment facilities at LLNL. Building 612 Drum/Container Crusher Unit and Building 513 Shredding/Compaction Unit are used for pretreatment, with no further treatment specified for the waste processed by these units. Area 514 Waste Water Treatment Tank Farm (514-WWTTF) and Area 514 Waste Water Filtration Facility (514-WWFF) operate in tandem to produce dischargeable waste water. There are 8 planned facilities for LLNL: Building 612 Size Reduction Unit; 5 treatment units within Area 514, Portable Blending Unit, Tank Blending Unit, Carbon Adsorption Unit, Centrifugation Unit, and Cold Vapor Evaporation Unit; Building 513 Solidification Unit; and the Mixed Waste Management Facility.

Treatment technologies have been identified for the majority of LLNL MLLW requiring treatment. Plans for disposal of treated wastes have not been finalized.

General

LLNL is located on the eastern edge of Livermore, California, about 65 km east of San Francisco (Figure 8-1). LLNL is operated by the University of California (UC) for the DOE. Its primary mission is nuclear-weapons research and development, although LLNL also performs research on inertial confinement fusion, laser isotope separation, magnetic fusion energy, energy and resources, environmental restoration and waste management, and biomedical and environmental topics. About 600 buildings occupy the main 3.28-km^2 site in Livermore. An additional 63 buildings are located on Site 300, a 30.3-km^2 site in the Altamont Hills, 24 km east of the Livermore site. Site 300 is used for testing of non-nuclear high explosives. About 9300 UC employees and 2100 non-UC employees work at LLNL.

Table 8.5-1
Mixed Wastes at Lawrence Livermore National Laboratory

Waste Type/Matrix	Number of Waste Streams	Inventory (m^3)	Inventory (kg)	Number of Waste Streams	Five-Year Projection (m^3)	Five-Year Projection (kg)
WASTE TYPE – MLLW						
CH, Organic Liquids	4	67.80	63,076.00	4	134.67	127,200.00
CH, Aqueous Liquid	1	25.00	24,800.00	1	50.00	49,600.00
CH, Organic Sludges/particulates	2	3.30	3,790.00	2	2.70	3,250.00
CH, Inorganic Sludges/particulates	2	42.00	43,348.00	2	86.00	86,500.00
CH, Cemented Solids	1	30.00	38,702.00	1	70.00	77,000.00
CH, Soil With <50% Debris	1	0.20	180.00	1	0.10	100.00
CH, Soils	1	4.00	4,500.00	1	8.00	9,000.00
CH, Organic Debris	1	<0.10	2.00	1	<0.10	4.00
CH, Inorganic Debris	4	10.40	6,960.00	4	20.40	13,438.00
CH, Heterogeneous Debris	1	25.00	12,251.00	1	50.00	25,000.00
CH, Lab Packs With Metals	1	0.30	212.00	1	0.60	424.00
CH, Lab Packs Without Metals	1	3.00	1,409.00	1	6.00	3,000.00
CH, Reactive Metals	1	0.50	550.00	1	1.00	1,100.00

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Table 8.5.1 (CONTINUED)
Mixed Wastes at Lawrence Livermore National Laboratory

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Liquid Mercury	1	<0.10	9.00	1	<0.10	1.00
CH, Elemental Lead	1	0.50	4,400.00	1	1.00	8,800.00
Sub-Total MLLW:	23	212.02	204,189.00	23	430.49	404,417.00
WASTE TYPE -- MTRU						
RH -alpha, Organic Liquids	1	-	262.00	1	0.60	500.00
RH -alpha, Aqueous Liquid	1	0.60	591.00	1	1.20	1,200.00
RH -alpha, Inorganic Debris	1	1.00	1,609.00	1	2.00	3,208.00
Sub-Total MTRU:	3	-	2,462.00	3	3.80	4,908.00
TOTAL:	26	-	206,651.00	26	434.29	409,325.00

Mixed Waste Sources. The following LLNL activities generate mixed waste:

- Research and development
- Laboratory analytical testing
- Facility maintenance and other support functions
- Decontamination and decommissioning of facilities
- Environmental restoration of the site

Detailed quantitative and descriptive information for each waste stream may be found in the Waste Profile Sheets at the end of this section.

Mixed Waste Inventory. As of December 31, 1992, the mixed waste inventory is approximately 214 m^3. LLNL stores both remote-handled as well as contact-handled mixed waste. They do not, however, generate or store any high-level waste.

The current stored inventory and 5-year projected wastes volumes are identified by treatability group in Table 8.5-1. As of December 31, 1992, about 74 percent of the waste by volume had been characterized by sampling and analysis. The remaining streams have either been evaluated by process knowledge or by an unknown method.

Waste Minimization. LLNL reports that efforts to minimize production of mixed waste rely primarily on improving operating practices such as waste segregation and on changing inventory procedures across the site.

Treatment Technology. Treatment technologies have been identified for nearly of the LLNL mixed waste volume. Some treatment technologies may need to be modified or verified for application to DOE waste streams.

8.5.1 Mixed Waste

LLNL reports its 26 existing mixed waste streams have a total volume of approximately 214 m^3. Nearly all of the waste is MLLW except for 3 streams listed as MTRU waste. The 5-year estimate for all mixed wastes from site operations is about 434 m^3. The waste streams have been classified into both physical and chemical matrix categories, using sampling and analysis, and process knowledge. The type of characterization performed on the waste is the basis for assigning EPA waste codes.

8.5.1.1 High Level Waste

There is no HLW stored at LLNL and none is expected to be generated in the next 5 years.

8.5.1.2 Mixed Transuranic Waste

LLNL lists 3 MTRU waste streams in their inventory, which are remote-handled wastes. The total volume of MTRU waste stored on site is approximately 2 m^3. These streams are still being generated and are expected to produce about 4 m^3 of mixed waste in the next 5 years. Ninety-eight percent of the waste is reported as being subject to the LDR requirements. The amount of MTRU waste at LLNL is less than 1 percent of the total volume of operations wastes in storage. Improved operating practices are minimizing production of MTRU wastes at LLNL.

The MTRU wastes are in 3 matrix categories: inorganic debris, aqueous liquid, and organic liquids. The inorganic debris, accounting for about 52 percent of the volume, includes scrap metal, lead bricks, and metal shavings from research and maintenance. The aqueous liquid is residue from metal etching activities using sulfuric acid. The MTRU organic liquids are spent solvents used to clean tanks and equipment during program changes.

LLNL also reports nearly 35 m^3 of transuranic waste in temporary storage pending shipment to the Waste Isolation Pilot Plant in New Mexico at some future date. The quantity of mixed TRU waste reported amounts to about 6 percent of the overall TRU inventory. Previously published projections of total TRU waste at LLNL estimate a volume of nearly 3,300 m^3 will be generated from 1992 to 2018, which suggests an average annual generation rate of around 130 m^3/yr. The 5-year estimate for MTRU generation (3.8 m^3) is less than 1 percent of the earlier estimate. Because the total TRU generation rate spans 26 years, many long-range generation activities (e.g., facility decontamination) may not occur during the next 5 years.

8.5.1.3 Mixed Low-Level Waste

LLNL classifies 23 waste streams (over 99 percent of the total volume in storage) as operational MLLW. The current inventory of MLLW is about 212 m^3. The waste matrices represented include aqueous liquid, elemental lead, heterogeneous debris, organic and inorganic debris, organic and inorganic sludges/particulates, lab packs with and without metals, organic liquids, reactive metals, soils, soils with < 50 percent debris, liquid mercury, and cemented solids. This stream consists of water used to clean parts and equipment from the machine shops on site. Contaminants in the wash water include heavy metals and solvents.

Organic liquids is the largest matrix category, representing approximately 32 percent of the MLLW volume. Four waste streams are in this category. The largest stream, consisting of oil residues from waste water treatment processes, accounts for 74 percent of this category. The waste is potentially contaminated with halogenated solvents, heavy metals, and radiological contaminants. The other streams which include wastes from research activities at LLNL, consist of halogenated solvents, oils, a variety of other used solvents, and scintillation cocktails and gels.

Inorganic sludges and particulates account for another 20 percent of the MLLW inventory. Three waste streams are in this category: low-level filter cake from the treatment of waste water at the 514 Tank Farm, sludge from the cleaning of retention tanks across the site, and residues from emptying bulking tank and water jet cutting. The filter cake is produced by the Dorr Oliver filtration process at the 514 Tank Farm. The remaining MLLW generation results from several programs: the Environmental and Radiation Analytical Sciences Laboratory, Nuclear Chemistry, Biomedical and Environmental Sciences, Chemistry and Materials Sciences, Mechanical Engineering or Laser Program.

Cemented solids which consist of sludges and particulates that were solidified with Portland cement, account for approximately 14 percent of the MLLW volume. Aqueous liquids make up another 12 percent of the volume in storage. The heterogeneous debris matrix also represents approximately 12 percent of the MLLW inventory which consists of inorganic waste such as pipettes, funnels, beakers, gloves, and other laboratory debris. About 5 percent of the MLLW is in the inorganic debris matrix, consisting of glass and metal containers, spent HEPA filters, laboratory trash, and metal parts and equipment. The balance of the waste volume is in 8 other matrix categories in smaller fractions.

All the MLLW generators are still producing waste with a 5-year projected volume of approximately 430 m^3. The aqueous liquid and heterogeneous debris waste streams are projected to each generate 12 percent

of the MLLW in the 5-year projection. Organic liquids will account for almost 31 percent of the future volume and the inorganic sludges/particulates are projected to generate around 20 percent of the MLLW in the next 5 years. Cemented solids are projected to generate 16 percent of the MLLW in the 5-year projection. The remaining 10 waste streams will represent the other 9 percent.

EPA hazardous-waste codes were assigned to the MLLW using sampling and analysis for 9 of the 23 streams in this category (about 74 percent of the volume). Waste codes for the other 14 streams were determined by process knowledge or some unknown method.

8.5.2 Treatment Facilities and Technology

Liquid wastes from the aqueous stream (12 percent of the volume) are currently being treated at the Area 514 Waste Water Treatment Tank Farm. The remaining MLLW (89.68 m^3) is not being treated because treatment plans have not been finalized, treatment facilities are not available, or characterization is incomplete. Treatment capacity at LLNL is summarized in Tables 8.5-2 through 8.5-5.

8.5.2.1 Existing Treatment Facilities

Two facilities are currently treating mixed waste streams at LLNL: Area 514 Waste Water Treatment Tank Farm (514-WWTTF) and Area 514 Waste Water Filtration Facility (514-WWFF). Operating in tandem, the treatment facilities produce waste water that can be discharged. LLNL also has 2 volume-reduction units, Building 612 Drum/Container Crusher Unit and the Building 513/ Shredding Compaction Unit, which are not discussed in detail because they are pre-treatment processes not producing a final waste form.

Area 514 Waste Water Treatment Tank Farm. 514-WWTTF is used to treat liquid low-level wastes. The facility consists of a carbon adsorption unit, a neutralization unit, a flocculation unit, an oxidation-reduction unit, a precipitation unit, and a separation unit. The carbon adsorption unit removes radionuclides from the waste stream. Neutralization is used for pH adjustment. Flocculation and precipitation remove radionuclides, heavy metals, and suspended solids.

514-WWTTF has a permitted treatment capacity of 34 m^3 per day. The design capacity is 12,400 m^3 per year, but under normal conditions, the operating capacity is about 170 m^3 per year. The facility will not accept high-level radioactive constituents, alpha-emitting TRU constituents, organic compounds exceeding 1000 parts per million, or PCBs.

Area 514 Waste Water Filtration Facility. 514-WWFF operates in series with 514-WWTTF to produce dischargeable waste water. 514-WWFF filters waste water from the 514-WWTTF using diatomaceous earth, a rotating drum mixer, and a vacuum filter. Design capacity is rated at 4,420 m^3 per year, but under normal operating conditions only about 17 m^3 are processed per day. The treatment facility cannot accept high-level radioactive constituents, alpha-emitting TRU radioactive constituents, organic compounds, or PCBs.

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Table 8.5-2
Lawrence Livermore National Laboratory
Mixed Waste Treatment Facilities
Currently in Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Area 514 WWTTF	Carbon Adsorption, Chemical Precipitation, Neutralization, Oxidation/Reduction, Flocculation, Separation	MLLW, CH	Aqueous Liquids, Liquids	2403, 2425, 2429	170.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g

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Table 8.5-3
Lawrence Livermore National Laboratory
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Currently in Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Area 514 WWFF	Filtration	MLLW, CH	Aqueous Liquids	2403, 2425, 2429	4,420.0
Building 513 / Shredding/Compaction Unit	Shredding, Compaction	MLLW, CH	Solids	Not Reported	43.0
Building 612 Drum/Container Unit	Size Reduction	MLLW, CH	Solids	Not Reported	46.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g

Table 8.5-4
Lawrence Livermore National Laboratory
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Area 514-1 / Carbon Adsorption Unit	Carbon Adsorption	MLLW, CH	Aqueous Liquid	To Be Determined	64,000.0	1993
Area 514-1 / Portable Blending Unit	Neutralization	MLLW, CH	Aqueous Liquids	To Be Determined	64,000.0	1993
Area 514-1 / Tank Blending Unit	Neutralization	MLLW, CH	Aqueous Liquids	To Be Determined	6,700.0	1993
Building 513 / Solidification Facility (1)	Solidification	MLLW, CH	Liquid, Sludge, Solid	To Be Determined	2,100.0	1993
Mixed Waste Management Facility	Alternative Technologies	MLLW, CH	Organic Liquids, Solids	To Be Determined	To Be Determined	Year To Be Determined

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Note (1): Design capcity based on reported capacity of 7 m3/day and assuming 300 days operating per year.

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Table 8.5-5
Lawrence Livermore National Laboratory
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Area 514-1 / Centrifugation Unit	Centrifugation	MLLW, CH	Aqueous Liquid	To Be Determined	4,000.0	1993
Area 514-1 / Cold Vapor Evaporation Unit	Evaporation	MLLW, CH	Aqueous Liquid	To Be Determined	1,700.0	1993
Building 612 / Size Reduction Unit	Size Reduction	MLLW, CH	Solid	To Be Determined	50.0	Year To Be Determined

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

8.5.2.2 Planned Facilities

Treatment facilities planned at LLNL are a Tank Blending Unit, a Portable Blending Unit, a Carbon Adsorption Unit, a Centrifugation Unit, and a Cold Vapor Evaporation Unit, all to be located in Area 514, Building 513 Solidification Unit, Building 612 Size Reduction Unit, and the Mixed Waste Management Facility. Each of the facilities are described below.

Area 514-1 Portable Blending Unit. Liquid wastes will be blended in portable containers in small volumes. Treatment proposed includes neutralization, pH adjustment, oxidation/reduction, precipitation, coagulation, chelation/flocculation, separation, ion exchange, adsorption, and cyanide destruction. The expected maximum operating capacity is about 64,000 m^3 per year. The projected normal operating capacity will be around 1,100 m^3 per year.

Area 514-1 Tank Blending Unit. The Tank Blending Unit is a stationary process that will treat wastes by blending, neutralization, pH adjustment, and cyanide destruction. The expected maximum operating capacity is about 6,700 m^3 per year, although the normal operating capacity will be about 250 m^3 per year.

Area 514-1 Carbon Adsorption Unit. The Carbon Adsorption Unit will volatilize organic constituents in wastes with compressed air, with the volatilized constituents being adsorbed with carbon. The expected maximum operating capacity is rated at 64,000 m^3 per year. The projected normal operating capacity will be around 4,800 m^3 per year.

Area 514-1 Centrifugation Unit. The Centrifugation Unit will separate varying densities of liquid wastes or combined liquid and solid wastes with centrifugal force. The expected maximum operating capacity is 4,000 m^3 per year. The projected normal operating capacity is expected to be 3,000 m^3 per year.

Area 514-1 Cold Vapor Evaporation Unit. The Evaporation Unit will evaporate aqueous wastes at reduced temperatures using a vacuum pressure technique. Provisions will be made for the capture of vapors and condensate. The expected maximum operating capacity should be 1,700 m^3 per year. The projected normal operating capacity is around 1,000 m^3 per year.

Building 513 Solidification Facility. 513-SF is a solidification facility in the planning stages at LLNL. The 4 components of 513-SF are a drum mixer, drum tumbler, drum roller, and hand mixer in a chemical fume hood. All the solidification facility components work on the principle of uniformly combining a stabilizing agent or medium in a waste to create a solid or semi-solid leach-resistant matrix. Each component combines the waste and solidification agent in a container. The container is used as a process vessel, as well as, the package for the final waste matrix after solidification.

The design capacity for the 513-SF is 7 m^3 per day. Both solid and liquid hazardous or MLLW will be solidified. The types of wastes to be treated in this unit are contaminated diatomaceous earth; contaminated laboratory trash (plastic, metal, paper, cotton, wood, and glass); HEPA filter shredded material; contaminated soils containing plastic, paper, metal, concrete, and asphalt; acid and caustic solutions; and contaminated laboratory chemicals such as spent reagents.

Building 612 Size Reduction Unit. The Size Reduction Unit is an existing unit that is currently not in operation. This facility has, in the past, been used for managing radioactive waste not containing hazardous constituents. The plans are to use this facility at some later date for reducing the size of solid MLLW streams. The projected normal operating capacity is around 50 m^3 per year.

Mixed Waste Management Facility. A Mixed Waste Management Facility is being designed as a pilot facility to demonstrate technologies for treatment of mixed waste streams for the national MLLW program. The design capacity for this facility is currently being reviewed.

8.5.2.3 Treatment Facility Summary

Tables 8.5-6 and 8.5-7 summarize the capabilities of current and planned treatment facilities at LLNL. The tables list the physical form of both feed and treatment products, the current operating status of each unit, and whether the facility is intended for mixed forms of high-level, TRU, or low-level waste or a combination of these. The tables also summarize other relevant waste-acceptance parameters for the each treatment unit, with a "✓" marking acceptable parameters. The assumption has been made that the legal and technological limitations of a facility will be identical. The tables indicate whether a facility is capable of treating remotely-handled waste, and contact-handled waste. The tables also summarize other relevant waste-acceptance parameters pertaining to the chemical composition of the waste, such as presence of TRU isotopes, toxic metals, and toxic organics. Parameters marked as acceptable are still subject to concentration limitations. For example, a facility may accept waste with uranium but only if the uranium is present below a certain concentration.

8.5.3 Technology Development

The availability of waste management technologies has been examined for all mixed wastes. The different degrees of availability of the waste specific technology treatment are included in the Waste Profile Sheets (WPS). All waste steams at LLNL have been determined to have applicable treatment technology.

For some wastes, technologies exist or are considered readily available based on previous commercial sector or DOE experience. No significant process modifications are required for the treatment of waste streams with this determination. For other wastes, commercially available technologies would appear to be applicable but would require some modification or the gathering of performance data for a particular type of waste matrix. For other waste streams, the detailed characterization data necessary to make decisions on treatment technologies does not exist. In these cases, technology evaluations cannot begin. Most of the following technology development activities are directed toward demonstration or modification of existing technologies.

The following site-specific technology development activities directly or potentially support the planned Mixed Waste Management Facility (MWMF), which is being designed as facility to demonstrate pilot technologies for treatment of mixed waste streams. The MWMF will be an adjunct to the Decontamination Waste Treatment Facility, which is to replace existing facilities in Buildings 612 and 623.

Site-specific technology development activities with numerically indexed narrative descriptions (following the WPS) and tables of titles are presented in the remaining sections of this chapter, as well as in Appendix B. The following site-specific technology development activities which are <u>potentially applicable</u> to the treatability groups and BDATs identified in Chapter 6.0, are listed below. Additionally, crosscutting technology development activities not assigned to treatability groups are included. Where BDAT is indicated as NA, or is blank, the technology development activity does not link to specific BDAT RCRA treatment functions, but is intended to provide other supporting functions.

Site-Specific Technology Development Activities

(by BDAT, by summary technology area - ID number references to indexed narrative descriptions presented later in this chapter and Appendix B)

BDAT: CHOXD
Summary Tech Area ID: waste destruction & stabilization
39UV/H2O2 Oxidation of MW

BDAT: INCIN
Summary Tech Area ID: waste destruction & stabilization
3 Molten Salt Destruction of Hazardous and Mixed Wastes
25 Wet Oxidation C-21/Nuc. Ind.
33 Wet Oxidation of Ion Exchange Resins

BDAT: WETOX
Summary Tech Area ID: waste destruction & stabilization
25 Wet Oxidation C-21/Nuc. Ind.
33 Wet Oxidation of Ion Exchange Resins

BDAT: HLVIT
Summary Tech Area ID: final form
40 Ceramic Waste Forms LLNL
9 Immobilization of Wastes in Ceramics

BDAT: STABL
Summary Tech Area ID: final form
40 Ceramic Waste Forms LLNL
69 Immobilization of Wastes in Ceramics

Technology development activities that do not link to specific BDAT RCRA treatment functions

BDAT: NA
Summary Tech Area ID: characterization
65 Whole Barrel Survey and Segregation

Summary Tech Area ID: front end handling
32 Multiple Sensor Integration for Material Segregation-1

Summary Tech Area ID: robotics
64 Automated Glovebox Processing
122 Multiple Sensor Integration for Material Segregation-2

Table 8.5-6
Lawrence Livermore National Laboratory
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Area 514 WWTTF	Operating	Aqueous Liquids, Liquids	Liquid (Sewer)	MLLW		CH		√	√
Area 514-1 / Carbon Adsorption Unit	Planned, 1993	Aqueous Liquid	Liquids	MLLW		CH			√
Area 514-1 / Portable Blending Unit	Planned, 1993	Aqueous Liquids	Liquids	MLLW		CH			
Area 514-1 / Tank Blending Unit	Planned, 1993	Aqueous Liquids	To Be Determined	MLLW		CH			
Building 513 / Solidification Facility	Planned, 1993	Liquid, Sludge, Solid	Stabilized Waste	MLLW		CH		√	
Mixed Waste Management Facility	Planned, Year To Be Determined	Organic Liquids, Solids	To Be Determined	MLLW		CH			√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

Table 8.5-7
Lawrence Livermore National Laboratory
Current and Planned Facilities - Treatment Category
Compaction, Evaporation, Sorting, Size Reduction, and Packaging Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Area 514 WWFF	Operating	Aqueous Liquids	Solid	MLLW		CH			
Area 514-1 / Centrifugation Unit	Planned, 1993	Aqueous Liquid	Liquids	MLLW		CH			
Area 514-1 / Cold Vapor Evaporation Unit	Planned, 1993	Aqueous Liquid	Liquid (Sewer), Concentrate (Salts)	MLLW		CH			
Building 513 / Shredding/Compaction Unit	Operating	Solids	Solids	MLLW		CH			
Building 612 / Size Reduction Unit	Planned, Year To Be Determined	Solid	Solid	MLLW		CH			
Building 612 Drum/Container Unit	Operating	Solids	Solid	MLLW		CH			

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

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WASTE

PROFILE

SHEETS

Lawrence Livermore

National Laboratory

LLNL-WPS-1

April 1993

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Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next 5 years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

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State: California	ID #: 2400
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED ORGANIC FLUIDS AND GLASS	
Matrix: Lab Packs without Metals	Waste Type: MLLW

Waste Stream Description and Source:

Low level radioactive organic wastes with PCB's from on-site laboratory research activities. Waste includes glass vials, pippetts and organic fluids. Generated from changing research and development activities which produce liquid organic fluids in glass vials.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	3.0	1,409.0	3.0	1,409.0	6.0	3,000.0

Treatability Group:

MLLW CH, Lab Packs without Metals, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Beta/gamma emitter
4) Volatile radionuclide

Contains transuarnic elements, but because of its low activity (<10 nCi/g), it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2400**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED ORGANIC FLUIDS AND GLASS

Matrix: Lab Packs without Metals **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: California | ID #: 2401

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED FILTER CAKE

Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

Low level radioactive filter cake generated from on-site rotary-drum vacuum filtration of aqueous waste waters. Waste streams into the waste water facility may contain non-halogenated and halogenated solvents, and metals (arsenic, cadmium, barium, lead, chromium, mercury and silver). Filter cake consists of moist diatomaceous earth and chemical precipitates. Generated from on-site research and development activities. Waste stream is produced from the treatment of liquid waste waters at the Building 514 Tank Farm.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	38.0	38,615.0	38.0	38,615.0	77.0	77,000.0

Treatability Group:

MLLW CH, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Beta/gamma emitter
3) Contact-handled
4) Volatile radionuclide

Contains transuranic elements, but because of its low activity, (<10 nCi/g), it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2401**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED FILTER CAKE

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D002C	Tech.	Deactivation
D010	Conc.	Stabilization
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: California	**ID #: 2402**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED INORGANIC TRASH-1	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Inorganic trash received from on-site laboratory research and maintenance operations. This waste consists of sludge, paper coveralls, kimwipes, gloves, booties, wood, low level radioactivity, and chromium. Generated from changing on-site research and development activities where trash is derived from clean up and used safety equipment such as coveralls, paper, gloves, and booties.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.400	396.0	0.400	396.0	0.400	396.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Volatile radionuclide
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Contains transuranic elements, but because of its low activity, (<10 nCi/g) it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California ID #: 2402

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED INORGANIC TRASH-1

Matrix: Inorganic Debris Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003E	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California	**ID #: 2403**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED WASH WATERS	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

Waste Stream Description and Source:

Low level radioactive wash waters with low concentrations of organic compounds, metals and/or other toxic materials generated on site from machining operations. Wash waters may contain beryllium, chrome, mercury, cadmium, lead, and/or solvents. Derived from on-site machine shops which generate wash waters used to clean parts and equipment.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	25.0	24,800.0	25.0	24,800.0	50.0	49,600.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics and Metals w/ Mercury

Treatment Status:

Currently being treated on-site at the Area 514 WWTTF facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Beta/gamma emitter
3) Contact-handled
4) Volatile radionuclide

Contains transuranic elements but because of its low activity, (<10 nCi/g), it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2403**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED WASH WATERS

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001C	Tech.	Deactivation
D004	Conc.	Chemical Precipitation
D005	Conc.	Chemical Precipitation
D006B	Conc.	Chemical Precipitation
D007	Conc.	Chemical Reduction followed by Chemical Precipitation
D008B	Conc.	Chemical Precipitation
D009C	Conc.	Chemical Precipitation
D018		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
F001	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis
F002	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis
F003	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis
F005A	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis

State: California	ID #: 2404
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED SOIL AND SAND	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

Low level radioactive soil and sand blasting grit from on-site retention tank cleaning and surface spill cleanup. These wastes may contain crank case oil, hydraulic fluid, gasoline, diesel and paint chips. Derived from contaminated soil and sand blasting grit used for clean up and decontamination activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	4.0	4,733.0	4.0	4,733.0	9.0	9,500.0

Treatability Group:

MLLW CH, Inorganic Sludges/Particulates, Toxic Organics and Metals w/ Mercury

Treatment Status:

Plan to treat at a planned facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Volatile radionuclide
3) Beta/gamma emitter
4) Contact-handled

Contains transuranic elements but because of its low activity, (<10 nCi/g), it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2404**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED SOIL AND SAND

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009E	Tech.	Incineration
F002	Conc.	Incineration

State: California	**ID #: 2405**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED SCRAP METAL	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Low level radioactive scrap metal from on-site research and maintenance, including laboratory clean up. Includes lead bricks, metal buttons, pumps and stainless steel vessels. Used and decommissioned contaminated equipment and metal parts from changing research and development activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	6.0	6,029.0	6.0	6,029.0	12.0	12,000.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 2405**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED SCRAP METAL	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002C	Tech.	Deactivation
D003E	Tech.	Deactivation
D004	Conc.	Vitrification
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California | ID #: 2407

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED LEAD BRICKS

Matrix: Elemental Lead | Waste Type: MLLW

Waste Stream Description and Source:

Lead bricks and pieces contaminated with low level radiological contaminants, beryllium generated by off-site explosion experiments. These wastes are containerized and packed in vermiculite. Used and discarded lead bricks which may have been used for shielding purposes.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.500	4,400.0	0.500	4,400.0	1.000	8,800.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technologies exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Radionuclides or radiation level unknown

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002C	Tech.	Deactivation
D008B	Conc.	Stabilization

State: California	**ID #: 2408**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED HALOGENATED SOLVENT	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Stream Description and Source:

Halogenated solvent waste, skimmed by phase separation from on-site waste water treatment processes. Waste streams may contain low level radiological contaminants, non-halogenated and halogenated solvents, and metals (lead, chromium cadmium). Waste consists of decanted solvents. Waste generated from solvent skimming treatment of halogenated contaminated wastewater at the Building 514 Tank Farm.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	10.0	9,848.0	10.0	9,848.0	20.0	20,000.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California ID #: 2408

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED HALOGENATED SOLVENT

Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F002	Conc.	Incineration
P005	Tech.	Fuel Substitution; or Incineration

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State: California	ID #: 2409
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED OILS	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

Waste oils skimmed by phase separation from on-site waste water treatment processes. Waste streams may contain non-halogenated and halogenated solvents, and metals (lead, chromium, cadmium), and low level radiological contaminants. Wastestream consists of decanted oils. Wastes generated from an oil skimming operation at Building 514. Oil derived from the treatment of oil bearing waste waters treated at the tank farm.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	50.0	46,268.0	50.0	46,268.0	100.0	93,000.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Also looking at the Mixed Waste Management Facility capability.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Beta/gamma emitter
4) Volatile radionuclide

Contains transuranic elements, but because of its low activity (<10 nCi/g) it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California ID #: 2409

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED OILS

Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: California	**ID #: 2410**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED SOIL-1	
Matrix: Soils	**Waste Type: MLLW**

Waste Stream Description and Source:

Soil excavated from on-site trenching activities. This soil is potentially contaminated with low level radioactivity, solvents, cadmium, lead, chromium, copper, nickel, zinc, beryllium, mercury, and cadmium. Contaminated soil from trenching and clean up activities on site.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	4.0	4,500.0	4.0	4,500.0	8.0	9,000.0

Treatability Group:

MLLW CH, Soils, Toxic Organics and Metals w/ Mercury

Treatment Status:

Plan to treat on-site.

Technology Status:

Technology exists. No modifications are necessary. Design specifications exist.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Beta/gamma emitter
3) Contact-handled

Contains transuranic elements, but because of its low activity, (<10 nCi/g), it is not a MTRU.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2410**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED SOIL-1

Matrix: Soils **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: California	**ID #: 2412**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED INORGANIC GASES	
Matrix: Reactive Metals	**Waste Type: MLLW**

Waste Stream Description and Source:

Low level radioactive inorganic gases from on-site research activities and laboratory clean up. Waste is contaminated lithium metal, contained in argon atmosphere containers. Used and discarded laboratory waste from changing research and development activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.500	550.0	0.500	550.0	1.000	1,100.0

Treatability Group:

MLLW CH, Reactive Metals

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment options have not been analyzed.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled
2) Volatile radionuclide
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California ID #: 2412

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED INORGANIC GASES

Matrix: Reactive Metals Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001D	Tech.	Deactivation
D003D	Tech.	Deactivation

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State: California	ID #: 2419
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED EMPTY CONTAINERS	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Empty fiber or plastic containers from on-site cleanup or sample preparation activities. Waste streams include empty plastic chemical bottles. Containers are empty but may contain low level radioactive residues. Used and discarded empty fiber and plastic containers.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.010	2.0	0.010	2.0	0.020	4.0

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat off-site. Treatment is not required, meets LDR. Some size reduction capability. Design specifications exist.

Technology Status:

Technology exists. **Needs modifications or verification for application to DOE waste streams.**

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Volatile radionuclide
4) Beta/gamma emitter

Contains transuranic elements, but because of its low activity, (< 10 nCi/g), it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2419**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED EMPTY CONTAINERS

Matrix: Organic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002C	Tech.	Deactivation
D010	Conc.	Stabilization
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California **ID #: 2424**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LLMW EMPTY METAL OR GLASS CONTAINERS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

The waste stream is empty containers with potential residues of caustics, metals, plastics, and solvents from changing research and development programs. This waste is used, discarded and empty containers constructed of either metal or glass. Empty metal or glass containers generated from on-site research activities. These containers formerly contained low level radioactive and hazardous materials.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.000	221.0	1.000	221.0	2.0	442.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/ Mercury

Treatment Status:

Treatment is not required, meets LDR. Some size reduction capability.

Technology Status:

Technology exists. **Needs modifications or verification for application to DOE waste streams.**

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002B	Tech.	Deactivation
D004	Conc.	Vitrification

State: California ID #: 2424

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LLMW EMPTY METAL OR GLASS CONTAINERS

Matrix: Inorganic Debris Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D015	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
F008	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

State: California	**ID #: 2424**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LLMW EMPTY METAL OR GLASS CONTAINERS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California	**ID #: 2427**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED OILS	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste is low level radioactive waste oils and halogenated solvents from on-site laboratory research and maintenance operations. Waste includes oils drained from vacuum pumps. This waste is generated from on-site research and development activities which use halogenated solvents. Waste is derived from the draining of vacuum pumps.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	6.0	5,877.0	6.0	5,877.0	12.0	12,000.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Beta/gamma emitter
4) Volatile radionuclide

Contains transuranic elements but because of its low activity (<10 nCi/g) it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2427**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED OILS

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

State: California	ID #: 2430
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED WASTE HEPA FILTERS	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is spent HEPA filters and absorbents generated by on-site research activities and facility maintenance. Wastes may contain low level radioactivity and solvents, lead, beryllium and/or cadmium. Generation is solid waste consisting of a discarded or used HEPA filter which may be contaminated with radioactive metals and solvents.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	3.0	314.0	3.0	314.0	6.0	600.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2430**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED WASTE HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D011	Conc.	Stabilization
D018		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California	ID #: 2433
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED ORGANIC LIQUIDS	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is low level radioactive organic liquid waste from biomedical and nuclear chemistry research operations. Wastes include oils, alcohol, kerosene, acetic acid, benzene, toluene, methanol, and scintillation gels and cocktails from tritium analysis. This waste is used and discarded liquid wastes generated from changing research and development activities at LLNL.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.8	1,083.0	1.8	1,083.0	2.7	2,200.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Volatile radionuclide
4) Beta/gamma emitter

Contains transuranic elements but because of its low activity (<10 nCi/g) it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 2433**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED ORGANIC LIQUIDS	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D002A	Tech.	Deactivation
D005	Conc.	Chemical Precipitation; or Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D019		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: California ID #: 2435

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: LOW LEVEL MIXED INORGANIC TRASH-3

Matrix: Heterogeneous Debris Waste Type: MLLW

Waste Stream Description and Source:

Low level radioactive inorganic trash generated by on-site research and laboratory clean-up activities. This waste includes a mixtures of the following: pipettes, funnels, beakers, gloves, paper, filters, plastics, sponges, floor dry, and other laboratory trash. These may be contaminated with: beryllium, lead, and/or low level radioactive materials. Waste stream generated from changing research and development activities on site at LLNL. Wastes consists of dry solid trash.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	25.0	12,251.0	25.0	12,251.0	50.0	25,000.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Beta/gamma emitter
4) Volatile radionuclide

Contains tranuranic elements, but because of its low activity (<10 nCi/g) it is not a MTRU waste.

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 2435**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED INORGANIC TRASH-3	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D020		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
F020	Conc.	Incineration
F027	Conc.	Incineration
P022	Tech.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the

State: California	ID #: 2435
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: LOW LEVEL MIXED INORGANIC TRASH-3	
Matrix: Heterogeneous Debris	Waste Type: MLLW

following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California	**ID #: 2444**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: TRU MIXED INORGANIC METAL	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

The waste is potentially radioactive inorganic scrap metal generated from on-site laboratory research and maintenance, including laboratory clean up. Includes lead bricks and metal shavings. These materials may contain transuranic activity (80.6 lbs. in 55-gal. drum) Waste is used and discarded metal parts generated from on-site researach and development activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.000	1,609.0	1.000	1,609.0	2.0	3,208.0

Treatability Group:

MTRU RH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Transuranic contaminants
2) Contact-handled
3) Remote handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Investigating decontamination techniques for possible recycling as product material or disposal as "clean."

State: California	**ID #: 2444**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: TRU MIXED INORGANIC METAL	
Matrix: Inorganic Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California **ID #: 2446**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: TRU MIXED HALOGENATED SOLVENTS

Matrix: Organic Liquids **Waste Type: MTRU**

Waste Stream Description and Source:

The waste is radioactive halogenated solvents generated from on-site cleaning of tanks and equipment and operating of research laboratories and machining shops. Waste consists of TCE and TCA and may contain transuranic activity (0.6 lbs. in a 55-gallon drum). Waste is generated from the on-site cleaning of tanks and equipment used in changing R & D activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.300	262.0	0.300	262.0	0.600	500.0

Treatability Group:

MTRU RH/AL, Organic Liquids, Toxic Organics

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Transuranic contaminants
2) Contact-handled
3) Remote handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Mixed waste is being characterized according to Waste Acceptance Criteria for WIPP.

State: California	**ID #: 2446**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: TRU MIXED HALOGENATED SOLVENTS	
Matrix: Organic Liquids	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: California	ID #: 2448
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: TRU MIXED SULFURIC ACID	
Matrix: Aqueous Liquid	Waste Type: MTRU

Waste Stream Description and Source:

The waste is radioactive sulfuric acid with metals generated from on-site metal etching activities. Acid may contain transuranic activity and at least one or more of the following metals: chromium, copper, aluminum, nickel, zinc, cadmium, or lead (.39 lbs. in a 55-gallon drum). The waste is generated from on-site research and development activities which use Transuranic research with sulfuric acid.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.600	591.0	0.600	591.0	1.2	1,200.0

Treatability Group:

MTRU RH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Transuranic contaminants
2) Contact-handled
3) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 2448**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: TRU MIXED SULFURIC ACID	
Matrix: Aqueous Liquid	**Waste Type: MTRU**

General Comments:
Mixed waste is being characterized according to the Waste Acceptance Criteria for WIPP.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: California | ID #: 2449

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: Lab Packs With Metals

Matrix: Lab Packs with Metals | Waste Type: MLLW

Waste Stream Description and Source:

Waste is lab packed waste contaminated with TC metals. Waste is one or more small containers of free liquids or solids surrounded by solid materials (virgin or waste materials) within a larger container, includes scintillation packaged with vials.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.300	212.0	0.300	212.0	0.600	424.0

Treatability Group:

MLLW CH, Lab Packs with Metals, Toxic Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

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State: California	**ID #: 2449**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: Lab Packs With Metals	
Matrix: Lab Packs with Metals	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001B	Tech.	Deactivation
D002C	Tech.	Deactivation
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: California | ID #: 2450

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: Metal Chips and Coolant

Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

This waste contains metal chips and machine coolant. Mixture contains approximately 10% oil and depleted uranium turnings and chips from machining operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	3.0	3,444.0	3.0	3,444.0	2.5	3,050.0

Treatability Group:

MLLW CH, Organic Sludges/Particulates, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D038		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration

State: California	**ID #: 2451**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: Contaminated Soils	
Matrix: Soil with <50% Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste contains soils contaminated with hazardous constituents and radioactivity. Includes soils contaminated with organics, inorganics, or both. Contained in flasks and small containers resulting from equipment maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.200	180.0	0.200	180.0	0.100	100.0

Treatability Group:

MLLW CH, Soil with <50% Debris, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

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State: California | ID #: 2451

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: Contaminated Soils

Matrix: Soil with <50% Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration

State: California	**ID #: 2452**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: Liquid Mercury Waste	
Matrix: Liquid Mercury	**Waste Type: MLLW**

Waste Stream Description and Source:
This waste contains liquid mercury contained in flasks and small containers resulting from equipment maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.010	9.0	0.010	9.0	0.001	1.000

Treatability Group:
MLLW CH, Liquid Mercury, Toxic Metals w/ Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
1) None.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009D	Tech.	Amalgamation

State: California	**ID #: 2453**
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: Stabilized Sludges and Particulates	
Matrix: Cemented Solids	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste includes sludges or solids (e.g., particulates, etc.) that have been solidified/stabilized with cement. These are mainly sludges from tank bottoms and equipment cleanouts.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	30.0	38,702.0	30.0	38,702.0	70.0	77,000.0

Treatability Group:

MLLW CH, Cemented Solids, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2453**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: Stabilized Sludges and Particulates

Matrix: Cemented Solids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D039		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: California	ID #: 2454
Site: LAWRENCE LIVERMORE NATIONAL LABORATORY	
Waste Stream Name: Organic Sludges and Particulates	
Matrix: Organic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste is solid residues with inorganic matrix. It includes plastic and other organic debris with oil, kerosene, or other organic liquids. Sump waste, lab sink waste, filters, dip tanks, etc. are the sources of this waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.300	346.0	0.300	346.0	0.200	200.0

Treatability Group:

MLLW CH, Organic Sludges/Particulates, Toxic Organics and Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 2454**

Site: LAWRENCE LIVERMORE NATIONAL LABORATORY

Waste Stream Name: Organic Sludges and Particulates

Matrix: Organic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

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TECHNOLOGY

DEVELOPMENT

SUMMARIES

Lawrence Livermore

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Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:

LLNL MWTF, MWIP
ID: 3

Program Title: Molten Salt Destruction of Hazardous and Mixed Wastes

Summary Description:
The molten-salt destruction process converts the hazardous component of mixed waste into carbon dioxide and water. It concentrates the actinides in the molten salt, thus converting mixed wastes into low-level wastes. The off-gases are sent through standard clean-up. The salt is separated into carbonates, noncarbonate salts, and ash (comprising actinides), which are recycled, sent to LLW disposal, and recovered or stabilized, respectively. We used single-stage units on hazardous wastes and on high explosives, and we are currently experimenting with a 2-stage unit for mixed wastes. Mixed wastes, reactive gases (e.g. oxygen, O2), and molten salts (sodium carbonate, Na2CO3) are combined at the melting point of the salt (700-900 C). The organic components of the mixed waste (e.g. acetone) burn to produce carbon dioxide (C02), steam and salts such as sodium chloride (NaCl).

Summary Purpose/Need:
Molten-salt destruction retains the advantages of incineration, such as high throughput, and avoids the disadvantages, such as large fugitive inventories of radionuclides and negative public perception. The process thus offers an alternative in which actinides will be contained within the molten salt, and which does not require wet scrubbers. This process is an alternative to incineration. Since the first stage operates at 700 C actinide volatility is kept low. Acid gases are scrubbed by the salts reducing the complexity of off-gas treatment.

Summary Result/Endpoint/Deliverable:
We are building a pilot-scale facility using the 2-stage process. A commercial company can subsequently build a commercial-scale facility.

BDAT: INCIN
Functional Areas: waste destruction & stabilization
thermal treatment unit - high residue
alternative organic destruction - high concentration

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, Complex 21

ID: 25

Program Title: Wet Oxidation C-21/Nuc. Ind.

Summary Description:
Wet Oxidation treatment for Ion Exchange Resins and Porous Solids - C-21/Nuc. Ind.
Treatment of porous solids such as kim wipes, booties, other laboratory items and ion exchange resins using a wet oxidation process already in UK and Europe is being proposed. The procedure will have to be modified for the different ion exchange resins of interest here. The ion exchange resins do not have a RCRA component, but the porous solids have all kinds of solvents. Pu or others constitute the radioactive components. No unique environmental and permittability considerations exist for this technology and standard permitting in California is expected. The development activity is taking place in Bldg. 161, though Bldg. 419 could be a likely candidate.

Summary Purpose/Need:
The program is to tailor the wet oxidation process technology developed in the United Kingdom (1 ton/day unit in UK in Europe) to treat porous solids and ion exchange resins. The need is for a low temperature technology that does not volatize actinides and is inherently safe and this approach is an alternative to incineration. All radioactive constituents should end up in residue and there should be little or no organic residue. HEPA filter for off-gas will be needed and the dried residue can be sent to WIPP or electrochemical processes to recover Pu.

Summary Result/Endpoint/Deliverable:
The effort involves adapting the technology developed in the United Kingdom to DOE needs and building a pilot plant to demonstrate the application to the wastes discussed earlier. It is hoped to have an operational system (depending on funding) by the end of FY 94.

BDAT: WETOX INCIN

Functional Areas: waste destruction & stabilization
alternative organic destruction - high concentration

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, EM cross-complex
ID: 32

Program Title: Multiple Sensor Integration for Material Segregation-1

Summary Description:
The goal of this program is to develop advanced automation technologies for the identification and sorting of large numbers of solid and liquid waste containers. Sensor information will be coupled with remote viewing and manipulation robotics for disposal operations in hostile environments.

Summary Purpose/Need:
The integration of remote sensor technologies with robotics will allow safe and effective segregation of various combustible, metallic, and radioactive wastes.

Summary Result/Endpoint/Deliverable:
No information was given at this time.

BDAT: NA

Functional Areas: front end handling
sorting
robotics

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, cross-complex
ID: 33

Program Title: Wet Oxidation of Ion Exchange Resins

Summary Description:
The wet oxidation process oxidizes organic materials with hydrogen peroxide in the presence of catalysts (such as iron or copper), converting them to carbon dioxide and water. The process is already well developed in the U.K. for radioactive and hazardous wastes. We will adapt plant design and modify the operating protocol to apply wet oxidation to mixed waste in the U.S.

Summary Purpose/Need:
Unlike incineration, wet oxidation is carried out at relatively low temperature, eliminating formation of toxic, corrosive, and radioactive off-gases. The volume of radioactive waste is reduced, producing savings in transportation and disposal costs. Toxic compounds in hazardous wastes may be fully destroyed, allowing direct discharge of the clean products.

Summary Result/Endpoint/Deliverable:
The effort involves adapting the technology developed in the United Kingdom to DOE needs and building a pilot plant to demonstrate the application to the wastes discussed earlier. It is hoped to have an operational system (depending on funding) by the end of FY 94.

BDAT: WETOXINCIN

Functional Areas: waste destruction & stabilization
alternative organic destruction - high concentration

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
Cross-complex, LLNL MWMF

ID: 39

Program Title: UV/H2O2 Oxidation of MW

Summary Description:
UV light photochemically decomposes H2O2 to produce OH radicals that are powerful oxidants capable of mineralizing organic compounds. As a result the organic compounds are oxidized to CO2, H2O, acids and anions, which are easily dealt with. The efficiency of the current process needs to be improved. We are studying the use of xenon flash lamps and excimer UV sources and are exploring the possibility of using dual-purpose sources, 1 for decomposing H2O2 and another for exciting the target organics to enhance their reaction rates.

Summary Purpose/Need:
Complete mineralization of organic compounds is needed in treating mixed waste. Process efficiency is important. The medium- to high-pressure mercury lamps commonly used in UV/H2O2 processes may not be the most efficient sources. UV/H2O2 is environmentally safe, is tolerant of a wide range of pH values, and operates at low temperature and pressure. Only benign chemical are added to the system; they do not produce any precipitates.

Summary Result/Endpoint/Deliverable:
This effort involves bench-scale studies for parametric investigations of efficiency vs. uv source and configuration, leading to pilot-scale conceptual designs.

BDAT: CHOXD

Functional Areas: waste destruction & stabilization
alternative organic destruction - low concentration

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, Rocky Flats Plant, Cross-complex

ID: 40

Program Title: Ceramic Waste Forms LLNL

Summary Description:
The task will develop final waste forms for the residues from treatment of mixed waste at Rocky Flats Plant. Waste streams identified by the Mixed Waste Treatment Program will be assessed to determine candidate ceramics for waste form preparation. The ceramics will be selected to provide a high-durability waste form suitability for disposal. Emphasis will be placed on high loading of waste and simplicity in processing. Synthesis alternatives will be examined to determine the least expensive and most reliable methods.

Summary Purpose/Need:
Residues from the treatment of mixed waste at Rocky Flats are not in a form suitable for disposal. We need to develop a high-quality, reliable ceramic waste form capable of high waste loading and volume reduction.

Summary Result/Endpoint/Deliverable:
This effort involves building and testing the first production-scale ceramic waste form line at Rocky Flats in 1995.

BDAT: STABLHLVIT

Functional Areas: final form
final form ceramic

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, EM Cross-complex, supporting complex 21 Chemical Processes

ID: 64

Program Title: Automated Glovebox Processing

Summary Description:
Automated glovebox technologies (glovebox robotics, remote control of processes by teleoperations, and advanced material transfers) are being applied to priority waste processing. Extensive development efforts are ongoing for reliability and for remotely maintainable robotic systems that can be operated from adjacent, noncontaminated areas. Our current focus is purification and recycling of contaminated metals, initially lead, which is an identified waste processing priority.

Summary Purpose/Need:
By incorporating glovebox robotics, teleoperations, and advance material transfer techniques, a complete processing line can be completed that reduces the need for operators, thus increasing productivity and reducing risks. Our focus on recycling and reuse technologies will help us determine the feasibility of processing wastes to useful materials.

Summary Result/Endpoint/Deliverable:
This effort involves development of automated glovebox technologies for processing of radioactive, hazardous, and mixed wastes.

BDAT: NA

Functional Areas: robotics
front end handling
other
lead treatment/recycle

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, EM Cross-complex
ID: 65

Program Title: Whole Barrel Survey and Segregation

Summary Description:
LLNL has been working on a noninvasive method to characterize sealed waste drums. Computed tomography (CT) can determine radioisotopes and their activities in sealed containers. However, low throughput renders CT impractical for waste facilities. Limitations to practical CT use in characterizing waste drums can be overcome by improved CT scanners, data interpretation, and sensor fusion. Development on this project has reached the pilot-scale stage.

Summary Purpose/Need:
Waste barrels must be labeled, assayed, and certified. An accurate, nondestructive assay method would identify all the radioisotopes present and quantitatively measure their activities. In this way, waste containers could be routed in the most cost-effective manner without the drums having to be opened.

Summary Result/Endpoint/Deliverable:
This project will provide a CT system ready for technical transfer to commercial operators.

BDAT: NA

Functional Areas: characterization, monitoring & assay

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF

ID: 69

Program Title: Immobilization of Wastes in Ceramics

Summary Description:
This project is at the conceptual stage for planning studies in the area of ceramic waste form development for mixed waste, low level waste, and transuranic waste. Waste forms based on naturally occurring mineral phases such as sodalite and close analogs of those minerals will be designed to accommodate each type of waste.

Summary Purpose/Need:
Ceramic waste forms can be designed to achieve very high waste loading with high durability of the waste forms.

Summary Result/Endpoint/Deliverable:
Research is scheduled to be completed by 1994, with bench scale feasibility projects begun in 1995.

BDAT: HLVIT STABL

Functional Areas: final form
final form ceramic

Target Site: Lawrence Livermore National Laboratory

Location site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:
LLNL MWMF, and LLNL EPD characterization needs

ID: 122

Program Title: Multiple Sensor Integration for Material Segregation-2

Summary Description:
The program has been working on advanced sensing and classification algorithms that when integrated with robotics and automation can characterize, singulate and sort the contents of drums. Utilizing this information the contents can be autonomously dispatched to the appropriate processing line. Based on process material flowsheets this capability will be critical to handle the large number of barrels to be processed daily. For material classification, sensor information is acquired from a wide array of sensors (ferrous materials, optical profiles, radiation detectors, etc.) and then interpreted and integrated into the classification algorithms for singulation and sorting. In an unknown and often hostile environment operator intelligence will be required for certain decisions. Teleoperation technologies coupled with sensor information will aid the operator in his decisions. These Technologies autonomous/telemanipulation control (with integral collision avoidance). For example, advanced 2D and 3D remote viewing technologies coupled with automatic manipulator end-point tracking systems allow the operator to operate more efficiently.

Summary Purpose/Need:
Automation coupled with advanced sensors and data interpretation allows a safe practical method for segregating the various waste streams prior to processing steps. This sensor based system yields a wide range of information and feedback for autonomous grasping and sorting. The integration of these sensor technologies allow segregation of the various combustibles, metals, and radioactive materials.

Summary Result/Endpoint/Deliverable:
Completed bench studies.

BDAT: NA

Functional Areas: robotics
characterization
sorting

8.6 Laboratory For Energy-Related Health Research

Site Summary

The Laboratory for Energy-Related Health Research (LEHR), located in Davis, California, conducted research on the potential health effects from exposure of dogs to bone seeking radionuclides. About 8 m^3 of MLLW from operations is currently stored at LEHR. Waste streams are named, described, and their sources identified in the LEHR Waste Profile Sheets (WPS). All this waste is characterized by process knowledge and is subject to LDR. Nine waste codes and 4 BDAT apply as detailed in the LEHR WPS. All the waste is categorized as MLLW. Operations waste is no longer generated at LEHR. All mixed wastes produced at LEHR through the end of 1997 will result from environmental restoration activities. LEHR is an inactive facility with no future DOE use.

LEHR does not have or plan to have any facilities for treating mixed waste streams on-site.

General

LEHR is located 2.4 km south of the main campus of the University of California, Davis (UCD) (Figure 8-1). The site encompasses 0.06 km^2 (15 acres) owned by UCD and leased to DOE since 1958. The number of people working at the site is variable, depending on the activities being performed, usually fewer than 45 but varying depending on the activities being performed.

The LEHR facility consists of 16 buildings, including a main administration and office building, 2 animal hospitals, a laboratory and support building, waste-storage facilities, and outdoor dog pens. Research at LEHR originally focused on determining the health effects caused by chronic exposures to radionuclides, primarily strontium-90 and radium-226, using dogs to simulate radiation effects on humans. In 1988, DOE's Office of Energy Research decided to close out the research program, shut down LEHR, and return the facilities and site to UCD for unrestricted use after remediation.

8.6.1 Mixed Waste

The mixed waste inventory at LEHR is reported as operations waste that was produced during the study and is stored on-site. Any mixed wastes produced in the next 5 years will result from environmental remediation. No MTRU or high-level waste is stored or expected to be generated during remediation.

The operations waste stored at LEHR was produced during the DOE-funded study that ended in 1988. All of the stored inventory is reported as MLLW. LEHR is storing 4 mixed waste streams on-site, with a total volume of around 8 m^3. The volume figures quoted are through December 31, 1992. Operations waste is no longer being generated, so there are no 5-year volume projections or mixed waste-minimization activities. All the stored waste is subject to the Land Disposal Restrictions. The operational wastes stored on site will be dealt with as part of environmental restoration and decontamination and decommissioning.

The waste matrix categories represented are organic liquids, aqueous liquids, and organic sludges (Table 8.6-1). The organic liquids consist of used solvents and vials of scintillation cocktail; the aqueous stream includes acidic stock and experimental solutions. The organic sludge is biological waste from the beagles used in the study. The organic liquids make up nearly 58 percent (about 4.7 m^3) of the waste volume. The organic sludge accounts for just over 35 percent of the inventory and the aqueous stream represents another 7 percent.

Table 8.6-1
Mixed Wastes at Laboratory for Energy-Related Health Research

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	1	4.70	5,467.00	0	0.00	0.00
CH, Aqueous Liquid	1	0.56	653.00	0	0.00	0.00
CH, Organic Sludges/particulates	2	2.86	3,402.00	0	0.00	0.00
Sub-Total MLLW:	4	8.12	9,522.00	0	0.00	0.00
TOTAL:	4	8.12	9,522.00	0	0.00	0.00

The organic sludges are characterized by sampling and analysis, although further characterization is needed to determine appropriate treatment options. The organic and aqueous liquids are characterized by process knowledge. The waste streams are primarily beta and gamma emitters and alpha emitters at < 10nCi/g.

8.6.2 Treatment Facilities

There are no treatment facilities at LEHR.

8.6.3 Technology Development

There are no site-specific technology development activities for LEHR.

8.6.4 Environmental Restoration Program

LEHR has a number of contamination issues to address. Portions of 5 buildings are known to be contaminated, predominantly with low levels of radioactive materials and asbestos. The on-site disposal of radioactive wastes is known to have occurred at several locations on the property. Ground water below the site is known to contain some chemicals and some radioactive materials. The basic objective of the environmental restoration program at the site is to remove the sources of contamination, decontaminate site facilities, and remediate site soils and trenches. More detailed information on contaminated media associated with environmental restoration is in Chapter 2.

Environmental restoration accomplishments at LEHR include packaging and shipping radioactively contaminated biological waste to the Hanford Site for disposal; installing 10 ground water monitoring wells and obtaining 55 soil borings; removal and disposal of cobalt 60 source; packaging and shipping strontium-90 radioactive source to Argonne National Laboratory; and completing activities related to the removal, treatment, packaging, and disposal of approximately 35,000 gallons of sludge waste. In addition, LEHR has completed numerous planning and report documents related to quality assurance, waste characterization, and waste handling.

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WASTE

PROFILE

SHEETS

Laboratory for Energy-Related

Health Research

LEHR-WPS-1

April 1993

ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: California ID #: 2094
Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH
Waste Stream Name: LEHR FLAM MW-1
Matrix: Organic Liquids Waste Type: MLLW

Waste Stream Description and Source:
The waste consists of a 55 gallon jerry jugs of ethyl alcohol, toluene LSC standards, and vials of scintillation cocktail. The waste was generated as part of a 30 year study funded by the DOE.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	4.7	5,467.0	4.7	5,467.0	0.000	0.000

Treatability Group:
MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time. Treatment technologies will be fully evaluated after the waste has been completely characterized.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:
1) None.

Waste Minimization Activities:
1) Not Applicable.

The waste stream is no longer generated.

General Comments:
The waste will be dealt with as part of the D&D activities at the site. The information currently known about the waste is from historical information previously provided by the researchers who initially generated the waste.

State: California ID #: 2094
Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH
Waste Stream Name: LEHR FLAM MW-1
Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
U220	Conc.	Incineration
U239	Conc.	Incineration

State: California ID #: 2095

Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH

Waste Stream Name: LEHR COR MW-2

Matrix: Aqueous Liquid Waste Type: MLLW

Waste Stream Description and Source:

Stock solutions and experimental solutions in 500 ml and 20 ml vials, the principal contaminant being HCl. Radionuclides are Strontium 90 and Radium 226. This waste stream was generated as part of DOE funded research over a period of 30 years.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.560	653.0	0.560	653.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment technologies will be fully evaluated after the waste has been completely characterized.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Beta/gamma emitter
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

The waste stream is no longer generated.

General Comments:

This waste will be dealt with as part of the D&D activities at the site.
The information currently known about the waste is from historical information previously provided by the researchers who initially generated the waste.

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State: California	ID #: 2095
Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH	
Waste Stream Name: LEHR COR MW-2	
Matrix: Aqueous Liquid	Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation

State: California | ID #: 0000002096
Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH
Waste Stream Name: LEHR IMH MW-3
Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:
The waste consists of organic solvents in biowaste sludge from the beagle study. This waste was generated as part of a 30 year study funded by the DOE.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.9	2,268.0	1.9	2,268.0	0.000	0.000

Treatability Group:
MLLW CH, Organic Sludges/Particulates, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time. Further characterization will have to be performed before treatment technologies can be fully evaluated.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
1) None.

Waste Minimization Activities:
1) Not Applicable.

The waste stream is no longer generated.

General Comments:
This waste will be dealt with as part of the D&D activities at the site.

State: California ID #: 0000002096

Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH

Waste Stream Name: LEHR IMH MW-3

Matrix: Organic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U018	Conc.	Incineration
U050	Conc.	Incineration
U239	Conc.	Incineration

State: California ID #: 0000002097
Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH
Waste Stream Name: LEHR TT MW-4
Matrix: Organic Sludges/Particulates Waste Type: MLLW

Waste Stream Description and Source:

Residual from biowaste contaminated with organic solvents that was pumped into the tank trailer for temporary storage from the two dog excrement processing facilities on site during the research study. This waste was generated as part of a 30 year study on beagles funded by the DOE.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.960	1,134.0	0.960	1,134.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Sludges/Particulates, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment technologies will be fully evaluated after the waste has been completely characterized.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, < 10 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

The waste stream is no longer generated.

General Comments:

This waste will be dealt with as part of the D&D activities at the site.
The characterization information on the waste is minimal.

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State: California ID #: 0000002097

Site: LAB. FOR ENERGY-RELATED HEALTH RESEARCH

Waste Stream Name: LEHR TT MW-4

Matrix: Organic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U165	Conc.	Incineration

8.7 Mare Island Naval Shipyard

Mare Island Naval Shipyard (MINS) is located on the west coast of the Mare Island Strait, west of Vallejo, California (Figure 8-1). The shipyard is a U.S. Navy facility that repairs, overhauls, and maintains Navy ships, including nuclear-powered ships. Drydocks, cranes, waste-handling facilities, and offices are located at the shipyard. Activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program. As described in Section 1.3, the Naval Nuclear Propulsion Program is a joint DOE and Department of Navy program responsible for all activities relating to naval nuclear propulsion. The only mixed-waste generated by the shipyard is mixed low level waste (MLLW).

8.7.1 Mixed Waste

8.7.1.1 High-Level Waste

There is no HLW currently stored or expected to be generated at MINS.

8.7.1.2 Mixed Transuranic Waste

There is no MTRU waste currently stored or expected to be generated at MINS.

8.7.1.3 Mixed Low-level Waste

MINS has in storage as of December 31, 1992, about 7.5 m^3 (about 6500 kg) of MLLW consisting of inorganic and organic debris, paint chips (including some state-only MLLW), and cemented solids (Table 8.7-1). The RCRA contaminants are mostly heavy metals. The shipyard expects, with the state receiving authority to regulate the hazardous components of mixed waste, state-only mixed waste streams of asbestos and petroleum products to be generated in the future. All waste stored on the site is subject to the LDR storage prohibitions. The 5-year projected generation of mixed waste is about 40 m^3 (about 15,000 kg) as provide in Table 8.7-1.

The waste streams include both RCRA and state-only hazardous. Three waste streams are listed as RCRA mixed waste. The remaining streams contain State of California-listed hazardous components and are considered mixed waste per state regulations. The state-only mixed waste streams contain asbestos and petroleum products.

The mixed waste generated at MINS is low-level waste resulting from ship overhaul, decommissioning or routine maintenance in the shipyard. All waste streams are contact-handled, beta-gamma emitters with Co-60 as the primary radionuclide.

Waste minimization includes eliminating, wherever technically allowed, the use of acetone and other F-listed solvents, lead and chromium-based paints, lead shielding in disposal containers, and chemical paint removers.

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Table 8.7-1
Mixed Wastes at Mare Island Naval Shipyard

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Inorganic Sludges/particulates	1	<0.10	2.30	1	0.20	13.60
CH, Cemented Solids	1	0.85	1,097.30	1	5.50	6,000.00
CH, Organic Debris	2	6.16	5,285.00	2	5.60	5,568.00
CH, Inorganic Debris	1	0.40	90.90	1	28.30	2,954.50
Sub-Total MLLW:	5	7.44	6,475.50	5	39.60	14,536.10
TOTAL:	5	7.44	6,475.50	5	39.60	14,536.10

8.7.2 Treatment Facilities

Only small quantities of mixed waste are generated at Mare Island Naval Shipyard. As of this date, no treatment facilities for the waste have been identified. There are no existing or planned treatment facilities at MINS. Where possible, RCRA simple treatment in the accumulation container will be performed in accordance with state regulations. .

8.7.3 Technology Development

Since radiation levels are not of sufficient significance to affect treatment, these mixed waste streams should require technology comparable to that used in treating similar hazardous, but non-radioactive waste streams. Concentration of radionuclides in treatment residues will need to be considered. There are no specific technology needs or development activities associated with Mare Island Naval Shipyard.

8.7.4 Excess Heavy Metal Bearing Equipment

During equipment decommissioning, every effort is made to separate lead-bearing and other heavy metal components from the radioactive parts of the equipment to avoid declaring the entire unit mixed waste. The excess equipment containing recyclable heavy metals in storage at the shipyard as of December 31, 1992 was 20 m^3 (19,190 kg), with approximately 114 m^3 (227,300 kg) expected to become excess in the next 5 years.

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Mare Island Naval Shipyard

ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next 5 years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: California | ID #: 0000000005
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: SOLID WASTE WITH HEAVY METALS
Matrix: Organic Debris | Waste Type: MLLW

Waste Stream Description and Source:
Debris, such as cloth and plastic containing chromium and/or lead.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.850	525.0	0.850	525.0	3.1	3,750.0

Treatability Group:
MLLW CH, Organic Debris, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentrations of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:

Waste containing D007 cannot be minimized since it results from work on systems where chromate is required.

State: California ID #: 0000000005
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: SOLID WASTE WITH HEAVY METALS
Matrix: Organic Debris Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: California | ID #: 0000000006
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: SOLIDIFIED SOLUTION WITH HEAVY METALS
Matrix: Cemented Solids | Waste Type: MLLW

Waste Stream Description and Source:

Solidified chromate solutions and chemical analysis solutions. This waste is not RCRA hazardous but is regulated by the State of California as a hazardous waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.850	1,097.3	0.850	1,097.3	5.5	6,000.0

Treatability Group:

MLLW CH, Cemented Solids, Toxic Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:

Improved operating practices.
Technology changes.

General Comments:

Projected generation rates are based on California hazardous waste regulations. Samples are being evaluated at this time; the results are not available. Waste stream is also characterized by sampling and analysis.

State: California ID #: 0000000006

Site: MARE ISLAND NAVAL SHIPYARD

Waste Stream Name: SOLIDIFIED SOLUTION WITH HEAVY METALS

Matrix: Cemented Solids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

State: California | ID #: 0000000008
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: PAINT CHIPS CONTAINING LEAD
Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:
Lead based chips from paint removal.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.030	2.3	0.030	2.3	0.200	13.6

Treatability Group:
MLLW CH, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:
Plan to treat at a planned facility. Simple stabilization in the accumulation container under California State permit by rule requirements.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology to treat solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause signigicant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Predominant radionuclide is Co-60.

Waste Minimization Activities:

Use of lead-based paint has been eliminated wherever technically feasible.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

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State: California	ID #: 0000000009
Site: MARE ISLAND NAVAL SHIPYARD	
Waste Stream Name: EQUIPMENT CONTAINING THALLIUM	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Equipment containing thallium. This waste is not RCRA hazardous but is regulated by the State of California as hazardous waste, California State Code 181.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.400	90.9	0.400	90.9	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:

1) Not Applicable.

This waste is no longer generated.

General Comments:

State Code 181 applies to this waste stream. This waste stream is subject to California State LDR prohibitions.

EPA CODES

Waste Characterization Basis: Process Knowledge

State: California ID #: 0000000009

Site: MARE ISLAND NAVAL SHIPYARD

Waste Stream Name: EQUIPMENT CONTAINING THALLIUM

Matrix: Inorganic Debris Waste Type: MLLW

No applicable RCRA Codes have been identified.

State: California | ID #: 0000000011
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: SOLID WASTE WITH PETROLEUM PRODUCTS
Matrix: Organic Debris | Waste Type: MLLW

Waste Stream Description and Source:
Cloth and plastic containing pertroleum products. This is not a RCRA waste, but is regulated by the State of California as a hazardous waste, California State Code 352.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	5.3	4,760.0	5.3	4,760.0	2.5	1,818.0

Treatability Group:
MLLW CH, Organic Debris

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause signigicant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices.
Product change.

General Comments:
California State Code 352 applies to this waste stream. This waste stream is subject to California LDR prohibitions.

EPA CODES
Waste Characterization Basis: Process Knowledge

State: California ID #: 0000000011

Site: MARE ISLAND NAVAL SHIPYARD

Waste Stream Name: SOLID WASTE WITH PETROLEUM PRODUCTS

Matrix: Organic Debris Waste Type: MLLW

No applicable RCRA Codes have been identified.

State: California ID #: 0000000012
Site: MARE ISLAND NAVAL SHIPYARD
Waste Stream Name: MATERIALS CONTAINING ASBESTOS
Matrix: Inorganic Debris Waste Type: MLLW

Waste Stream Description and Source:
Removal of asbestos material for equipment maintenance. This is not a RCRA waste, but is regulated by the State of California as a hazardous waste, California Waste Code 151.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	28.3	2,954.5

Treatability Group:
MLLW CH, Inorganic Debris

Treatment Status:
No treatment required prior to disposal. No treatment is required for land disposal of asbestos waste.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Not applicable.

Waste Minimization Activities:

Good operating practices.
Product change.

General Comments:
California Waste Code 151 applies to this waste stream. Waste stream is also characterized by sampling and analysis.

EPA CODES
Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

8.8 Sandia National Laboratories/California

Site Summary

The Sandia National Laboratories, California (SNL/CA) conducts research and development in the interest of national security. About 10 m^3 of MLLW is currently stored at SNL/CA. Waste streams are named, described, and their sources identified in the SNL/CA Waste Profile Sheets (WPS). Three of the streams are non-RCRA waste and are included because they contain hazardous constituents regulated by the State of California. Waste is characterized by process knowledge and about 59 percent (by volume) of the RCRA waste is subject to LDR. About 16 m^3 of MLLW is projected to be generated through the end of 1997. Environmental Restoration and Cleanup and Transition (C&T) waste will also be generated during the next 5 years. SNL/CA has a site-wide waste minimization program for hazardous waste which is in full compliance with DOE and all other regulatory agency requirements.

SNL/CA has no on-site treatment facilities for mixed waste and no plans for future treatment capability. The tritiated scintillation cocktail waste stream is currently being shipped to a commercial treatment and disposal facility. Treatment options for the other waste streams are being evaluated.

General

Sandia National Laboratories/California (SNL/CA), is located in Livermore, California, 65 km east of San Francisco (Figure 8-1). Sandia is a prime contractor to the DOE, and is operated by Sandia Corporation under a no-profit, no-fee contract. SNL/CA's primary activities focus on development and engineering of the non-nuclear components of nuclear weapons. SNL/CA performs weapons engineering for all phases of the nuclear-weapons life cycle; nuclear materials safeguards and security; energy research; tritium research; and fundamental research on combustion, geosciences, fusion, and materials sciences. SNL/CA has about 1,100 employees. The 1.7-km^2 site is surrounded by DOE-owned land that acts as a buffer zone. Hazardous waste activities at the site include handling, packaging, and storing energetic, radioactive, mixed, and nonradioactive hazardous waste.

8.8.1 Mixed Waste

SNL/CA has generated and is currently storing approximately 9.6 m^3 of this waste. No mixed transuranic or high-level waste is generated at the site.

8.8.1.1 High-Level Waste

There is no high-level waste currently stored at SNL/CA, and none is expected to be generated in the next 5 years.

8.8.1.2 Mixed Transuranic Waste

There is no mixed TRU waste currently stored at SNL/CA, and none is expected to be generated in the next 5 years.

8.8.1.3 Mixed Low-Level Waste

SNL/CA generates 6 mixed waste streams. Three of the streams are non-RCRA waste and are included because they contain hazardous constituents regulated by the State of California. As of December 31, 1992, the total volume of mixed waste stored on site, both RCRA and non-RCRA, is approximately 9.6 m^3. Of the RCRA waste, about 59 percent (by volume) is subject to the Land Disposal Restrictions. All mixed waste generated from operations on-site is listed as MLLW. SNL expects to generate nearly 15.8 m^3 of MLLW over the next 5 years. Information regarding each waste stream will be maintained by SNL in its computerized waste information system. The system is capable of tracking wastes from generation to final disposal.

Table 8.8-1 summarizes the waste-stream information by grouping the wastes into physical-chemical matrix categories. The waste categories are lab packs with and without metals, organic liquids, and inorganic sludges/particulates. The 3 RCRA streams represent nearly 13 percent (1.3 m^3) of the site's mixed waste volume. The RCRA wastes are metals contaminated with tritium and uranium, scintillation cocktail with tritium, and organic liquids.

The 3 waste streams containing California-list hazardous constituents are contaminated ethylene glycol, equipment and supplies containing uranium and tellurium, and tritiated pump oil. The total volume of the non-RCRA wastes accounts for about 87 percent (8.3 m^3) of the mixed waste at SNL/CA.

Generation of mixed waste is minimized by improved operating practices, including waste segregation and material handling. SNL/CA has established a site-wide waste-minimization program for hazardous waste. The waste minimization program is administered by EPA and is in full compliance with DOE and all other regulatory agency requirements.

8.8.2 Treatment Facilities and Technology

SNL/CA has no on-site treatment facilities for mixed waste and no plans for future treatment capability. The Waste Storage Facility (Bldg. 961) is capable of waste-handling operations such as compaction, cement encapsulation, neutralization, and absorption, but this capacity is not being used for mixed waste.

The tritiated scintillation-cocktail waste stream is currently being shipped for off-site treatment and disposal to a licensed commercial facility. As a result, the volume stored on site fluctuates. The streams that contain organic liquid and oil can be incinerated, but an appropriate facility has not yet been identified. Treatment options for the other waste streams are being evaluated.

8.8.3 Technology Development

There are no site-specific technology development activities for SNL/CA.

Table 8.8-1
Mixed Wastes at Sandia National Laboratory - California

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	2	0.62	168.00	2	2.00	400.00
CH, Inorganic Sludges/particulates	1	0.20	27.00	1	7.30	1,000.00
CH, Lab Packs With Metals	2	8.46	3,332.00	2	5.50	2,150.00
CH, Lab Packs Without Metals	1	0.32	50.00	1	1.00	625.00
Sub-Total MLLW:	6	9.60	3,577.00	6	15.80	4,175.00
TOTAL:	6	9.60	3,577.00	6	15.80	4,175.00

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Sandia National Laboratories/California

SNL/CA-WPS-1

April 1993

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next 5 years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: California | ID #: 495
Site: SANDIA NATIONAL LABORATORY - CALIFORNIA
Waste Stream Name: SCINTILLATION COCKTAIL WITH TRITIUM
Matrix: Lab Packs without Metals | Waste Type: MLLW

Waste Stream Description and Source:
Scintillation cocktails, combination of phenylalkanes with tritium. Generated from Bio Assays and sampling at TRL and MO24.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.320	50.0	0.320	50.0	1.000	625.0

Treatability Group:
MLLW CH, Lab Packs without Metals, Ignitable, Corrosive, or Reactive Only

Treatment Status:
Currently being treated off-site at a TBD facility. 0.42 cubic meters shipped off-site in 12/92. Currently 0.32 cubic meters or 50 kg remain stored on-site. This waste is treated on a regular basis so the inventory changes from survey to survey.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:
1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California ID #: 495

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: SCINTILLATION COCKTAIL WITH TRITIUM

Matrix: Lab Packs without Metals Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: California	ID #: 496
Site: SANDIA NATIONAL LABORATORY - CALIFORNIA	
Waste Stream Name: METALS WITH TRITIUM & URANIUM	
Matrix: Lab Packs with Metals	Waste Type: MLLW

Waste Stream Description and Source:

Beryllium, mercury, lead, chromium, other trace metals, and trace oil with tritium and uranium. Research Lab; etching, polishing and analyzing metal samples. Acid solutions are poured into a container with a neutralizing agent. Clay is then added to absorb liquid. Primarily from weapons program and research activities (TRL).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	127.0	0.100	5.0	0.420	132.0	0.500	150.0

Treatability Group:

MLLW CH, Lab Packs with Metals, Toxic Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled
3) Volatile radionuclide
4) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 496**

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: METALS WITH TRITIUM & URANIUM

Matrix: Lab Packs with Metals **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: California | ID #: 0000000497

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: ORGANIC LIQUIDS

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

A variety of organic liquids including 2 drums with labpacks. No absorbent material has been added to the liquid waste. Individual containers still need analysis. One drum is bulk liquid of various organic mixtures. Generated by research activities, primarily at the TRL.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.200	91.0	0.320	50.0	0.520	141.0	1.5	250.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment technology exists (incineration), but no facility is available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Volatile radionuclide
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 0000000497**

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: ORGANIC LIQUIDS

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: California **ID #: 0000000498**

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: OIL

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Waste Stream Description and Source:

Solidified and liquid oil, equipment and containers contaminated with oil. Includes clean-up supplies such as gloves and adsorbent paper material. This is a California listed waste (#221) and does not have any EPA codes. Pump oil from equipment in the TRL.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
8.0	3,200.0	0.000	0.000	8.0	3,200.0	5.0	2,000.0

Treatability Group:

MLLW CH, Lab Packs with Metals

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment technology exists (incineration), but no facility is available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Volatile radionuclide
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California **ID #: 0000000498**

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: OIL

Matrix: Lab Packs with Metals **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California | ID #: 0000000499
Site: SANDIA NATIONAL LABORATORY - CALIFORNIA
Waste Stream Name: EQUIPMENT WITH URANIUM AND TELLURIUM
Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:
Materials contaminated with or containing uranium and tellurium. Includes hardware, clean-up supplies, and powders. This is a California listed waste (#551) and does not have an EPA code associated with it. Site-wide research, mostly from Bldg. 916 & 979.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.200	27.0	0.000	0.000	0.200	27.0	7.3	1,000.0

Treatability Group:
MLLW CH, Inorganic Sludges/Particulates

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled
2) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:
1) None.

Waste Minimization Activities:
1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

EPA CODES
Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: California **ID #: 0000000500**

Site: SANDIA NATIONAL LABORATORY - CALIFORNIA

Waste Stream Name: ETHYLENE GLYCOL SOLUTION

Matrix: Organic Liquids **Waste Type: MLLW**

Waste Stream Description and Source:

Ethylene glycol containing tritium. This is a California listed waste (#134) and does not have an EPA code. Ethylene glycol is used in devices which monitor tritium concentrations at the TRL or around the site.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.100	27.0	0.000	0.000	0.100	27.0	0.500	150.0

Treatability Group:

MLLW CH, Organic Liquids

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Incineration is a possible treatment but no facility is available at SNL/CA. Waste is non-RCRA but is regulated in CA.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Volatile radionuclide
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Safeguard issues may be a concern. Treatment involves tritium release, which must be reported.
2) Treatment must consider radioactive off-gases to protect the public and treatment facility personnel from releases.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: California	**ID #: 0000000500**
Site: SANDIA NATIONAL LABORATORY - CALIFORNIA	
Waste Stream Name: ETHYLENE GLYCOL SOLUTION	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

9.0 COLORADO

There are two Colorado facilities that generate, expect to generate, and/or store DOE-Managed mixed waste.

- 9.1 Grand Junction Project Office
- 9.2 Rocky Flats Plant

Figure 9-1 shows the location of these facilities.

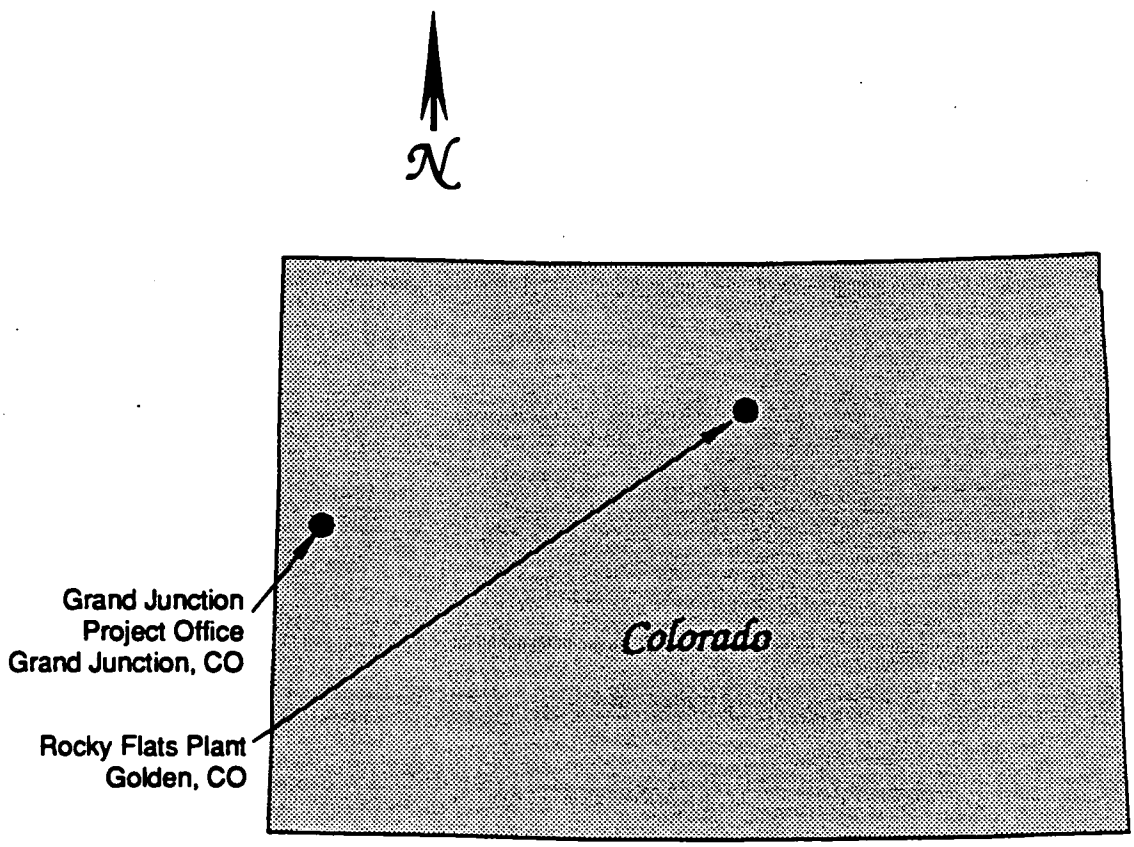

Figure 9-1. Colorado Facilities that Generate, Expect to Generate, and/or Store DOE-managed Mixed Waste.

9.1 Grand Junction Projects Office

Site Description

The Grand Junction Projects Office (GJPO), located in west central Colorado, supports the Federal Government's remedial action programs. About 0.6 m^3 of mixed low-level waste (MLLW) has been generated by these activities. In addition, GJPO is expected to generate about 0.2 m^3 of MLLW over the next 5 years. Waste streams are named, described, and their sources identified in the GJPO Waste Profile Sheets (WPS). Waste is characterized by both sampling and analysis and by process knowledge. About 15 percent of the waste inventory is subject to the LDR, and none of the projected waste is subject to LDR because the GJPO will remain a Conditionally Exempt Small Quantity Generator (CESQG). Hazardous material substitution and recycling have been used to minimize waste. The radionuclide content of the waste poses no special issues for treatment.

It is planned to ship 1 of the MLLW waste streams to an off-site commercial treatment facility for incineration, contingent upon the exemption from the requirement in DOE Order 5820.2A to dispose of on-site. Alternatively, the GJPO may be able to aggregate this mixed waste stream with similar wastes from other DOE sites to make a dedicated burn and radioactive residue return more achievable.

General

GJPO is located in Mesa County, Colorado, adjacent to the Gunnison River and immediately southwest of the town of Grand Junction (Figure 9-1). Chem-Nuclear Geotech, Inc., is the prime contractor for the facility, which occupies a 0.23-km^2 site and employs about 810 people. The historical mission of the GJPO was uranium milling, analyses, and storage, but now the facility is devoted to the support of the federal government's remedial-action programs.

The present GJPO site was acquired by the U.S. War Department in 1943 in support of the Manhattan Engineer District. Through 1945 a uranium and vanadium concentrate refinery was constructed and operated by the U.S. Vanadium Corporation for the federal government. In 1947, the U.S. Atomic Energy Commission (AEC) established the Colorado Raw Materials Office to manage domestic uranium procurement and exploration functions. Between 1947 and 1971, the AEC was responsible for the receipt, sampling, and analysis of uranium and vanadium concentrates, during which time several pilot-plant milling and amenability testing programs were conducted at the facility. The AEC's uranium concentrate program was terminated in 1970, and the last shipment of concentrate left the facility in January 1975.

Current GJPO activities focus on a variety of remedial action projects: the Grand Junction Projects Office Remedial Action Program (GJPORAP), the UMTRA Program's Grand Junction Vicinity Properties (GJVP) Project; the Monticello Remedial Action Project (MRAP) and the Monticello Vicinity Properties (MVP) Project (involving remedial action at the government-owned mill site and surrounding vicinity properties). The GJPO's Analytical Chemistry Laboratory provides full-service analytical support, including chemical, radiochemical, and radiometric analyses, for the above projects and other on- and off-site DOE programs.

The GJPO maintained a status of CESQG until March 29, 1991, when on-site uranium mill tailings remediation unearthed a sump containing both liquid and sediment contaminated with chloroform. The amount of waste recovered caused the GJPO to be reclassified as a small quantity generator and subject to more stringent regulatory controls. On January 22, 1992, the GJPO submitted a RCRA Part A permit

application to the Colorado Department of Health (CDH) and the EPA, Region VIII, officially commencing operations within the hazardous and mixed waste storage unit as a RCRA interim status storage facility.

In November 1992, the GJPO implemented the Conditionally Exempt Small Quantity Generator Management Plan. This plan was prepared to establish the process whereby hazardous and mixed waste generated at the GJPO is managed to maintain GJPO's status as a CESQG. Should the GJPO's status be elevated beyond that of a CESQG, all affected mixed waste for which an available treatment or disposal option does not exist would be in immediate technical violation of the Land Disposal Restrictions.

The GJPO has approximately 0.6 m^3 of stored MLLW consisting of 9 waste streams, with approximately 0.1 m^3 being subject to the LDR. Three of the streams have been characterized by sampling and analysis and 6 by process knowledge to determine applicable hazardous waste codes. RCRA components are primarily lead (D008) and D- and F-listed solvents. (Details for each stream are provided in the Waste Profile Sheets.) Uranium is the major radioactive contaminant and poses no special issues for treatment. Five waste streams are active; they are expected to generate 0.2 m^3 of waste in the next 5 years. Waste minimization actions include solvent substitution and elimination of hazardous scintillation cocktails in laboratory analyses. None of the waste is being treated; however, 1 stream is scheduled for treatment at a commercial facility in 1993. Principal RCRA-specified best demonstrated available technologies are incineration and stabilization.

9.1.1 Mixed Waste

The GJPO has about 0.6 m^3 (610 kg) of MLLW, of which about 0.1 m^3 (110 kg) or 15 percent is subject to the LDR. Reported quantities reflect the inventory as of December 31, 1992. The waste matrix includes 9 waste streams, consisting of organic liquids, aqueous liquids, and soils (Table 9.1-1). The largest single category of mixed low-level waste is aqueous liquids, which make up about 68 percent, or about 0.4 m^3, of the volume. The stream contributing 97 percent of this volume came from remediation of a sump located in Building 31. Six of the 9 waste streams are generated by laboratory analyses and consist of expired calibration standards, cyclohexane mixture, liquid scintillation cocktails, PCB/pesticide extraction residues (soils), extraction residues from VOC analyses (soils), and extraction residues from oil and grease analysis of soil samples. These laboratory waste streams make up roughly 33 percent or 0.2 m^3 of the mixed low-level waste generated at the GJPO.

EPA hazardous waste codes have been assigned using sampling and analysis for 3 waste streams and process knowledge for the 6 analytical-procedure waste streams. Either analytical controls were adequate to use process knowledge for determining the applicable hazardous waste code, or material safety data sheets of virgin chemicals were used to characterize the wastes. All wastes are contact-handled and contain uranium as the principal radioactive contaminant. Waste minimization at the GJPO has focused on hazardous-material substitution, return of unused chemicals to the suppliers, and recycling of used oil and spent lead/acid batteries.

An estimated 0.2 m^3 of MLLW will be generated at the GJPO in the next 5 years. Four of the 9 waste streams are no longer generated. The largest fraction (43 percent by volume) of the forecast waste will be the PCB/pesticide extraction residues from the analytical laboratory in Building 20.

9.1.1.1 High Level Waste

There is no high-level waste at the GJPO site.

Table 9.1-1
Mixed Wastes at Grand Junction Project Office

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	2	0.18	146.72	1	<0.10	60.00
CH, Aqueous Liquid	3	0.42	424.40	1	<0.10	10.00
CH, Soils	4	<0.10	37.00	3	0.13	312.34
Sub-Total MLLW:	9	0.62	608.12	5	0.21	382.34
TOTAL:	9	0.62	608.12	5	0.21	382.34

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9.1.1.2 Mixed Transuranic Waste

There is no mixed transuranic (MTRU) waste at the GJPO site.

9.1.2 Treatment Facilities and Technology

There are no existing or planned mixed waste treatment facilities at the GJPO. In 1993, the GJPO plans to use an off-site commercial treatment facility, to incinerate one of the waste streams (cyclohexane/trioctylphosphine oxide). This plan is contingent upon the exemption from the requirement in DOE Order 5820.2A to dispose of on-site.

Technology options have not been analyzed for the remaining GJPO waste streams; however, the radionuclides present pose no special issues for treatment.

9.1.3 Technology Development

All GJPO waste streams have existing treatment technology. There are no site-specific technology development activities for GJPO.

9.1.4 Environmental Restoration Program

Current GJPO Environmental Restoration Program activities focus on a variety of remedial action projects: the GJPORAP, the UMTRA Programs, and the GJVP Project. The GJPO's Analytical Chemistry Laboratory provides full-service analytical support, including chemical, radiochemical, and radiometric analyses, for the above projects and other on- and off-site DOE programs.

The contamination of the GJPO site is believed to be almost exclusively from the burial of waste from the pilot-plant operations. The contaminated material consists of uranium mill tailings, ore and related process equipment. The total volume of contaminated material is estimated to be 225,000 cubic yards. Environmental restoration accomplishments for the GJPO Remedial Action Project include the continued hauling of tailings to the interim repository (198,078 tons in FY 92). There remains a potential for encountering quantities of mixed waste throughout the remainder of GJPORAP. Pending the identification and quantification of these potential mixed wastes, no projections are being provided at this time.

Under the UMTRA program, quantities of uranium mill tailings commingled with hazardous waste and/or polychorinated biphenyls (PCBs) have been identified during the course of mill tailings removal under the GJVP project. Approximately 3000 cubic meters of commingled waste are anticipated to be generated during 1994 and 1995. More detailed information on the contaminated media associated with environmental restoration is given in Chapter 2.

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WASTE

PROFILE

SHEETS

Grand Junction Project Office

GJPO-WPS-1

April 1993

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: Colorado ID #: 1132
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: EXPIRED CALIBRATION/AA STANDARDS
Matrix: Aqueous Liquid Waste Type: MLLW

Waste Stream Description and Source:
Expired calibration standards of uranium and thorium are generated from the analytical chemistry laboratory. These standards are generated as the result of quality control/quality assurance requirements. Building 20, expired reagents.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.008	7.7	0.008	7.7	0.010	10.0

Treatability Group:
MLLW CH, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only

Treatment Status:
Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
None known.
Contains U and Th.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation

State: Colorado ID #: 1134
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: PCB/PESTICIDE EXTRACTION RESIDUE
Matrix: Soils Waste Type: MLLW

Waste Stream Description and Source:
The analytical chemistry laboratory's waste stream of soil is generated from PCB/pesticide extractions with methylene chloride, acetone and hexane. Building 20, Laboratory Analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.010	22.3	0.010	22.3	0.090	226.0

Treatability Group:
MLLW CH, Soils, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
None known.
Contains uranium, radiation level unknown.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Colorado ID #: 1134
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: PCB/PESTICIDE EXTRACTION RESIDUE
Matrix: Soils Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Colorado ID #: 1135
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: CYCLOHEXANE/TOPO
Matrix: Organic Liquids Waste Type: MLLW

Waste Stream Description and Source:

A solvent waste mixture of Cyclohexane and Trictylphosphine Oxide (TOPO) is generated by the analytical chemistry laboratory as a result of a uranium extraction procedure. Building 20, Laboratory analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.118	86.2	0.020	25.0	0.138	111.1	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Plan to treat off-site at an existing commercial facility contingent upon the exemption from the requirement in DOE order 5820.2A to dispose on-site.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

None known.
Radionuclides: U-232, Th-238. Maximum activity estimated at 50 pCi/ml.

Waste Minimization Activities:

1) Not Applicable.

Because of solvent substitution, this waste is no longer generated.

General Comments:

The GJPO's generator status was elevated from conditionally exempt to small quantity generator, thereby becoming subject to LDRs in March 1991. Conditionally exempt status was regained in Febrary 1992.

State: Colorado ID #: 1135
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: CYCLOHEXANE/TOPO
Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

State: Colorado | ID #: 1136
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: GJPO REMEDIAL ACTION PROJECT WASTE
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

As a result of GJPO Remedial Action Project (GJPORAP) activities, waste was discovered in a sump connected to Building 31. It is believed that the sump waste was generated during the 1950s or 1960s from analytical activities attempting to identify more efficient techniques for uranium extraction from ore.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.408	408.3	0.000	0.000	0.408	408.3	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

None known.
Radionuclides: Ra-226 (115.1 pCi/l), Th-230 (17.6 pCi/l), and U (1.06 mg/l).

Waste Minimization Activities:

1) Not Applicable.

This waste was generated by a single remediation event. This waste is no longer generated.

State: Colorado ID #: 1136

Site: GRAND JUNCTION PROJECT OFFICE

Waste Stream Name: GJPO REMEDIAL ACTION PROJECT WASTE

Matrix: Aqueous Liquid Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D022		Not currently prohibited under the LDR Program.

State: Colorado ID #: 1139
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: VOLATILE ORGANIC EXTRACTION RESIDUE
Matrix: Soils Waste Type: MLLW

Waste Stream Description and Source:
Environmental mill tailing sample residues are generated by the analytical chemistry laboratory through a volatile organic extraction procedure. Building 20, Laboratory analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.001	0.028	0.001	0.028	0.012	30.0

Treatability Group:
MLLW CH, Soils, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
None known.
Contains uranium, radiation level unknown.

Waste Minimization Activities:
1) Improved operating practices: material handling and inventory procedures; waste segregation; and changes in production scheduling.

This waste is generated infrequently.

State: Colorado ID #: 1139

Site: GRAND JUNCTION PROJECT OFFICE

Waste Stream Name: VOLATILE ORGANIC EXTRACTION RESIDUE

Matrix: Soils Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration

State: Colorado | ID #: 2223
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: SANDIA AQUIFER SAMPLE
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

Excess analytical samples, water sample-2 containers (18.5 pounds). Sample #SA40601 - contaminated with acetone, methylene chloride, and trichloroethylene (F002, F003, D040). Building 20, Excess sample.
Generated by ground water sampling of aquifer underlying surface impoundments.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.008	8.4	0.008	8.4	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics

Treatment Status:

Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

None known.
Radionuclide: U-238, 2300 pCi/l.

Waste Minimization Activities:

1) Not Applicable.

Waste is no longer generated.

State: Colorado ID #: 2223
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: SANDIA AQUIFER SAMPLE
Matrix: Aqueous Liquid Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D040		Not currently prohibited under the LDR Program.
F002	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis
F003	Conc.	Biodegradation; Carbon Adsorption; Steam Stripping; Liquid-Liquid Extraction; Wet Air Oxidation; or Reverse Osmosis

State: Colorado ID #: 2227
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: ENVIRONMENTAL SURVEY SAMPLES
Matrix: Soils Waste Type: MLLW

Waste Stream Description and Source:

Excess samples from surface infiltration/runoff at the Lurance Canyon Burn Site. SAMPLE #s: SA36002, SA80602, SA80304, SA80303 contaminated with lead (D008) solid samples. SAMPLE #s: SA81001 contaminated with phenolic compounds and acetone (F003) solid samples. There are 10 soil samples totaling 7.5 pounds. Building 20, Excess Sample. At the conclusion of analysis, the excess samples become waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.001	3.4	0.001	3.4	0.000	0.000

Treatability Group:

MLLW CH, Soils, Toxic Organics and Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

None known.
Radionuclides: Am-241, Cs-137, Pu-238, Sr-90, Th-228, Th-232, I (all isotopes).

Waste Minimization Activities:

1) Not Applicable.

Waste is no longer generated.

State: Colorado ID #: 2227
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: ENVIRONMENTAL SURVEY SAMPLES
Matrix: Soils Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F003	Conc.	Incineration

State: Colorado ID #: 2228
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: LIQUID SCINTILLATION COCKTAILS, MIXED
Matrix: Organic Liquids Waste Type: MLLW

Waste Stream Description and Source:

Liquid scintillation cocktails containing organic liquid (xylene, cyclohexane), corrosive liquid (nitric acid) and radioisotopes. The Analytical Chemistry Laboratory waste stream of liquid scintillation cocktails is generated as the result of analyses of environmental samples for tritium, lead-210, and thorium-230. Building 20, Laboratory analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.043	35.6	0.043	35.6	0.072	60.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Volatile radionuclide

Radionuclides: Pb-210 and thorium in addition to tritium. Maximum activity: 50 pCi/20 ml.

Waste-Specific Radiation Effects on Treatment:

None known.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Colorado ID #: 2228
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: LIQUID SCINTILLATION COCKTAILS, MIXED
Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D002A	Tech.	Deactivation
D008B	Conc.	Stabilization
F003	Conc.	Incineration

State: Colorado | ID #: 0000002070
Site: GRAND JUNCTION PROJECT OFFICE
Waste Stream Name: OIL AND GREASE EXTRACTION RESIDUE
Matrix: Soils | Waste Type: MLLW

Waste Stream Description and Source:
This stream consists of sample residue from an extraction procedure used in the analysis for oil and grease in samples. Building 20, Laboratory Analsis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.005	11.3	0.005	11.3	0.023	56.3

Treatability Group:
MLLW CH, Soils, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time. GJPO's Waste Management Plan addresses implementation of Site Specific Plans for Treatment Capacity and Technology. Commercial and DOE treatment options are addressed in GJPO's Waste Management Plan.

Technology Status:
Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
None known.
Contains uranium, radiation level unknown.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

9.2 Rocky Flats Plant

The Rocky Flats Plant (RFP) occupies approximately 25 km^2 in Northern Jefferson County, Colorado, approximately 25 km northwest of Denver. RFP's historical mission was to produce plutonium and other metal components for nuclear weapons. Production activities include metal working, fabrication and component assembly, chemical recovery and purification of transuranic radionuclides. The plant utilized specialized facilities for recovering nuclear components from obsolete weapons. RFP's new mission is to clean out and stabilize production process systems; decontaminate obsolete or excess buildings and facilities; process plutonium residues in preparation for transport to storage or disposal sites; possibly transfer non-plutonium manufacturing to other locations; maintain a contingency status in Building 707 pending final decisions from the reconfiguration Programmatic Environmental Impact Statement (PEIS); and provide technical assistance in developing design of a replacement facility to be evaluated in the PEIS. Approximately 140 structures at RFP include major manufacturing, chemical processing, plutonium recovery, and waste treatment facilities. Plant operations also include chemical laboratories, research and development, and support for other the DOE facilities. During such operations the generation of liquids, solids, and gases containing radioactive hazardous wastes (mixed wastes) may result. RFP also stores and treats certain mixed wastes in accordance with existing RCRA operating permits and interim status regulations. RFP has identified 40 mixed low-level waste (MLLW) streams and 25 mixed transuranic waste (MTRU) streams in storage.

Mixed Waste Sources. The following RFP activities generate or have historically generated mixed waste:

- Fabrication of nuclear weapons components from plutonium, uranium, beryllium, and stainless steel
- Laboratory analytical testing
- Metal fabrication and assembly
- Chemical recovery and purification of process-produced transuranic radionuclides
- Duct remediation
- Waste management
- Environmental restoration, including decontamination and decommissioning of facilities
- Facility maintenance and other supporting activities

Of the 65 identified mixed waste streams for the site, 31 are no longer generated. Detailed quantitative and descriptive information for each waste form may be found in the Waste Profile Sheets (WPS).

Mixed Waste Inventory. As of December 31, 1992, the mixed waste inventory for RFP was reported to be approximately 58,000 m^3. Many waste streams have been verified analytically to exceed the LDR treatment standards established in 40 CFR §§ 268.41 and 268.43. The others are identified as being subject to LDR based on process knowledge with the assumption that constituent concentrations exceed the treatment standards. This conservative position has been adopted in order to ensure the adequate management of the waste occurs while in storage and awaiting physical characterization. Therefore, the entire inventory is considered to be subject to the LDR regulatory requirements. All of the waste streams can be contact-handled.

The current inventory, and the 5-year projection of wastes to be generated are identified by the waste matrix in Table 9.2-1. As of December 31, 1992, 83 percent of the waste by volume had been characterized using process knowledge, with the remainder characterized by sampling and analysis or

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Table 9.2-1
Mixed Wastes at Rocky Flats Plant

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE – MLLW						
CH -alpha, Organic Liquids	4	160.69	-	1	2.80	-
CH, Aqueous Liquid	1	45,425.00	-	1	100.00	-
CH -alpha, Aqueous Liquid	4	12.05	-	1	0.62	-
CH -alpha, Organic Sludges/particulates	1	0.38	-	0	0.00	0.00
CH -alpha, Inorganic Sludges/particulates	11	9,742.29	-	4	2,095.20	-
CH -alpha, Cemented Solids	3	95.53	-	1	0.35	-
CH -alpha, Inorganic Debris	10	528.14	-	8	413.20	-
CH -alpha, Elemental Lead	1	31.92	-	1	8.95	-
CH -alpha, Beryllium Dust	1	1.47	-	1	0.70	-
CH -alpha, Multiple	4	28.54	-	2	18.65	-
Sub-Total MLLW:	40	56,026.01	-	20	2,640.47	-
WASTE TYPE – MTRU						
CH -alpha, Aqueous Liquid	1	14.48	-	1	1.05	-

Table 9.2-1 (Continued)
Mixed Wastes at Rocky Flats Plant

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE – MTRU						
CH -alpha, Inorganic Sludges/particulates	8	534.13	-	2	3.80	-
CH -alpha, Cemented Solids	1	1.26	-	1	26.25	-
CH -alpha, Inorganic Debris	10	658.32	-	8	219.60	-
CH -alpha, Reactive Metals	1	0.21	-	0	0.00	0.00
CH -alpha, Elemental Lead	1	3.78	-	1	3.10	-
CH -alpha, Multiple	3	267.81	-	1	19.50	-
Sub-Total MTRU:	25	1,479.99	-	14	273.30	-
TOTAL:	65	57,506.00	-	34	2,913.77	-

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combination of both techniques. These characterizations are the basis for determining the applicable RCRA hazardous waste codes for each waste stream, as noted in the WPS.

Waste Minimization. A Waste Minimization Program Plan and Pollution Prevention Awareness Plan was submitted to EPA and the Colorado Department of Health (CDH) on September 10, 1991. Goals for the RFP Waste Minimization Program are based on a percentage reduction in the amount of radioactive and nonradioactive solid waste generated each year as compared with an FY 91 baseline. The 10 percent waste generation goal was exceeded in 1992.

Treatment Technology. A variety of existing treatment facilities at RFP are in use to treat currently generated mixed waste streams. Most of the existing technologies focus on volume reduction of liquid and solid waste streams and stabilization of other wastes so that they can be placed in storage or disposed in accordance with on-site and off-site waste acceptance criteria. These existing technologies were initiated many years ago and consequently were not specifically designed to create final waste streams that can be disposed in accordance with the LDR regulations. Treatment technology exists (solidification process) for approximately 81 percent of the RFP MLLW volume. This results primarily from the identification of processing capability for liquid waste currently stored above ground in a series of solar evaporation ponds. Although technology exists for the remainder of the MLLW inventory, verification or modification is required to determine applicability to individual waste streams. Because MTRU waste is currently planned for disposal at the Waste Isolation Pilot Plant (WIPP), using a no-migration variance petition, treatment is not currently being pursued to treat MTRU waste to meet the LDR treatment standards. Treatment for MTRU waste is being pursued to ensure that the waste that is disposed at WIPP will meet current transportation requirements and disposal-site waste acceptance criteria. As a result verification or modification of existing technology is also required for 87 percent of the MTRU waste streams. RFP is assessing technologies for 3 of the 25 MTRU waste streams to determine whether a technology exists and whether modifications are necessary or applicable. Plans for assessing technologies and determining the status of modification or verifications for each waste stream is described in RFP's Comprehensive Treatment and Management Plan (CTMP) dated June 9, 1992. The technologies described in the CTMP are designed to meet the LDR treatment requirements for MLLW.

Mixed Waste Compliance Agreements and Orders. DOE entered into an Interagency Agreement (IAG) with EPA Region VIII and the CDH on January 22, 1991, which covers environmental restoration and remediation activities at RFP. Certain of the activities being performed under the IAG are related to the treatment and removal of mixed wastes and the closure of mixed waste units. DOE and EPA also entered into an LDR Federal Facility Compliance Agreement (FFCA II) on May 10, 1991, which covers the treatment of mixed wastes in storage or being generated to LDR treatment standards.

CDH also issued a Compliance Order on July 31, 1991, to address hazardous waste compliance activities for mixed residues at RFP. Mixed residues are materials that contain hazardous wastes and amounts of transuranic radioactive materials that were above the economic discard limit for those materials when generated. RFP held mixed residues in order to recover the transuranic materials.

These agreements and orders require, among other things, the development of plans to properly treat mixed wastes for disposal. In the case of the IAG, these plans are to be developed in accordance with regulations for the CERCLA and RCRA remediation and restoration activities.

Under the Mixed Residue Compliance Order, a Mixed Residue Reduction Report (MRRR) was prepared and submitted to CDH for approval on February 28, 1992, and an annual update (AMRRR) was submitted for approval on November 13, 1992. These reports described RFP's plans to treat mixed residues as necessary to allow for their removal for storage or disposal.

Under FFCA II, the CTMP was submitted to EPA for approval (and to CDH for information) on June 10, 1992, describing RFP's plans to treat MLLW as necessary to meet LDR treatment standards for disposal, and MTRU wastes as necessary for disposal. In addition, a Mixed Residue Management Plan, was submitted to EPA for approval (and to CDH for information) on November 13, 1992, describing RFP's plans to treat mixed residues as necessary to allow their removal or disposal. The Mixed Residue Management Plan incorporates the MRRR and the AMRRR to meet the requirements of FFCA II.

RFP is revising these plans and reports based on comments received from EPA and CDH.

9.2.1 Mixed Waste

9.2.1.1 High-Level Waste

There is no high-level waste at the Rocky Flats Plants.

9.2.1.2 Mixed Transuranic Waste

MTRU waste has historically been managed at RFP as either TRU waste or residues, the distinction being the amount of TRU materials in the particular waste or process residual or by-product. If the transuranic content was above the economic discard limit, the material was stored for later processing to remove and recover the transuranic material. In this inventory report, this historical distinction is not used and mixed residues subject to the mixed residue compliance order are categorized as MTRU wastes to make the data consistent with DOE-wide inventory reporting criteria.

RFP generates 25 MTRU waste streams that make up 7 categories of wastes. These include aqueous liquids, inorganic debris, cemented solids, inorganic sludge/particulates, elemental lead, reactive metals, and multiple matrices. These 7 waste categories contain approximately 1500 m^3 of waste stored on-site in 10 different buildings. Each building is included in the RFP TRU RCRA Part B permit application.

A majority of the MTRU wastes (1,200 m^3) are either inorganic debris (700 m^3) or inorganic sludges/particulates (500 m^3). The inorganic debris waste category includes waste streams consisting of soil and clean-up debris, metal, combustible wastes, leaded gloves, ground glass, heavy metals, filter wastes, and insulation. The inorganic sludges/particulates waste category includes waste streams consisting of aqueous sludges from waste water treatment, used absorbent (Oil Dri), particulate sludge, firebrick-pulverized or fines, magnesium oxide crucibles, sand/slag and crucibles, coarse graphite, and incinerator ash.

The long-term management strategy for MTRU wastes differs from that for MLLW under the FFCA II and mixed residue compliance order plans and reports. DOE plans to store and manage all MTRU wastes at RFP until such time as the WIPP is permitted to accept these wastes. All of the 1500 m^3 of MTRU wastes currently in inventory at RFP are managed as if they are subject to the LDR and are planned for disposal at WIPP. Plans for treating this waste are directed toward meeting the transportation requirements and the WIPP Waste Acceptance Criteria. RFP is not planning LDR treatment because WIPP is expected to receive a no-migration variance to the LDR disposal requirements. These plans are described in the CTMP dated June 9, 1992.

Hazardous waste codes for the 25 MTRU waste streams include RCRA characteristic wastes D001 through D011 and 3 of the 5 spent solvent listings (F001, F002, and F005). The specific LDR treatment technology for each hazardous waste code has been identified in the Waste Profile Sheets. All MTRU waste streams can be contact-handled.

Two of the 25 waste streams have levels of radioactivity that could result in radiolysis or significant heat generation during treatment and disposal.

During 1992, waste minimization consisted of changing the operational status of MTRU systems in order to reduce the amount of MTRU wastes generated through good operating practices, waste avoidance due to recycling or reuse, and technology changes. As a result, 3 of the 25 MTRU waste streams are no longer generated.

In the next 5 years, RFP will generate 14 waste streams and approximately 300 m^3 of MTRU waste. This estimate is based on past generation history for each reported waste stream and on the recharacterization of some existing inventory from straight residue to mixed residue, and is a modest increase from historical generation rates and other inventory projections, which may vary from 50 to 80 m^3/yr for all TRU waste. Even with an aggressive waste minimization program, the changing plant mission and focus on environmental restoration and waste management is likely to increase generation rates in the short term.

In addition to the above described MTRU wastes, RFP also has TRU wastes (non-mixed wastes) in inventory that are not subject to the regulatory requirements of RCRA. Therefore, these TRU wastes are not included in the inventory of wastes repeated in this section.

9.2.1.3 Mixed Low-Level Waste

The RFP reported 40 MLLW streams that make up 10 separate matrices or types of waste. These include inorganic debris, cemented solids, inorganic sludge/particulates, organic liquids, beryllium dust, elemental lead, organic sludge/particulates, aqueous liquids, lab packs without metals, and multiple matrices. These 10 waste categories account for approximately 56,000 m^3 of wastes stored in 19 locations. Each location is included in the RFP RCRA operating permit or has RCRA interim status to store or treat MLLWs on-site. Approximately 98 percent (55,000 m^3) of the total volume is generated by activities associated with the solar evaporation ponds and Building 374 operations, and includes approximately 45,000 m^3 of aqueous liquids (solar pond water), approximately 6,000 m^3 of pondcrete, and 3,000 m^3 of saltcrete waste. Pondcrete was produced when sediments and sludges were removed from solar evaporation ponds, mixed with cement and poured into containers lined with plastic to form a solidified waste. Cleanup efforts are complete for the largest solar pond, but are still required for the remaining 4 ponds.

Approximately 1 percent of the total volume is inorganic debris that consists of PCB solids and liquids including contaminated equipment and cleanup materials, filters, metal, solidified cutoff sludge, and combustibles. The remaining volume consists of beryllium dust, cemented solids, elemental lead, lab packs with metals, organic liquids, and organic sludges/particulates. All MLLW is subject to the LDR and may be contact-handled.

Waste codes include all of the 4 RCRA characteristic wastes (ignitability, corrosivity, reactivity, and toxicity characteristic; D-codes), the spent solvent listings (F001, F003, F005), several of the electroplating listed hazardous wastes (F006 through F009), and several of the P and U listed discarded commercial chemical product waste codes. Additional P and U listed hazardous waste codes are expected to be added in the future when a given laboratory chemical is no longer used or has reached expiration date and are to be disposed.

Section 9.2.2 discusses the treatment facilities that currently exist at RFP or are under development. These existing or planned treatment facilities are designed to treat the existing waste streams by either

reducing the volume of waste placed into storage or to treat the wastes in a manner to safely store the wastes in accordance with RFP's permit and permit applications.

The radioactivity of MLLW streams must be considered to determine the effects on the treatment technologies associated with each waste stream in accordance with LDR requirements. The radionuclide content of 31 of the 40 MLLW streams will not have any effect on the treatment technologies specified under LDR requirements. The remaining MLLW streams (approximately 400 m^3) contain levels of radioactivity that may generate significant amounts of heat or result in radiolysis during treatment and disposal. The specific radiation characteristics and the radiation effects on treatment for each MLLW stream are specified in the WPS.

RFP has a waste minimization program designed to eliminate or minimize the generation of MLLWs on-site. This program is outlined in the Waste Minimization Program Plan and Pollution Prevention Awareness Plan submitted to EPA and the Colorado Department of Health on September 10, 1991. This plan was developed to augment DOE directives for waste minimization as stated in the Waste Reduction Policy Statement on June 27, 1990, and the Waste Minimization and Pollution Prevention Policy on August 20, 1992. These policies form the foundation of DOE initiatives to improve environmental effectiveness, reduce waste management costs, and increase overall operational efficiency. Goals for the RFP Waste Minimization Program are based on a percentage reduction in the amount of radioactive and nonradioactive solid waste generated each year as compared with an FY 91 baseline. Major accomplishments of the RFP Waste Minimization Program during FY 92 include completion of waste minimization assessments, completion of various feasibility studies and demonstrations to support future treatment technology and facility development, and initiation of recycling and conservation programs. All waste reduction and recycling goals were exceeded in 1992.

RFP will generate an estimated 2,600 m^3 of MLLW within the next 5 years. This projection is generally based on an estimate of the past 3 years' generation history.

9.2.2 Treatment Facilities and Technology

9.2.2.1 Existing Treatment Facilities

Various existing treatment facilities at RFP (Tables 9.2-2 through 9.2-6) are currently utilized for treatment of mixed waste. Ongoing waste-treatment operations were designed to manage a multitude of waste streams including TRU and MTRU waste, LLW and MLLW, hazardous chemical wastes, laboratory wastes, sanitary wastes, and office refuse. Only those treatment systems that manage radioactive or radioactive mixed wastes are reported here.

The overall objective of existing waste treatment is to safely and effectively process and package liquid and solid wastes generated at the site. Treatment is designed to reduce the hazardous properties of the waste or to make the waste more suitable for shipment and disposal. Overall, treatment facilities are currently categorized as liquid-waste treatment facilities or solid-waste treatment facilities. Liquid waste is currently treated in Buildings 374 and 774 to produce solid waste streams suitable for off-site disposal. Solid-waste treatment primarily consists of decontamination, size reduction, packaging and re-packaging for ultimate off-site disposition. Currently, Building 776 is the only facility utilized for solid waste treatment.

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Table 9.2-2
Rocky Flats Plant
Mixed Waste Treatment Facilities
Currently in Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Aqueous Process Waste Treatment: Building 774 / Wastewater	Deactivation, Neutralization, Filtration, Chemical Precipitation	MTRU, MLLW, ALPHA, CH	Aqueous Liquids, Inorganic Liquids, Inorganic Sludges	RFP 1070, RFP 2050, Miscellaneous Liquids	1,819.0
Building 374 / Process Waste Treatment Facility: Building 374 (1)	Decontamination, Neutralization, Immobilization, Evaporation, Deactivation, Solidification	MTRU, MLLW, ALPHA, CH	Aqueous Liquids, Inorganic Liquids, Inorganic Sludges, Liquids	All process liquids sent to building 374	149,000.0
Fabric Filtration: Buildings 444,447, and 460 (2)	Filtration	MLLW, CH	Aqueous Liquids	Process liquids from buildings 444, 447, and 460	3,411.0
Miscellaneous Waste Handling & Immobilization: Bldg 774 (3)	Stabilization, Solidification	MTRU, MLLW, ALPHA, CH	Inorganic Liquids	RFP 1066	42.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g
Note (1): Reported capacity is permitted capacity.
Note (2): Reported capacity is maximum permitted capacity.
Note (3): Reported capacity is maximum permitted capacity.

Table 9.2-2 (Continued)
Rocky Flats Plant
Mixed Waste Treatment Facilities
Currently in Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Organic and Sludge Immobilization System: Building 774 (4)	Immobilization, Solidification	MTRU, MLLW, ALPHA, CH	Organic Liquids, Organic Sludges	All Organic Liquid Waste Streams	270.0

* ALPHA refers to transuranic alpha greater than 10 nCi/g

Note (4): Reported capacity is maximum permitted capacity.

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Table 9.2-3
Rocky Flats Plant
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Currently in Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Normal Operating Capacity (m3/yr)
		Radioactive Type(s) *	Physical/Chemical Matrix		
Supercompaction And Repackaging Facility: Building 776	Compaction	MTRU, MLLW, ALPHA, CH	Inorganic Debris, Organic Debris	RFP 111, RFP 118	949.0
Unit 61 Size Reduction Vault: Building 776 (1)	Size Reduction	MTRU, MLLW, ALPHA, CH	Inorganic Debris, Organic Debris, Solids	RFP 110, RFP 117, RFP 344, RFP 349, RFP 109, RFP 362, RFP 1061, RFP 2048, RFP 111, RFP 118	704.0 Tons/yr

* ALPHA refers to transuranic alpha greater than 10 nCi/g

Note (1): Reported capacity is permitted capacity. Normal capacity is variable.

Table 9.2-4
Rocky Flats Plant
Mixed Waste Treatment Facilities
Existing Plan to Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Capacity (m3/yr) **	Date Avail. For Use **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Chip Cementation: Building 447 (1)	Solidification, Stabilization	MLLW, CH	Inorganic Debris	Metal Chips	5.3	Year To Be Determined
Pondcrete Solidification Process: Building 788 (2)	Solidification	MLLW, CH	Inorganic Sludge/Particulates	RFP 2401	20,800.0 Tons/yr	Year To Be Determined
Pondcrete/Saltcrete Reprocessing Facility: 750PAD (3)	Solidification	MLLW, CH	Inorganic Sludges/Particulates	RFP 339, RFP 340	6,608.0 Tons/yr	Year To Be Determined
Pondcrete/Saltcrete Reprocessing Facility: 904PAD (4)	Solidification	MLLW, CH	Inorganic Sludges/Particulates	RFP 339, RFP 340	3,312.0 Tons/yr	Year To Be Determined

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Note (1): Reported capacity is maximum permitted capacity.

Note (2): Reported capacity is maximum permitted capacity.

Note (3): Reported capacity is maximum permitted capacity.

Note (4): Reported capacity is maximum permitted capacity.

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Table 9.2-5
Rocky Flats Plant
Compaction, Evaporation, Shredding,Sorting, Size Reduction, and Packaging Facilities
Existing Plan to Use for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Capacity (m3/yr) **	Date Avail. For Use **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Advanced Size Reduction Facility: Building 776 (1)	Size Reduction	MTRU, MLLW, ALPHA, CH	Inorganic Debris, Organic Debris	None Currently	2,080.0 Tons/yr	Year To Be Determined
Building 776 Low-Level Mixed Waste Baler (2)	Compaction	MLLW, CH	Inorganic Debris, Organic Debris	None Currently	1,056.0 Tons/yr	Year To Be Determined
Low-Level Mixed Waste Baler: Building 889	Compaction	MLLW, CH	Inorganic Debris, Organic Debris	None Currently	1,056.0 Tons/yr	Year To Be Determined

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Note (1): Reported capacity is maximum permitted capacity.

Note (2): Reported capacity is maximum permitted capacity.

Table 9.2-6
Rocky Flats Plant
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
Building 374/774 Salt And Sludge Treatment	Immobilization	MLLW, CH	Inorganic Sludge/Particulates	Saltcrete, Solidified bypass sludge	To Be Determined	2005
Miscellaneous Waste Form Treatment	Immobilization	MLLW, CH	Aqueous Liquids, Inorganic Debris, Inorganic Liquids, Inorganic Sludges/Particulates	Acids, Analytical Lab Solutions, Beryllium Fines, Incinerator Ash, Glass, Sand from Button Breakout, Silver Nitrate	To Be Determined	2005
Mixed Residue Treatment	Precipitation, Neutralization, Immobilization	MTRU, ALPHA, CH	Inorganic Liquid, Inorganic Sludge,	Analytical Lab Solutions,	To Be Determined	Year To Be Determined

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

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Table 9.2-6 (Continued)
Rocky Flats Plant
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
				Miscellaneous Liquids		
Solidified Bypass Sludge Treatment	Immobilization	MLLW, CH	Inorganic Sludge/Particulate, Sludges	RFP 115	To Be Determined	2005
Solvent Contaminated Waste System (1)	Thermal, Non-thermal	MLLW, CH	Inorganic Debris, Inorganic Liquids, Inorganic Sludges, Organic Liquids, Solids	RFP 108, RFP 111, RFP 120, RFP 2054, RFP 342, RFP 2378, RFP 2389, RFP 2400, RFP 336, RFP 109,	To Be Determined	2005 - 2012

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Note (1): Date available for treating mixed waste: 2005 for thermal, 2012 for non-thermal.

Table 9.2-6 (Continued)
Rocky Flats Plant
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
				RFP 362, RFP 1063, RFP 1070, RFP 1065, RFP 348, RFP 355, RFP 338, RFP 107, RFP 112, RFP 1068, RFP 2247, RFP 2379, RFP 2044, RFP 114, RFP 2396, RFP 2246, RFP 346, and effluent from		

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

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Table 9.2-6 (Continued)
Rocky Flats Plant
Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

Facility/System	Treatment Type(s)	Allowable Waste		Ident. Of MW Streams To Be Treated	Design Capacity (m3/yr) **	Date Avail. For Treating MW **
		Radioactive Type(s) *	Physical/Chemical Matrix			
				other treatment systems		
Surface Organic Removal / Leaded Gloves, and Bulk Lead Treatment	Separation, Immobilization	MLLW, CH	Inorganic Debris, Inorganic Sludges/Particulates, Solids	Soil and Cleanup Debris, Glass, Glove Box Parts with Lead, Heavy Metal, Incinerator Ash, Lead, Leaded Gloves, Metal, PCB Solids	To Be Determined	2007

* ALPHA refers to transuranic alpha greater than 10 nCi/g

** Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

Many of the treatment facilities have been in existence for some time and pre-date the inception of RCRA. As a result, these facilities were originally established to reduce volume (e.g., 776 size reduction vault and 374 evaporator) and to stabilize the waste (e.g., 774 Organic and Sludge Immobilization System) so that it would be acceptable for future storage or disposal. Because of this, existing treatment facilities were not initially designed to ensure that mixed wastes were treated to the LDR concentration based-treatment standards. Therefore, the existence of these treatment facilities is not a basis for declaring that LDR-compliant waste streams are generated in all cases. These existing facilities still perform a valuable function, but further treatment may be necessary in certain circumstances. For this reason Section 9.2.2.2 outlines a variety of planned facilities that are being designed to establish LDR-compliant final waste streams.

9.2.2.1.1 Facilities in Use

Liquid and Solid Waste Treatment

Building 374 is used for treatment of chemically contaminated LLW, MLLW, MTRU, and nonradioactive waste water (aqueous waste) from process, laboratory, and utilities buildings at RFP. The largest sources of water treated in Building 374 are laundry and incidental wastes. The type of treatment used for each waste stream depends on the chemical constituents and amount of residual radioactivity in the form to be treated. Waste streams contaminated with higher levels of activity are treated using precipitation, with the resultant solution and sludge being sent to the evaporation process and a cement immobilization process respectively. Waste forms contaminated with lower levels of radioactivity are treated in the evaporation process, and the resultant salts are immobilized with cement. Waste acids are neutralized and filtered, with cement immobilization used as the final treatment for the resultant sludges.

Building 774 treats MTRU waste, MLLW, and organic liquid process waste streams. As in Building 374, the type of treatment used in Building 774 depends on the chemical nature of the waste. Caustic waste and certain neutralized acidic wastes are treated in a 2-stage precipitation process. Organic wastes are solidified with cement.

The primary function of existing solid waste treatment facilities is volume reduction (compaction, size reduction), immobilization, and decontamination, not final treatment.

Specific facilities in which liquid and solid waste treatment operations are performed are described in greater detail below.

Process Waste Treatment Facility: Building 374. Building 374 contains an aqueous-waste treatment plant. Aqueous wastes are received from a number of buildings. The plant contains 5 major processes: acid neutralization, radioactive decontamination, sludge solidification, evaporation, and spray dryer and saltcrete. The processes are interrelated and use a series of tanks connected by piping. Acid neutralization uses potassium hydroxide with incoming acidic wastes to adjust the pH of these solutions. Radioactive decontamination uses a 3-stage precipitation, flocculation, and clarification system to remove radioactive solids from aqueous wastes. Sludge solidification takes sludges from the radioactive-decontamination process and acid-neutralization process, and solidifies them to meet shipment and storage requirements. The evaporation process evaporates water from aqueous plant waste and the radioactive decontamination process that meets radioactive guidelines. The spray dryer and saltcrete process solidifies the remaining salts for approved storage.

Fabric Filtration: Buildings 444, 447, and 460. Buildings 444, 447, and 460 house fabric filters used to remove solid materials from liquid waste prior to transferring to the Building 374 waste-treatment

facility. The filter systems consist of a drained table with a filter roll at one end. The filter paper continuously unrolls to expose fresh paper and the waste paper is collected in a 55-gallon stainless steel drum lined with a plastic bag at the end of the roll table. Process waste is dumped to the table, where it drains by gravity through the filter. The filter and particulates trapped in it are managed as hazardous waste.

Aqueous Process Waste Treatment: Building 774. Building 774 is a liquid-waste treatment facility that receives low-level or TRU radioactive acid wastes, caustic wastes, waste oils, and non-radioactive photographic solutions. The facility contains 5 aqueous processes: neutralization, liquid waste treatment-first and second stages, precipitation, and silver recovery. All processes in Building 774 with the exception of silver recovery are interrelated in that they use a series of tanks and pumps connected by pipes to treat acidic, caustic, and other radioactive wastes, and separate relatively low-level effluent from contaminated solids or sludges. The neutralization process mixes radioactive waste generated during plutonium reprocessing with sodium hydroxide. The liquid waste treatment process--stages 1 and 2 treats basic liquid waste transferred from Building 771 to Building 774. Precipitation treats aqueous waste in a 2-stage process during which radioactive contaminants are removed from waste and solidified as MTRU wastes. The aqueous wastes are transferred from plutonium reprocessing operations in Building 771. The silver-recovery process recovers silver from photographic solution and forms it into ingots.

Organic and Sludge Immobilization System: Building 774. Transuranic organic liquids are immobilized into solid form. Discardable lathe coolants and degreasing solvents, pumped by pipeline from several buildings, are blended in a 55-gallon drum with an emulsifying agent, water, Envirostone (gypsum cement), and an accelerator using a double impeller. All solidified waste streams are inspected and radiographed for the presence of free liquids.

Miscellaneous Waste Handling and Immobilization: Building 774. Miscellaneous liquid and solid wastes that are incompatible with the process equipment or the liquid-waste treatment process are immobilized in a 55-gallon drum using a mixture of Portland cement and absorbent cement. All acidic wastes are neutralized before cementing. The wastes processed generally come from the analytical lab, maintenance shops, and research and development laboratories throughout the plant. The wastes usually arrive packaged in 4- or 8-liter bottles, overpacked in 55-gallon drums.

Size Reduction Vault: Building 776. This facility is a supplied-air room entry vault located in Building 776, Room 146. A variety of contaminated solid waste materials are processed for size reduction. Large equipment is cut up using saws, plasma torches, etc. Glove box gloves and metals are washed in a ball mill washer. Insulation and filter media are cemented and packaged in drums. Contaminated drums and high efficiency particulate air (HEPA) filters are crushed. Repackaging of various types of drummed and crated wastes is also done. Size-reduced wastes are packaged in wooden and metal crates, and 55-gallon drums. These operations generate sludge, filters and liquid waste from the ball mill containing various amounts of plutonium. These materials were processed for plutonium recovery. Liquid wastes are filtered for plutonium, sampled, and pumped to Building 374 for treatment.

Supercompaction and Repacking Facility: Building 776. Building 776 provides 2 stages of compaction enclosed in a glovebox. Two categories of waste are processed. Soft waste initially packaged in 55-gallon drums is unpackaged and pre-compacted into 35-gallon drums. Hard waste enters the facility in 35-gallon drums. Both types of wastes are supercompacted into "pucks." The pucks are loaded into 55-gallon drums.

9.2.2.1.2 Existing Facilities Planned for Use

The following facilities have been in existence for sometime and pre-date the inception of RCRA. Therefore, they were not designed to ensure that mixed wastes were treated to the LDR regulation concentration based treatment standard. These facilities were originally establish to reduce volume and to stabilize the waste so that it would be acceptable for future storage or disposal.

Those mixed waste treatment facilities existing but not currently operating are in this category either because the wastes treated by the facility are not currently being generated, or because facility or process modifications are required to continue to use the system to treat mixed waste. These facilities are described below.

Chip Cementation: Building 447. Waste composite chips consisting of stainless steel, depleted uranium, aluminum, beryllium, and copper, potentially coated with oils and solvents, are blended with a sand/cement/water mixture in 55-gallon drums using a vibrator. The drum is capped with a cement and Oil-Dri mixture. The solidified mixture and drum are stored on-site awaiting disposal.

Pondcrete Solidification Process: Building 788. Sludge solids were pumped from the solar pond to a thickener tank. The thickened solids were pumped from the thickener to a pug mill or batch mixer and blended with Portland cement. The mixture called "Pondcrete" flowed over a weir at the end of the pug mill into plastic-lined plywood boxes. Pondcrete that was not adequately solidified was reprocessed in the batch mixer or at the 750 Pad or 904 Pad, as described below.

Pondcrete/Saltcrete Reprocessing Facilities: 750 Pad and 904 Pad. Previously processed Pondcrete waste streams were removed from their original containers. As required, blocks were broken with an impact hammer. The waste was mixed with cement and water, and poured into a plywood box. After the mixture cured, the box was sealed.

Advanced Size Reduction Facility: Building 776. This facility is a glovebox-type system with dedicated heating, ventilation, air conditioning and exhaust systems. Contaminated solid wastes, such as glove boxes, machine tools, and processing equipment, are introduced into the system for size reduction and steam cleaning. Size reduction is done by manual disassembly, remote disassembly, and plasma arc cutting. Steam cleaning of the size-reduced parts reduces contamination levels before packaging. Wastes are packaged in wooden and metal crates and 55-gallon drums. Various types of drummed and crated wastes are also repackaged. The liquid from steam cleaning is filtered for plutonium recovery and transferred to Building 374 for treatment.

Low-Level Mixed Waste Balers: Building 776 and Building 889. The baler is a compaction device. It compacts and packages only combustible waste into 20" x 20" x 30" bales. Eight of these bales are placed in a 4'x4'x7' waste crate. After the crates are filled, they are available for off-site shipment. Free liquids, pressurized containers, and rigid materials are removed from the waste stream before baling.

9.2.2.1.3 Existing Facilities Not Planned for Use

There are no mixed waste treatment facilities in this category.

(Note: Rocky Flats has a production scale and pilot scale fluidized bed incinerator in Building 776, and a plutonium recovery incinerator in Building 771. None of these incinerators are currently operating nor are they considered mixed waste treatment incinerators.)

9.2.2.2 Planned Treatment Facilities

This section describes the approach to compliance by the development, design, and implementation of treatment systems for the treatment of MLLW to meet LDR and disposal-site waste acceptance criteria. The 5 planned treatment systems identified represent the smallest number of systems capable of treating the MLLW forms in inventory or currently being produced at RFP. The individual technologies making up the waste-treatment systems must be robust enough to handle the expected waste variability within the waste systems, thereby minimizing capital and operating expenditures.

An integrated treatment-system approach has been used. A treatment system is composed of several technologies applied in sequence to convert the initial waste form into a final form that will meet all regulatory requirements for ultimate disposal at the Nevada Test Site (NTS).

Individual technologies address a particular aspect of waste treatment, such as size reduction, separation, destruction, or immobilization. In addition to the stabilized waste form produced by the waste system, secondary wastes may also be produced. Typical secondary wastes include such things as off-gases, particulates, liquid effluents, and sludges. Therefore, a waste treatment system must also include those ancillary technologies required to handle any secondary wastes created during treatment of the primary wastes.

Typically, a waste treatment system consists of 3 basic components: pretreatment, destruction, and immobilization or stabilization. Depending on the particular wastes treated and technologies used, some intermediate operations may not be required or may be provided by another treatment system.

For these wastes forms, pretreatment generally consists of sorting, size reduction, and possibly homogenization. Destruction includes any process for destroying the hazardous constituent using oxidation/reduction, combustion, or biodegradation. Finally, immobilization includes either containing and stabilizing the hazardous constituents or altering the physical characteristics to a form suitable for disposal. This integrated systems approach to waste treatment achieves regulatory compliance and enables disposal or compliant storage of the mixed wastes.

Each of the principal waste treatment systems is discussed below.

Solvent Contaminated Waste Treatment (System 1). This system is currently designated for treating solvent-contaminated waste streams and the secondary waste (volatilized organics) from Surface Organic Removal, Leaded Gloves, and Bulk Lead Treatment (System 5). These waste streams consist of combustible and noncombustible substrates contaminated with organic solvents, which are flammable and toxic to varying degrees, and metal constituents. Table 9.2-6 provides a complete list of waste streams assigned to this system.

Most of the waste in this system is in storage; however, the largest volume waste streams (combustibles) is still being generated and will continue to be generated during decontamination.

Of the waste streams assigned to this system, 7 have some potential for LDR compliance along another path. One waste form (Fluidized Bed Incinerator oil) may be treated at a commercial treatment facility. Six waste streams have been identified as candidates which based upon complete recharacterization, may not require LDR treatment (reclassification). Two other waste streams (PCB solids and soil cleanup debris) may fit better into System 5 when characterization is complete.

There are 2 approaches to treatment of the solvent-contaminated wastes. One is a thermal treatment option using a destruction technology such as incineration followed by immobilization of the ash using microwave solidification, polymer solidification, or cementation. The second consists of a combination of nonthermal (alternative) destruction technologies including various types of oxidation processes followed by immobilization of the ash. For the thermal option, a single technology should handle treatment of the identified wastes. If the nonthermal option is implemented, more than 1 destruction technology is expected to be required to achieve treatment of all the identified wastes.

Solidified Bypass Sludge Treatment (System 2). This system treats 1 stored waste stream, solidified bypass sludge. This waste is the stored portion of Building 374/774 solidified sludges, which were assumed to be contaminated with solvents, cadmium, and lead and do not meet LDR requirements. Table 9.2-6 describes the waste form assigned to this system.

This waste will continue to be generated until System 4 (Sludge) is on-line to treat the generated portion of this waste to meet all regulatory requirements for disposal. This waste stream, especially the waste generated after 1990, is being considered as a candidate for reclassification to achieve LDR compliance.

The solidified bypass sludge treatment system is designed to treat a waste that was already treated but does not meet LDR or off-site waste acceptance criteria (WAC). Pretreatment is required to put the waste into a form that can then be recast or recemented. Treatment options consist of immobilization of the sludge and hazardous constituents through the use of microwave solidification, polymer solidification, or cementation.

Miscellaneous Waste Form Treatment (System 3). This system treats 7 different waste streams, (Table 9.2-6). The wastes contain a wide variety of organic and inorganic contaminants in a wide variety of media. One waste form (incinerator ash) is identified as a candidate for waste reclassification for LDR compliance.

The system includes pretreatment; however, requirements have not been fully developed, because of the variability of these wastes. The treatment presently consists of immobilization using polymer solidification or cementation.

Building 374/774 Salt and Sludge Treatment (System 4). This system comprises 2 existing trains of treatment (immobilization) because 2 different wastes (salt and sludge) are generated by the Building 374/774 Liquid Waste Treatment Facility. The first train, System 4A (Salts), treats nitrate salts to create saltcrete. Saltcrete is the treatment residual from the evaporator in Building 374. The contaminants in this waste may include cyanides, cleaning and degreasing solvents, and acid or caustic cleaning/rinsing solutions. Some saltcrete blocks are LDR compliant and some are not. The second train, Bypass Sludge, System 4B (Sludge), treats the sludge from the precipitation process that precedes the evaporation process, assigned to CTMP Treatment System 2. This waste is believed to contain solvents, cadmium, and lead.

The characteristics of both saltcrete and bypass sludge vary with changes in plant activities. These wastes are likely to be reclassified to low level-waste. If reclassification is successful for these waste streams, the enhancement to the immobilization trains is still required to comply with disposal site WAC.

The treatment systems comprise an immobilization technology (polymer solidification, microwave solidification, or cementation) for each waste stream. Upgrades to or replacement of the current systems are under consideration. If both immobilization trains are not implemented immediately, the waste generated by Building 374/774 Liquid Waste Treatment Facility would require treatment in another system.

Surface Organic Removal, Leaded Gloves, and Bulk Lead Treatment (System 5). This system treats 9 wastes streams. The largest waste streams in this system is lead in the form of discarded shielding such as sheets and bricks, and this waste stream is contaminated with lead paint and radioactive constituents.

This group of wastes is unique. It is composed of several wastes that could be regulated under the newly promulgated Debris Rule; however, this determination is an on-going effort.

One waste stream (lead) may be treated at a commercial treatment facility for recycling. Two others (heavy metal and metal) may be reclassified. Four wastes may be treated in another system.

Treatment for this system includes pretreatment and a separation step using hot nitrogen stripping, volatilization/steam stripping, or supercritical CO_2 extraction that removes organics on the surface of the bulk material. The recovered organics are destroyed using System 1. Immobilization of the solid treatment residual is achieved by macroencapsulation with polymer or cement.

Mixed Residue Treatment. The MRRR described 4 paths for the treatment or disposal of mixed residues: ship as waste or product, remove RCRA characteristics, remove actinides and ship the resultant wastes, and treat and dispose of stored solutions. Actinide separation included 4 baseline processes that would address 68 percent (by volume) of the inventory of mixed residues. The baseline processes included both chemical and physical means of separating plutonium from residue materials and were based on traditional plutonium recovery technologies.

In consideration of the changes to the mission and responsibilities of Rocky Flats, DOE has redefined its residue-elimination philosophy to emphasize the disposal of the mixed residues whenever such disposal is efficient, cost-effective, and feasible. To that end, the number of paths for residue removal has been reduced from 4 to 3:

A. Repackage the residues, with appropriate pretreatment as necessary, and ship them to a repository (Ship-as-waste alternative).

B. Repackage the residues, with appropriate pretreatment as necessary, and ship them to another DOE site for conversion into suitable waste or storage forms (Ship-as residue alternative).

C. Treat and dispose of liquid residues currently stored in tanks and bottles by a combination of precipitation, neutralization, and immobilization.

Newly defined Path A addresses the removal of residues from Rocky Flats by converting them into forms that comply with transportation requirements and repository waste acceptance criteria. A major consideration in determining the amount of pretreatment necessary prior to shipment of any given residue

type is waste minimization. Such treatment of Rocky Flats mixed residues may include only repacking or minor processing to meet transportation requirements and waste acceptance criteria. Treatment may also involve more extensive processing to include actinide separation or concentration using aqueous, pyrochemical, or physical means. Actinide separation or concentration, if conducted, would be for purposes of waste-volume minimization, efficient and cost-effective transportation to the disposal site, and efficient use of repository space.

Newly defined Path B addresses the shipment of residues from Rocky Flats to another DOE site for conversion into suitable waste forms or for storage. Various chemical forms of plutonium would be stored as a national asset in a strategic reserve. Residues shipped to another DOE site would undergo a similar type of waste pretreatment or repackaging as that envisioned to take place at Rocky Flats as described above in the revised Path A.

Newly defined Path C is the same as the last path defined in the original MRRR. A pathway to dispose of stored liquids remains a necessary component of the overall mixed-residue reduction plan. Current plans define a two-phased program for treating liquids in Building 771 and a third phase to address the liquids currently stored in Building 371.

9.2.2.3 Treatment Facilities Summary

Tables 9.2-7 and 9.2-8 summarize the capabilities of current and planned treatment facilities at the RFP. The tables list the physical form of both feed and treatment products, the current operating status of the plant, and whether the facility is intended for MTRU or MLLW or a combination of these. The tables also summarize other relevant waste acceptance parameters for the facility, with an "x" marking acceptable parameters. The assumption has been made that the RCRA operating permit or interim status limitation and the technological limitations of a facility will be identical. These tables indicate whether a facility is capable of treating remotely handled waste, as opposed to contact-handled waste only. The tables also summarize 4 relevant waste acceptance parameters related to the chemical composition of the waste, such as the presence of alpha-emitting isotopes, mercury, other toxic metals, and toxic organics. Parameters marked as acceptable are still subject to concentration limitations. For example, a facility may accept waste with mercury only, but only if the mercury is present below a certain concentration.

9.2.3 Technology Development

The availability of waste management technologies has been examined for all RFP mixed wastes. Plans for assessing technologies and determining the status of modification or verifications for each waste stream is described in RFP's Comprehensive Treatment and Management Plan (CTMP) dated June 9, 1992. The technologies described in the CTMP are designed to meet the LDR treatment requirements. The different degrees of availability of the waste specific treatment technology are include in the waste profile sheets and summarized in this section.

For some wastes, technologies exist or are considered readily available based on previous commercial sector or DOE experience. No significant process modifications are required for the treatment of waste streams with this determination.

In most cases however, the determination has been made that the technology exists but has to be modified for application to RFP mixed wastes. Modifications may include adaptations of design and operation to assure containment of radionuclides. Other modifications may be aimed at treatment of the mixed waste matrix. Typically, the RFP site specific treatment technologies are being adapted from processes developed for radioactive material processing (with no RCRA LDR constituents) or other applications.

Table 9.2-7
Rocky Flats Plant
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Aqueous Process Waste Treatment: Building 774 / Wastewater	Operating	Aqueous Liquids, Inorganic Liquids, Inorganic Sludges	Liquids, Sludges	MTRU MLLW	√	CH	√	√	√
Building 374 / Process Waste Treatment Facility: Building 374	Operating	Aqueous Liquids, Inorganic Liquids, Inorganic Sludges, Liquids	Liquids, Saltcrete	MTRU MLLW	√	CH	√	√	√
Building 374/774 Salt And Sludge Treatment	Planned, 2005	Inorganic Sludge/Particulates, Solids	Solids	MLLW		CH	√	√	√
Chip Cementation: Building 447	Exists, Plan To Use, Year To Be Determined	Composite Chips, Inorganic Debris, Metal Turnings	Cemented Waste	MLLW		CH		√	√
Fabric Filtration: Buildings 444,447, and 460	Operating	Aqueous Liquids	Liquids, Solids	MLLW		CH		√	√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

Table 9.2-7 (Continued)
Rocky Flats Plant
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Miscellaneous Waste Form Treatment	Planned, 2005	Aqueous Liquids, Inorganic Debris, Inorganic Liquids, Inorganic Sludges/Particulates, Solids, Liquids	Solids	MLLW		CH	√	√	√
Miscellaneous Waste Handling & Immobilization: Bldg 774	Operating	Inorganic Liquids	Cemented Waste	MTRU MLLW	√	CH	√	√	√
Mixed Residue Treatment	Planned, Year To Be Determined	Inorganic Liquid, Inorganic Sludge, Liquids, Solids	Solids, Liquids	MTRU	√	CH	√	√	√
Organic and Sludge Immobilization System: Building 774	Operating	Organic Liquids, Organic Sludges, Waste Oils	Solidified Waste	MTRU MLLW	√	CH		√	√
Pondcrete Solidification Process:	Exists, Plan To	Inorganic	Pondcrete	MLLW		CH	√	√	√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

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Table 9.2-7 (Continued)
Rocky Flats Plant
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Building 788	Use, Year To Be Determined	Sludge/Particulates, Solar Pond Sludge							
Pondcrete/Saltcrete Reprocessing Facility: 750PAD	Exists, Plan To Use, Year To Be Determined	Inorganic Sludges/Particulates, Pondcrete, Saltcrete	Cemented Waste	MLLW		CH	√	√	√
Pondcrete/Saltcrete Reprocessing Facility: 904PAD	Exists, Plan To Use, Year To Be Determined	Inorganic Sludges/Particulates, Pondcrete, Saltcrete	Cemented Waste	MLLW		CH	√	√	√
Solidified Bypass Sludge Treatment	Planned, 2005	Inorganic Sludge/Particulate, Sludges	Solids	MLLW		CH	√	√	√
Solvent Contaminated Waste System	Planned, 2005 - 2012	Inorganic Debris, Inorganic Liquids, Inorganic Sludges, Organic Liquids, Solids	Solids	MLLW		CH			√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

Table 9.2-7 (Continued)
Rocky Flats Plant
Current and Planned Facilities - Treatment Category
Mixed Waste Treatment Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Surface Organic Removal / Leaded Gloves, and Bulk Lead Treatment	Planned, 2007	Inorganic Debris, Inorganic Sludges/Particulates, Solids	Solids	MLLW		CH		√	√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

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Table 9.2-8
Rocky Flats Plant
Current and Planned Facilities - Treatment Category
Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities

Facility/System	Operating Status *	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha **	RH CH	Hg	Other Toxic Metals	Toxic Organics
Advanced Size Reduction Facility: Building 776	Exists, Plan To Use, Year To Be Determined	Inorganic Debris, Large Solids, Organic Debris	Small Solids, Wastewater	MTRU MLLW	√	CH	√	√	√
Building 776 Low-Level Mixed Waste Baler	Exists, Plan To Use, Year To Be Determined	Combustible Solids, Inorganic Debris, Organic Debris	Baled Solids	MLLW		CH	√		√
Low-Level Mixed Waste Baler: Building 889	Exists, Plan To Use, Year To Be Determined	Inorganic Debris, Organic Debris, Solids	Solids	MLLW		CH	√	√	√
Supercompaction And Repackaging Facility: Building 776	Operating	Inorganic Debris, Organic Debris, Solids	Solids	MTRU MLLW	√	CH	√	√	√
Unit 61 Size Reduction Vault: Building 776	Operating	Inorganic Debris, Organic Debris, Solids	Solids, Wastewater	MTRU MLLW	√	CH	√	√	√

* Because DOE is still in the planning/conceptual stage, in the design stages, or in the construction stage for these facilities, schedules and capacities are subject to changes based on the availability of funds, results of treatability studies, permit issuance, etc.

** Transuranic alpha greater than 10 nCi/g.

For some wastes the decision has not been made on the availability of treatment technology. If the wastes are not yet well enough characterized from sampling or process knowledge, the necessary evaluations of potential treatment processes cannot be carried out. For other wastes the analysis and review is on going. For this latter set of wastes it appears likely that technology with or without modification is available.

No RFP waste streams have been identified for which a treatment technology is not known.

Site-specific technology development activities with numerically indexed narrative descriptions (following the waste profile sheets) and tables of titles are presented in the following sections of this chapter as well as in Appendix B. The following site-specific technology development activities lists activities which are potentially applicable to the treatability groups and best demonstrated available technologies (BDATs) identified in Chapter 6.0 are listed below. Additionally, crosscutting technology development activities not assigned to treatability groups are included. Where BDAT is indicated as NA, or is blank, the technology development activity does not link to specific BDAT RCRA treatment functions, but is intended to provide other supporting functions.

Site-Specific Technology Development Activities

by BDAT:
by Summary Technology (Tech) Area ID:
by ID number: (references numerically indexed narrative descriptions presented later in this chapter and Appendix B)
by Title:)

BDAT: CHOXD
Summary Tech Area ID: waste destruction & stabilization

6	Mediated Electrochemical Oxidation (MEO) of Mixed Wastes (LLNL)
137	Catalytic Chemical Oxidation
365	Mediated Electrolytic Oxidation (MEO) Alternative (PNL)

BDAT: HLVIT
Summary Tech Area ID: final form

135	Microwave Solidification

BDAT: INCIN
Summary Tech Area ID: off-gas technology

202	Real-Time Emission Monitoring

Summary Tech Area ID: waste destruction & stabilization

6	Mediated Electrochemical Oxidation (MEO) of Mixed Wastes (LLNL)
134	Thermal Treatment Process Unit/Fluidized Bed
137	Catalytic Chemical Oxidation
201	Packed-Bed Reactor/Silent Discharge Plasma (PBR/SDP)
365	Mediated Electrolytic Oxidation (MEO) Alternative (PNL)

BDAT: LLEXT
Summary Tech Area ID: chemical physical treatment

138	Surface Organic Contaminant Removal

BDAT: ROR

Summary Tech Area ID: chemical physical treatment

138 Surface Organic Contaminant Removal

BDAT: STABL

Summary Tech Area ID: final form

132 Cementation Solidification (Solar Pond Cleanout)

135 Microwave Solidification

136 Cement - Solidification Sludge of Salts and Ash (CTMP Compliance)

277 Polymer Solidification

9.2.4 Environmental Restoration Program

RFP's prime mission prior to January 1992 was nuclear weapons production in support of the U.S. Government. With the nation-wide reduction of nuclear weapons production, the mission of RFP has been redefined. A prime mission at the RFP now is environmental restoration. In 1991, an IAG was negotiated among DOE, EPA, and CDH. To accomplish this mission, the environmental restoration program was implemented at RFP to characterize and remediate environmental problems related to past plant operations. The environmental restoration program administers the IAG requirements and the program is designed as a comprehensive, phased program of site characterization, remedial investigation/feasibility studies, and remedial/corrective actions. The RFP is aggressively pursuing site remediation and is actively expanding these efforts in support of transition activities and future decontamination and decommissioning (D&D) operations.

One of the significant accomplishments of the environmental restoration program, to date, is the treatment of more than 17 million gallons of aqueous waste through evaporation. More detailed information on contaminated media associated with environmental restoration is in Chapter 2. The RFP is also preparing a comprehensive Ecological Monitoring Program to ensure compliance with all applicable biological regulations and to ensure that ecological resources are protected and enhanced through the restoration process. Other programs include maintaining a comprehensive ground water monitoring system involving 370 wells that characterize and monitor the quality of ground water at the RFP, and surrounding communities. The on-site/off-site Surface Water Management Program incorporates the management and control of surface water discharges from the RFP. The intent of this sub-project is to protect off-site residential users of surface water from adverse impacts from contact with surface waters discharged from the RFP. The on-site program has included the construction of water control structures and diversion ditches to further control surface water drainage from the RFP to off-site. The off-site program includes providing grants to municipalities for the purchase of new water supplies and water systems, and a water diversion project.

Field activities have started at 7 of the 16 RFP Operable Units (OU). One RCRA Facility Investigation/Remedial Investigation (OU1, 881 Hillside) has resulted in the conclusion of field studies and submittal of a final draft of the RCRA Facility Investigation/Remedial Investigation Report to the regulators. Interim Actions have been taken at 2 sites to further control the threat of the off-site migration of contaminants. At OU1 a French Drain System installed to capture and treat contaminated ground water has been completed and is presently operating. A water treatment system has been setup and is treating contaminated waters collected from seeps and springs at OU2. Procedures are now in place to implement National Environmental Policy Act of 1969 (NEPA) requirements. Public contact through the Rocky Flats Community Relations Plan is fully functional.

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WASTE

PROFILE

SHEETS

Rocky Flats Plant

RF-WPS-1

April 1993

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: Colorado ID #: 106
Site: ROCKY FLATS PLANT
Waste Stream Name: PCB (SOLIDS)/LLW MIXED
Matrix: Multiple Waste Type: MTRU

Waste Stream Description and Source:
This waste is primarily rags. PCB solid waste refers to items such as contaminated equipment. During the cleanup of PCB oil and 1,1,1-trichloroethnae was used to remove the oil. The rags containing hte PCB/solvent residue were packaged in 55-gallon drums with multiple bag liners. This waste stream includes inorganic debris, and inorganic sludges/particulates.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:
MTRU CH/AL, Multiple, Toxic Organics

Treatment Status:
Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:
Not Applicable.

Radiation Characteristics:
1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:
Not reported.

Waste Minimization Activities:
1) Not Applicable.

No longer generated

State: Colorado	**ID #: 106**
Site: ROCKY FLATS PLANT	
Waste Stream Name: PCB (SOLIDS)/LLW MIXED	
Matrix: Multiple	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	**ID #: 107**
Site: ROCKY FLATS PLANT	
Waste Stream Name: PCB (SOLIDS)/LLW MIXED	
Matrix: Multiple	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste is primarily rags. PCB solid waste refers to items such as contaminated equipment and cleanup materials that have been generated during removal of PCB equipment. During the cleanup of PCB oil, 1,1,1-trichloroethane was used to remove the oil. The rags containing the PCB/solvent residue were packaged in 55-gallon drums with multiple bag liners. This waste stream includes inorganic debris, and inorganic sludges/particulates.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.010	-	10.5	-	10.5	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Multiple, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Contact-handled
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

State: Colorado | ID #: 107

Site: ROCKY FLATS PLANT

Waste Stream Name: PCB (SOLIDS)/LLW MIXED

Matrix: Multiple | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 108
Site: ROCKY FLATS PLANT
Waste Stream Name: CEMENTED COMPOSITE CHIPS/LLW MIXED (327)
Matrix: Cemented Solids Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is cemented chips of stainless steel, depleted uranium, aluminum, beryllium, and copper. Composite metals are machined in Building 444 and normally consist of stainless steel and depleted uranium with some aluminum, beryllium and copper. During machining, oils and solvents are applied. The resultant chips are cemented with Portland cement. Cementation takes place in a drum which is packaged in a plywood box or the cementation takes place in a PVC-lined wooden box. This waste is identified by IDC 327.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	90.6	-	90.6	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Cemented Solids, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: materials handling and inventory procedures; waste segregation; or changes in production scheduling.

State: Colorado **ID #: 108**

Site: ROCKY FLATS PLANT

Waste Stream Name: CEMENTED COMPOSITE CHIPS/LLW MIXED (327)

Matrix: Cemented Solids **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado | ID #: 109
Site: ROCKY FLATS PLANT
Waste Stream Name: FILTERS/LLW MIXED
Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is activated charcoal filters, HEPA (paper) filters in wired frame, and fiberglass mesh plenum prefilters. IDC NO. 331, 335, 338, 342, 376, 490 and 491. Waste filters are generated in different forms and locations. They include activated carbon cartridge and HEPA types used to filter liquid or are suspected as radiologically contaminated. Types of filters currently in inventory are HEPA filters removed from glovebox ventilation systems, plenum prefilters, and activated carbon filters used to filter water. These filters are packaged in 55-gallon drums with multiple bag liners.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	28.8	-	28.8	-	31.9	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 109**

Site: ROCKY FLATS PLANT

Waste Stream Name: FILTERS/LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

General Comments:

EPA codes D001 and D003 assigned due to the presence of nitrate salts in IDC 342.
Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D002C	Tech.	Deactivation
D003A	Conc.	Chemical Oxidation followed by Alkaline Chlorination
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 110 4691
Site: ROCKY FLATS PLANT	
Waste Stream Name: METAL/LLW MIXED	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste could range from small pieces of metal, metal cuttings and chips to a large sheet. This waste form includes items such as gloveboxes, machinery, empty containers. The lead in this waste is usually in the form of discarded radiation shielding. IDC. NO 479, 480, 481 This waste is generated during non-fissile metal machining operations, where cutting oils and solvents are applied to the stock material. The metal chips are drained and placed in drums for future dispostition. The waste is packaged in 55-gal. drums with multiple bag liners or plywood boxes with a PVC liner.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	28.1	-	28.1	-	40.2	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
4) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado	**ID #: 110**
Site: ROCKY FLATS PLANT	
Waste Stream Name: METAL/LLW MIXED	
Matrix: Inorganic Debris	**Waste Type: MLLW**

General Comments:

Basis of estimate past 3 year generation history. Generation includes expected waste from Bldg 771 Duct Remediation (assuming full funding).

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 111
Site: ROCKY FLATS PLANT	
Waste Stream Name: COMBUSTIBLES/LLW MIXED	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Combustibles are generated at numerous locations throughout the RFP and are generally composed of such materials as paper, cloth, and plastics. The material is contaminated at low concentrations with depleted uranium or plutonium through contact during manufacturing and related processes. The materials making up this waste are items that have been used to wipe off products being machined, cleaned, or otherwise handled. The waste is packaged in 55-gal. drums with multiple bag liners. In addition, combustibles can be packaged in plywood boxes with PVC liners. This waste is identified by IDCs 325, 330, 336, 851, 852, and 853. Some containers may contain small amounts of glass and metal waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	410.4	-	410.4	-	263.1	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation;

State: Colorado **ID #: 111**

Site: ROCKY FLATS PLANT

Waste Stream Name: COMBUSTIBLES/LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

changes in operational settings; and energy, water conservation.

3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.
Generation includes waste expected from Bldg 771 Duct Remediation (assuming full funding).

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 112
Site: ROCKY FLATS PLANT
Waste Stream Name: ROASTER OXIDE/LLW MIXED (069)
Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

Waste Stream Description and Source:

This waste stream contains roaster oxide, which is a powder. Waste stream was previously named "Roaster Oxide/LLW Mixed." RF-IDC No. 069 The waste was generated as a result of roasting depleted uranium chips to an oxide in Building 447 to remove pyrophoric nature of the uranium. Uranium chips are generated primarily through the machining of uranium metal in Buildings 444, 865 & 883. After roasting, the uranium oxide was packaged in a 30-gal. drum and then overpacked in a 55-gal. drum. This waste is identified as IDC 069. No further generation of this waste as a MIXED waste is anticipated due to elimination of solvents in uranium machining operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	82.7	-	82.7	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.

State: Colorado **ID #: 112**

Site: ROCKY FLATS PLANT

Waste Stream Name: ROASTER OXIDE/LLW MIXED (069)

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado	ID #: 114
Site: ROCKY FLATS PLANT	
Waste Stream Name: SOIL & CLEANUP DEBRIS/TRU MIXED	
Matrix: Inorganic Debris	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream is construction rubble generated during decontamination and decommissioning activities. This waste consists of blacktop/concrete/dirt/sand. The waste is generated from construction/ demolition within the plutonium process buildings. The waste is usually packed in 55-gal. drums with multiple bag liners, a fiberboard liner, and a rigid polyethylene liner. Also, the waste can be packaged in DOT 7A, Type A metal boxes which are lined with a fiberboard and PVC liner. This waste is identified by IDC 374. Inventory data include mixed residues in this IDC.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	2.1	-	2.1	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
4) Change in operations status; process interruptions; work stoppages; mission changes; and new

State: Colorado	**ID #: 114**
Site: ROCKY FLATS PLANT	
Waste Stream Name: SOIL & CLEANUP DEBRIS/TRU MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

processes.

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	**ID #: 115**
Site: ROCKY FLATS PLANT	
Waste Stream Name: SOLIDIFIED BYPASS SLUDGE/LLW MIXED	
Matrix: Inorganic Sludges/Particulates	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is in solidified form containing Portland cement and wastewater treatment sludge. IDC NO. 007, 807 Waste is generated as a result of process wastewater treatment in Building 374. Solidified bypass sludge is produced by vacuum filtration of precipitated solids from pretreated aqueous waste slurry. The filter medium is an inert diatomaceous earth medium that accumulates on a rotating drum. Solids are trapped on the surface of the filter medium as the pretreated solution passes through. Entrapped solids on the surface of the filter medium are skimmed off as wet sludge. The precipitated solids are chiefly hydroxide with pH levels of 10-12. The final waste form is obtained by mixing the sludge with approximately 30% Portland cement. The waste is packed in one or two bag liners and a rigid polyethylene liner inside a 55-gal. drum. This waste is also generated as a TRU waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	457.8	-	457.8	-	89.0	-

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

State: Colorado **ID #: 115**

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED BYPASS SLUDGE/LLW MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado	ID #: 116
Site: ROCKY FLATS PLANT	
Waste Stream Name: AQUEOUS SLUDGE/TRU MIXED	
Matrix: Inorganic Sludges/Particulates	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream consists of aqueous sludge from wastewater treatment mixed with 30% Portland cement. IDC NO. 800, 803, 807 The waste is generated as a result of process waste water treatment in Building 374 and 774. Aqueous sludge is produced by vacuum filtration of precipitated solids from pretreated aqueous waste slurry. Entrapped solids are skimmed off the surface of the filter medium of the rotating drum as wet sludge. The precipitated solids are chiefly hydroxides with pH of 10-12. The final waste form is obtained by mixing the wet sludge with approximately 30% Portland cement. RFD has several drums of aqueous sludge that were returned by INEL. These old drums were packaged by alternating the layers of cement and wet sludge or by adding cement to the top and bottom of a drum containing wet sludge. This older waste is described by IDC's 001, 002, and 007.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	143.4	-	143.4	-	2.8	-

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.

State: Colorado **ID #: 116**

Site: ROCKY FLATS PLANT

Waste Stream Name: AQUEOUS SLUDGE/TRU MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado	ID #: 117
Site: ROCKY FLATS PLANT	
Waste Stream Name: METAL/TRU MIXED	
Matrix: Inorganic Debris	Waste Type: MTRU

Waste Stream Description and Source:

IDC NO. 416, 480, 481, 489. This waste includes items such as gloveboxes and machinery empty containers. Items that are difficult to reduce to a size that would fit in a 55-gal. drum are placed in DOT 7A, Type A metal boxes. The drums are lined with a rigid polyethylene liner, fiberboard liner and several bag liners. The boxes are lined with a fiberboard and PVC liner. Inventory data include mixed residues in IDCs 480 and 481.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	83.1	-	83.1	-	43.0	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
4) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado	**ID #: 117**
Site: ROCKY FLATS PLANT	
Waste Stream Name: METAL/TRU MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 118
Site: ROCKY FLATS PLANT	
Waste Stream Name: COMBUSTIBLE WASTE/TRU MIXED	
Matrix: Inorganic Debris	Waste Type: MTRU

Waste Stream Description and Source:

IDC NO. 330, 336, 337, 831, 832, 833. The waste consists mainly of cloth and paper products from cleanup of gloveboxes and spills, such as paper, rags, clothes, coveralls, plastic, rubber, wood, etc. The bulk of these wastes are packaged in 55-gallon drums with one rigid polyethylene liner and several bag liners. In addition, the waste may be repackaged into DOT 7A, Type A metal boxes which are lined with a fiberboard and PVC liner. Inventory data include mixed residues within the same IDCs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	372.0	-	372.0	-	124.4	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 118**

Site: ROCKY FLATS PLANT

Waste Stream Name: COMBUSTIBLE WASTE/TRU MIXED

Matrix: Inorganic Debris **Waste Type: MTRU**

General Comments:

Basis of estimate past 3 year generation history.
Generation includes expected waste from Bldg 771 Duct Remediation (assuming full funding).

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 119
Site: ROCKY FLATS PLANT	
Waste Stream Name: SOLIDIFIED ORGANICS/TRU MIXED	
Matrix: Multiple	Waste Type: MTRU

Waste Stream Description and Source:

IDC NO. 801. This waste stream includes waste TRU organic fluids which are transferred to Building 774 for cementation from Buildings 707, 776, and 777. The liquids are mixed with gypsum cement within 55-gal. drums. The drum is lined with one or two bag liners with a rigid polyethylene liner. This waste stream includes cemented solids, and organic sludges/particulates.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	111.3	-	111.3	-	19.5	-

Treatability Group:

MTRU CH/AL, Multiple, Toxic Organics

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 119**

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED ORGANICS/TRU MIXED

Matrix: Multiple **Waste Type: MTRU**

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado | ID #: 120
Site: ROCKY FLATS PLANT
Waste Stream Name: CUTOFF SLUDGE/LLW MIXED
Matrix: Multiple | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is miscellaneous dirt that washed into the sump, then was recovered, solidified, and packaged. Waste also contains debris (e.g., concrete and piping). IDC No. N/A This waste was generated during the removal of a sump from Size Reduction Operations in Building 889. The sludge was placed in plywood boxes with other waste from the operation and Portland cement was added to absorb any free liquid. These boxes were lined with PVC liners and the sludge was in individiual bags within the boxes. This waste stream includes inorganic debris, and inorganic sludges/particulates.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	8.0	-	8.0	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Multiple, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

State: Colorado **ID #: 120**

Site: ROCKY FLATS PLANT

Waste Stream Name: CUTOFF SLUDGE/LLW MIXED

Matrix: Multiple **Waste Type: MLLW**

General Comments:
This waste generated one time only.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 336
Site: ROCKY FLATS PLANT	
Waste Stream Name: FBI OIL (LLW-MIXED)	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream was previously named "FBI Oil." IDC No. N/A This waste stream is low-level mixed waste oil consisting of radiologically contamined spent cutting fluids, hydraulic oils, and lubricating oils from various operations on plant site. This oil is also contaminated with spent solvents such as carbon tetrachloride and freon. FBI oil is being stored in two large tanks in Building 774 with the remainder being stored in 55-gallon drums.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	109.6	-	109.6	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics and Metals w/ Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Contact-handled
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 336**

Site: ROCKY FLATS PLANT

Waste Stream Name: FBI OIL (LLW-MIXED)

Matrix: Organic Liquids **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado	**ID #: 337**
Site: ROCKY FLATS PLANT	
Waste Stream Name: ACID/LLW MIXED	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is spent acid (HN03 and H3P04) and a mixture of oil/mixed acid/chromic acid stored in 55-gallon polyethylene drums. IDC NUMBER is not applicable. Composite metals are chemically milled and electropolished in acidic solutions during Building 444 production operations. The spent acid solutions from both processes comprise the mixed waste stream. The waste is packaged in 55-gallon drums.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	9.5	-	9.5	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 337**

Site: ROCKY FLATS PLANT

Waste Stream Name: ACID/LLW MIXED

Matrix: Aqueous Liquid **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D003E	Tech.	Deactivation
D004	Conc.	Chemical Precipitation
D006B	Conc.	Chemical Precipitation
D007	Conc.	Chemical Reduction followed by Chemical Precipitation
D008B	Conc.	Chemical Precipitation
D011	Conc.	Chemical Precipitation
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation

State: Colorado	ID #: 338
Site: ROCKY FLATS PLANT	
Waste Stream Name: PCB(LIQUID)/LLW MIXED	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is transformer oil and hydraulic fluid contaminated with PCBs. IDC No. N/A PCB liquid waste was generated during removal of PCB-contaminated electrical or hydraulic equipment. The waste varied from high percentage transformer oil to hydraulic fluids contaminated with comparable low concentrations of PCB. Liquid PCB waste is stored in 55-gallon drums placed in 85-gallon overpacks.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.1	-	1.1	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Alpha emitter, 10-100 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

General Comments:

This waste stream is no longer generated.

State: Colorado **ID #: 338**

Site: ROCKY FLATS PLANT

Waste Stream Name: PCB(LIQUID)/LLW MIXED

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado	ID #: 339
Site: ROCKY FLATS PLANT	
Waste Stream Name: PONDCRETE	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of block(s) of cement which could fill an entire box (pouring into box directly). In the past it was repackaged, so it could include some large chunks. IDC No. 805. Pondcrete was generated as a result of cleaning out sediment from several solar evaporation ponds. The usage of the ponds was discontinued in 1986 and the wastewaters are currently sent to the Liquid Waste Treatment Facility in Building 374. The collection of waters previously sent to the evaporation ponds indicate multiple waste streams from several buildings at RFP. The contributing wastes may have been contaminated with a variety of hazardous constituents and radiological contaminants. The evaporation ponds are currently being closed as mixed waste units under RCRA. Pond water on top of pond sediments and sludge was pumped to Building 788 where it was sent to a clarifier and the supernatant was returned to the pond. The settled sludge solids were pumped to a unit where they were mixed with Portland cement. The resulting material, pondcrete, was placed in 2x4x7 plywood boxes, allowed to solidify and was prepared for offsite shipment. Pondcrete containers were transferred to interim status storage areas after packaging. Originally, pondcrete was packaged in triwall boxes. Many containers of pondcrete did not solidify properly, resulting in a backlog of pondcrete that must be reprocessed into an acceptable waste form for offsite shipment.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	5,905.2	-	5,905.2	-	259.2	-

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Alpha emitter, 10-100 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

State: Colorado **ID #: 339**

Site: ROCKY FLATS PLANT

Waste Stream Name: PONDCRETE

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

Waste Minimization Activities:
None reported

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
F006	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization; or Incineration; or High Temperature Metals Recovery
F007	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

State: Colorado	ID #: 340
Site: ROCKY FLATS PLANT	
Waste Stream Name: SALTCRETE	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists block(s) of cement which could fill an entire box (pouring into box directly). In the past it was repackaged, so it could include some large chunks. IDC No. 804 Saltcrete is generated by solidifying the concentrate from an evaporation process at the Liquid Waste Treatment Facility in Building 374. Wastewater treatment in Building 374 is processed by evaporation, flocculation/ precipitation and sludge dewatering and drying.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	3,279.3	-	3,279.3	-	1,745.0	-

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Alpha emitter, 10-100 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Raw material changes: raw material purification; and substitution.
4) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 340**

Site: ROCKY FLATS PLANT

Waste Stream Name: SALTCRETE

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
F006	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization; or Incineration; or High Temperature Metals Recovery
F007	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

State: Colorado ID #: 341
Site: ROCKY FLATS PLANT
Waste Stream Name: BERYLLIUM FINES (870) LLW
Matrix: Beryllium Dust Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is beryllium dust and contaminated soft wastes (e.g., Kimwipes, etc.). This waste stream was previously named "Beryllium Dust." IDC No. 870 Beryllium dust waste is generated from production machining operations and from a research application which uses a high temperature, high pressure process to form beryllium powder into a beryllium casting. The spilled or unused beryllium powder from this forming process is a discarded commercial chemical product and thus a P-series listed hazardous waste. This waste is packaged in 55-gallon drums lined with two polyethylene bags.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.5	-	1.5	-	0.700	-

Treatability Group:

MLLW CH/AL, Beryllium Dust, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 341**

Site: ROCKY FLATS PLANT

Waste Stream Name: BERYLLIUM FINES (870) LLW

Matrix: Beryllium Dust **Waste Type: MLLW**

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
P015	Tech.	Metals Recovery; or Thermal Recovery of Metals

State: Colorado ID #: 342
Site: ROCKY FLATS PLANT
Waste Stream Name: ELECTROCHEMICAL MILLING SLUDGE
Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is solidified (cemented) sludge (composite metals) from electrochem milling operations (primary cement). IDC No. N/A An electrochemical milling (ECM) process was used for several years in Building 881 for micro-shaping various parts, including some containing uranium. The ECM process was moved to Building 460. This waste is sludge resulting from cleanout of the ECM operation when the process was moved. Waste currently generated from the ECM process in Building 460 is no longer mixed because uranium parts are no longer shaped in the process.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.5	-	1.5	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

State: Colorado **ID #: 342**

Site: ROCKY FLATS PLANT

Waste Stream Name: ELECTROCHEMICAL MILLING SLUDGE

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F006	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization; or Incineration; or High Temperature Metals Recovery

State: Colorado | ID #: 343
Site: ROCKY FLATS PLANT
Waste Stream Name: INCINERATOR ASH(LLW)-MIXED
Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

Waste stream was previously named "Fluidized Bed Incinerator Ash (LLW)." IDCs No. 420 and 425. Ash was generated from operation of a fluidized bed incinerator in Building 776 or an incinerator in Building 771. The 776 incinerator was used to burn office trash, combustible waste generated in process areas (but outside of glovebox line), compressor oils from refrigeration units, diesel fuel, and crank case oils. FBI ash is packaged in 55-gal. drums lined with a rigid polyethylene liner and one bag liner.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	8.8	-	8.8	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/ Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

State: Colorado ID #: 343

Site: ROCKY FLATS PLANT

Waste Stream Name: INCINERATOR ASH(LLW)-MIXED

Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

General Comments:

Presence of EPA F-codes is suspect and presently under evaluation. Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado ID #: 344
Site: ROCKY FLATS PLANT
Waste Stream Name: LEAD/LLW MIXED
Matrix: Elemental Lead Waste Type: MLLW

Waste Stream Description and Source:
IDC No. 321 Lead waste is generated from discarded radiation shielding, usually in the form of bricks. Lead sheets are often reduced in size for packaging as waste. This waste stream could range from small pieces of lead to a sheet (e.g., side of a glovebox).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	31.9	-	31.9	-	8.9	-

Treatability Group:
MLLW CH/AL, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:
Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:
1) None.

Waste Minimization Activities:
1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:
Basis of estimate past 3 year generation history.

State: Colorado **ID #: 344**

Site: ROCKY FLATS PLANT

Waste Stream Name: LEAD/LLW MIXED

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Colorado	ID #: 345
Site: ROCKY FLATS PLANT	
Waste Stream Name: GROUND GLASS/LLW MIXED	
Matrix: Multiple	Waste Type: MLLW

Waste Stream Description and Source:

IDC 444 - The waste is packaged in 55-gallon drums, which are lined with a rigid polyethylene liner, a fiberboard liner, and a round bottom liner. This waste stream includes inorganic sludges/particulates, and inorganic debris.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	4.4	-	4.4	-	9.7	-

Treatability Group:

MLLW CH/AL, Multiple, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.

General Comments:

Fluorescent bulbs no longer being characterized as hazardous.
Basis of estimate past 3 year generation history.

State: Colorado	**ID #: 345**
Site: ROCKY FLATS PLANT	
Waste Stream Name: GROUND GLASS/LLW MIXED	
Matrix: Multiple	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado | ID #: 346

Site: ROCKY FLATS PLANT

Waste Stream Name: USED ABSORBENT/LLW MIXED (OIL DRI)

Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

This waste is Oil Dri (larger particles than a powder) which includes any type of absorbent material. This waste stream was previously named "Spent Absorbent/LLW (Oil Dri)." IDC No. 375 Absorbents, usually clay materials, are used in the plutonium and uranium process areas for cleanup of hazardous liquid spills, oil absorption, or absorption of any liquids, as needed. One of the most commonly used absorbents is Oil Dri(R). Spent absorbents are assumed to be radiologically contaminated. The waste is packaged in 55-gallon drums lined with two polyethylene bags.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange

State: Colorado ID #: 346

Site: ROCKY FLATS PLANT

Waste Stream Name: USED ABSORBENT/LLW MIXED (OIL DRI)

Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

and reuse; and packaging material reuse.

3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado	**ID #: 347**
Site: ROCKY FLATS PLANT	
Waste Stream Name: USED ABSORBENT TRU MIXED (OIL DRI)	
Matrix: Inorganic Sludges/Particulates	**Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream was previously named "Spent Absorbent/TRU (Oil Dry)". This waste stream was not specifically identified in the Storage or Inventory Report prepared by RFP in fulfillment of FFCA requirements. This waste is the TRU fraction of the waste titled "Oil Dry/LLW Mixed" in the Inventory Report. Normally it is LLW, but occasionally some assays as TRU. This waste stream is IDC No. 375 Absorbents, usually clay materials, which are used in the plutonium and uranium process areas for cleanup of hazardous liquid spills, oil absorption, or absorption of any liquids as needed. One of the most commonly used absorbents is Oil Dri(R). Spent absorbents are assumed to be radiologically contaminated. The waste is packaged in 55-gallon drums lined with two polethylene bags.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Organics

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

State: Colorado **ID #: 347**

Site: ROCKY FLATS PLANT

Waste Stream Name: USED ABSORBENT TRU MIXED (OIL DRI)

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration

State: Colorado	**ID #: 348**
Site: ROCKY FLATS PLANT	
Waste Stream Name: PAINTS/LLW MIXED	
Matrix: Organic Sludges/Particulates	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste consists of oil-base paint and thinners. "Paints and Cyanides/LLW Mixed." The cyanide waste has been separated out to a new waste stream. IDC No. N/A Waste oil-base paint and thinners are generated by maintenace operations throughout the plantsite. These wastes are radiologically contaminated with plutonium or uranium, depending on areas in which operations are performed. The waste is packaged in 55-gallon bung drums. This waste had previously been titled Paints and Cyanides/LLW Mixed.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.380	-	0.380	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Sludges/Particulates, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

State: Colorado	**ID #: 348**
Site: ROCKY FLATS PLANT	
Waste Stream Name: PAINTS/LLW MIXED	
Matrix: Organic Sludges/Particulates	**Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

State: Colorado | ID #: 349
Site: ROCKY FLATS PLANT
Waste Stream Name: LEAD/TRU MIXED
Matrix: Elemental Lead | Waste Type: MTRU

Waste Stream Description and Source:

IDC No. 321 This waste stream consists of lead waste which is generated from discarded shielding, usually in the form of sheets and bricks used extensively in the Perimeter Security Zone (PSZ) to protect personnel against radiation exposure during plutonium processing. This waste is packaged in 55-gallon drums lined with fiberboard liner and two polyethylene bag liners. Inventory data include mixed residues of the same IDC.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	3.8	-	3.8	-	3.1	-

Treatability Group:

MTRU CH/AL, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 349**

Site: ROCKY FLATS PLANT

Waste Stream Name: LEAD/TRU MIXED

Matrix: Elemental Lead **Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Colorado	**ID #: 350**
Site: ROCKY FLATS PLANT	
Waste Stream Name: LEADED GLOVES/TRU MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

IDC No. 339 This waste stream consists of leaded rubber gloves which are used on gloveboxes to reduce radiation exposure to personnel. Gloves which are damaged, or do not meet safety inspection requirements are replaced with new gloves and discarded as waste. The gloves are packaged in 55-gallon drums lined with a rigid polyethylene liner and one bag liner. Inventory data include mixed residues in IDC 339.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	21.0	-	21.0	-	11.9	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 350**

Site: ROCKY FLATS PLANT

Waste Stream Name: LEADED GLOVES/TRU MIXED

Matrix: Inorganic Debris **Waste Type: MTRU**

General Comments:

Basis of estimate past 3 year generation history.
Generation includes expected waste from Bldg 771 Duct Remediation (assuming full funding).

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 351
Site: ROCKY FLATS PLANT	
Waste Stream Name: LEADED GLOVES/LLW MIXED	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

The waste stream is glovebox gloves. IDC No. 339. Leaded rubber gloves are used on gloveboxes to reduce radiation exposure to personnel. Gloves which are damaged or do not meet safety inspection requirements are replaced with new gloves and discarded as waste. The gloves are packaged in 55-gallon drums lined with one fiberboard liner and two polyethylene bags.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	2.7	-	2.7	-	2.8	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado	**ID #: 351**
Site: ROCKY FLATS PLANT	
Waste Stream Name: LEADED GLOVES/LLW MIXED	
Matrix: Inorganic Debris	**Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado **ID #: 352**

Site: ROCKY FLATS PLANT

Waste Stream Name: LEADED GLOVES/ACID CONTAMIN./LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is glovebox gloves. IDC No. 341. Leaded rubber gloves are used in the glovebox systems for plutonium recovery operations in Buildings 771 and 371. These gloves are contaminated with nitric acid and other acids when replaced and discarded as waste. The gloves are packaged in 55-gallon drums lined with a rigid polyethylene liner and a bag liner. This waste stream is not specifically listed in either the storage or inventory reports prepared by Rocky Flats in fulfillment of FFCA requirements. This waste is the LLW portion of the waste stream entitled "Leaded Gloves/Acid Contaminated/TRU Mixed" in the inventory report. This waste normally assays as TRU, but occasionally there is some LLW. After gloves are washed they become IDC 339.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 352**

Site: ROCKY FLATS PLANT

Waste Stream Name: LEADED GLOVES/ACID CONTAMIN./LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 353
Site: ROCKY FLATS PLANT
Waste Stream Name: GROUND GLASS/TRU MIXED
Matrix: Inorganic Debris Waste Type: MTRU

Waste Stream Description and Source:

This waste stream is crushed fluorescent lights with some leached glass. IDC No. 444. Glass waste consists of crushed fluorescent lamps which come from the fluorescent lights used throughout the plutonium and uranium processing areas, as well as ground leaded glass. Small amounts of leached glass may also be mixed with the crushed fluorescent lamp waste. This glass waste is packaged in 55-gallon drums that are lined with one fiberboard liner and two polyethylene bags.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	2.1	-	2.1	-	5.9	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Metals w/ Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.

General Comments:

Basis of estimate past 3 year generation history.

State: Colorado **ID #: 353**

Site: ROCKY FLATS PLANT

Waste Stream Name: GROUND GLASS/TRU MIXED

Matrix: Inorganic Debris **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado **ID #: 354**

Site: ROCKY FLATS PLANT

Waste Stream Name: PARTICULATE-SLUDGE/TRU MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream was previously named "Particulate-Sludge/TRU Mixed(2)." IDC Nos. 044, 050, 092, 099, 159, 289, 290, 292, 299, 332, 340, 372, 422, 423, 430, and 431. This waste was generated from plutonium recovery operations in Building 771. The waste consists of low-purity oxide heel (IDC 289), incineration sludge (IDC 292), miscellaneous sludge (IDC 299), sludge from size reduction area (IDC 340), grit (IDC 372), soot (IDC 422), soot heel (IDC 423), unleached resin (IDC 430), leached resin (IDC 431) and cemented miscellaneous sludge (IDC 823). The particulate and sludge (TRU mixed) waste (discussed in the National Report on Prohibited Wastes and Treatment Options and in Treatment Report No 1) are unleached ion exchange resin (IDC430) and leached resin (IDC431). Spent ion exchange resin waste is not included in this data. The waste is packaged in 55-gallon drums with multiple bag liners. Inventory data include mixed residues in these IDCs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	43.7	-	43.7	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Transuranic contaminants
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

State: Colorado **ID #: 354**

Site: ROCKY FLATS PLANT

Waste Stream Name: PARTICULATE-SLUDGE/TRU MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

No longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado	ID #: 355
Site: ROCKY FLATS PLANT	
Waste Stream Name: PARTICULATE-SLUDGE/LLW MIXED	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream was not specifically identified in either the Storage or Inventory Reports prepared by Rocky Flats in fulfillment of FFCA requirements. This waste was a portion of the stream entitled "Particulate Sludge Waste/Tru Mixed" in the Inventory Report. Normally the waste was TRU, but some was found to be LLW. IDC Nos. 292, 299, 332, 430, 431. This waste was generated from plutonium recovery operations in Building 771. The waste consisted of incineration sludge (IDC 292), miscellaneous sludge (IDC 299), oily sludge (IDC 332), unleached resin (IDC 430 and leached resin (IDC 431). The particulate and sludge wastes (TRU mixed) discussed in the National Report on Prohibited Wastes and Treatment Options and in Treatment Report No 1 were unleached ion exchange resin (IDC 431). Spent ion exchange resin waste was not included in this data. Wastes currently in storage are uncemented. The wastes are typically packaged in smaller containers within 55-gallon drums with multiple bag liners.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	4.9	-	4.9	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

State: Colorado **ID #: 355**

Site: ROCKY FLATS PLANT

Waste Stream Name: PARTICULATE-SLUDGE/LLW MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado | ID #: 357

Site: ROCKY FLATS PLANT

Waste Stream Name: GLOVEBOX PARTS WITH LEAD/LLW MIXED

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste is gloveboxes, parts containing lead, and some glovebox windows. It is stored in 55-gallon drums with one rigid polyethylene liner, one fiberboard liner, and one round bottom bag liner. IDC No. 488. This waste is generated from D&D activities, and from the size reduction facility in Building 776. This waste is identified by IDC 488. This IDC is reserved exclusively for gloveboxes with lead or glovebox parts with bonded lead shielding. Glovebox windows, totalling up to 10% by weight of this waste volume, may also be included.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	6.8	-	6.8	-	10.6	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

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State: Colorado	**ID #: 357**
Site: ROCKY FLATS PLANT	
Waste Stream Name: GLOVEBOX PARTS WITH LEAD/LLW MIXED	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 358
Site: ROCKY FLATS PLANT
Waste Stream Name: FIREBRICK-PULVERIZED OR FINES(TRU-MIXED)
Matrix: Inorganic Sludges/Particulates Waste Type: MTRU

Waste Stream Description and Source:

This waste stream was previously named "Firebrick-Pulverized or Fines." IDC No. 377 and 378. This waste is generated from replacement of the fire brick in the plutonium recovery incinerator in Building 771. The fire brick must be replaced periodically because of plutonium buildup. The fire brick is pulverized to facilitate plutonium recovery. Material which assays below the economic discard limit is discarded as pulverized fire brick waste. The waste is packaged in 55-gallon drums lined with a rigid polyethylene liner. Inventory data include mixed residues in the same IDCs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	11.1	-	11.1	-	1.1	-

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 358**

Site: ROCKY FLATS PLANT

Waste Stream Name: FIREBRICK-PULVERIZED OR FINES(TRU-MIXED)

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado	**ID #: 360**
Site: ROCKY FLATS PLANT	
Waste Stream Name: HEAVY METAL (NON-SS)/TRU MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

IDC No. 320 Heavy (non-ss) metal waste is generated at various locations throughout the RFP. Heavy scrap metal is defined at RFP as metal elements above Cu on the periodic chart. This waste is identified as IDC 320. In 1987, IDC 321 was created specifically for lead. Prior to this, lead was not segregated from IDC 320. Typically, these scrap metals consist of crucibles, funnels, rods and fixturing from several processes and production operations. Tantalum, tungsten and platinum are examples of scrap metals at the RFP. Inventory data include mixed residues in IDC 320.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	5.5	-	5.5	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado	**ID #: 360**
Site: ROCKY FLATS PLANT	
Waste Stream Name: HEAVY METAL (NON-SS)/TRU MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado | ID #: 361
Site: ROCKY FLATS PLANT
Waste Stream Name: SOLIDIFIED LAB WASTE/TRU-MIXED
Matrix: Cemented Solids | Waste Type: MTRU

Waste Stream Description and Source:

This waste stream is liquid waste solidified with Portland Cement. IDC No. 802 This waste consists of waste liquids from the analytical labs, research and development laboratories, and maintenance shops which are packaged and sent to Building 774 for immobilization with Portland cement and absorbent cement. These are wastes which are incompatible with the process collection system and the liquid waste treatment plant. Acidic wastes are neutralized before immobilization. Immobilization is done in 55-gallon drums. Approximately 21 gallons of waste are added to each drum prior to storage. This waste stream is newly identified since the Storage and Inventory Reports.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.3	-	1.3	-	26.3	-

Treatability Group:

MTRU CH/AL, Cemented Solids, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new

State: Colorado	**ID #: 361**
Site: ROCKY FLATS PLANT	
Waste Stream Name: SOLIDIFIED LAB WASTE/TRU-MIXED	
Matrix: Cemented Solids	**Waste Type: MTRU**

processes.

General Comments:

Five-Year Estimate: Based on generation of 25 drums per year for five years from solution stabilization efforts at RFP. Based on Phase 1 Solution Stabilization Program.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado	**ID #: 362**
Site: ROCKY FLATS PLANT	
Waste Stream Name: FILTER WASTE/TRU-MIXED	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream was previously named "Filter Waste/Tru." IDC NO. 328, 331, 335, 338, 342, 376, 490, 491, 492. Filter waste is generated from process operations throughout the plant site. This waste consists of ful-flo filters from the Building 771 incinerator (IDC 328), ful-flo filters from non-incineration operations (IDC-331), absolute glovebox filters from non-acid contaminated operations, (IDC-335), acid contaminated absolute glovebox filters (IDC-342), acid contaminated HEPA filters (IDC-492), non-acid contaminated HEPA filters (IDC-490), plemum prefilters (IDC-491), filter media (IDC-338), and processed filter media (IDC-376). Processed filter media is material which has been treated using Portland cement to absorb moisture and neutralize acid contamination. Filter waste is packaged in 55-gallon drums and metal standard waste boxes. Inventory data include mixed residues within the same IDCs because they are regulated as mixed waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	132.1	-	132.1	-	21.4	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 362**

Site: ROCKY FLATS PLANT

Waste Stream Name: FILTER WASTE/TRU-MIXED

Matrix: Inorganic Debris **Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D002C	Tech.	Deactivation
D003E	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 363
Site: ROCKY FLATS PLANT	
Waste Stream Name: INCINERATOR ASH/ TRU-MIXED	
Matrix: Inorganic Sludges/Particulates	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream was previously named "Fluidized Bed Incinerator Ash(TRU)-Mixed." IDCs 419, 420, 421, 425 AND 428. Ash is generated from operation of a fluidized bed incinerator in Building 776 or an incinerator in Building 771. The incinerator was used to burn office trash, combustible waste generated in process areas (but outside of glovebox line), combustible oils from refrigeration units, diesel fuel, and crank case oils. The oil had been accumulated as a low-level mixed waste. FBI ash was packaged in 55-gallon drums lined with a rigid polyethylene liner and one bag liner. This wastestream was not specifically listed in either the Storage or Inventory reports prepared by Rocky Flats in fulfillment of FFCA requirments. It is a portion of the waste stream entitled "Fluidized Bed Incinerator Ash/LLW Mixed" in the inventory report. The ash normally assays as LLW but this portion was found to be TRU. Inventory data include mixed residues of the same IDC.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	234.3	-	234.3	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Organics and Metals w/ Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

State: Colorado ID #: 363

Site: ROCKY FLATS PLANT

Waste Stream Name: INCINERATOR ASH/ TRU-MIXED

Matrix: Inorganic Sludges/Particulates Waste Type: MTRU

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

General Comments:

Presence of EPA F-codes is suspect and presently under evaluation.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado | ID #: 364
Site: ROCKY FLATS PLANT
Waste Stream Name: LEADED GLOVES/ACID CONTAMINATED/TRU MIX
Matrix: Inorganic Debris | Waste Type: MTRU

Waste Stream Description and Source:

This waste stream consists of leaded rubber gloves used in the glovebox systems for plutonium recovery operations in Buildings 771 and 371. IDC No. 341. These gloves are contaminated with nitric acid and other acids when replaced and discarded as waste. The gloves are packaged in 55-gallon drums lined with a rigid polyethylene liner and a bag liner. Inventory data include mixed residues in IDC 341.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	27.7	-	27.7	-	9.4	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado	**ID #: 364**
Site: ROCKY FLATS PLANT	
Waste Stream Name: LEADED GLOVES/ACID CONTAMINATED/TRU MIX	
Matrix: Inorganic Debris	**Waste Type: MTRU**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado | ID #: 404

Site: ROCKY FLATS PLANT

Waste Stream Name: HEAVY METAL (NON-SS)LLW MIXED

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste is scrap metal such as tantalum, tungsten and platinum. It is packaged in drums lined with one fiberboard liner and two polyethylene bags. IDC No. 320. Heavy (non-ss) metal waste is generated at various locations throughout the RFP. Heavy scrap metal at RFP is defined as metal elements above Copper on the periodic chart. This waste is identified as IDC 320. In 1987, IDC 321 was created for lead. Prior to this, lead was not segregated from IDC 320. Typically, these scrap metals consist of crucibles, funnels, rods and fixturing from various processes and production operations. Tantalum, tungsten and platinum are examples of scrap metals at the RFP. This waste was also generated as TRU.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.3	-	1.3	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 404**

Site: ROCKY FLATS PLANT

Waste Stream Name: HEAVY METAL (NON-SS)LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	**ID #: 1061**
Site: ROCKY FLATS PLANT	
Waste Stream Name: GLASS/LLW MIXED	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream consists of glass vials, containers, pipettes, etc., used in the lab and other operations, plus acid-leached and unleached Raschig Rings. IDC's 440,442.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	4.4	-	4.4	-	4.5	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

State: Colorado **ID #: 1061**

Site: ROCKY FLATS PLANT

Waste Stream Name: GLASS/LLW MIXED

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado | ID #: 1062

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED PROCESS SOLIDS/LLW MIXED(806)

Matrix: Cemented Solids | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream was previously named "Solidified Process Solids/LLW Mixed." This stream represents the solidified final form of all particulate and sludge type materials. Particulates and sludge type materials are immobilized with Portland Cement. The cemented wastes are cast into 1-gallon molds and allowed to cure prior to packaging.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	4.8	-	4.8	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Cemented Solids, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

State: Colorado **ID #: 1062**

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED PROCESS SOLIDS/LLW MIXED (806)

Matrix: Cemented Solids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado | ID #: 1063
Site: ROCKY FLATS PLANT
Waste Stream Name: INSULATION/LLW MIXED
Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is soft insulation materials. RF-IDC No. 438 Insulation is primarily generated from construction, destruction and modification to facilities. The material is used for insulating purposes around boilers, piping and heating systems.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.9	-	1.9	-	2.8	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

General Comments:

Will continue to generate as long as building modification/ destruction occurs.
Basis of estimate past 3 year generation history.

State: Colorado	**ID #: 1063**
Site: ROCKY FLATS PLANT	
Waste Stream Name: INSULATION/LLW MIXED	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 1065

Site: ROCKY FLATS PLANT

Waste Stream Name: ORGANICS DISCARD LEVEL LLW MIXED (533)

Matrix: Organic Liquids Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of waste oils and solvent mixtures generated from machining operations. The waste oils are combined with emulsifiers, Envirostone, and accelerator and solidified in 55-gallon drums. Liquid organics consist of oil, and various halogenated solvents, generated from machining operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	30.9	-	30.9	-	2.8	-

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Product change: product substitution and conservation; and change in product composition.
3) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

State: Colorado **ID #: 1065**

Site: ROCKY FLATS PLANT

Waste Stream Name: ORGANICS DISCARD LEVEL LLW MIXED (533)

Matrix: Organic Liquids **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado ID #: 1066
Site: ROCKY FLATS PLANT
Waste Stream Name: ANALYTICAL LAB SOLUTIONS/LLW MIXED
Matrix: Aqueous Liquid Waste Type: MLLW

Waste Stream Description and Source:

Metal samples for analysis are dissolved in HCl with a mixture of HNO3, H2SO4, titanium trichloride, and ceric ammonium nitrate. IDC 541. This stream is composed of a variety of aqueous laboratory solutions resulting from analyses performed by the analytical laboratories.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.630	-	0.630	-	0.620	-

Treatability Group:

MLLW CH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 1066**

Site: ROCKY FLATS PLANT

Waste Stream Name: ANALYTICAL LAB SOLUTIONS/LLW MIXED

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D002B	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado	ID #: 1068
Site: ROCKY FLATS PLANT	
Waste Stream Name: SAND FROM BUTTON BREAKOUT/LLW MIXED(394)	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is sand containing slag and crucible pieces from plutonium recovery. IDC No. 394 Sand and debris resulting from recovery of plutonium makes up this waste stream in the form of sand/powder. The sand may not be reused. The waste stream has the potential to include calcium metal.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 1068

Site: ROCKY FLATS PLANT

Waste Stream Name: SAND FROM BUTTON BREAKOUT/LLW MIXED(394)

Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado ID #: 1070
Site: ROCKY FLATS PLANT
Waste Stream Name: MISCELLANEOUS LIQUIDS/LLW MIXED
Matrix: Organic Liquids Waste Type: MLLW

Waste Stream Description and Source:

This waste stream contains various miscellaneous liquids that do not fit the category of any other previously mentioned liquids. This waste includes materials such as a mixture of toluene/DDCP/nitric acid/water and a drum containing stripper and floor glue.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	19.1	-	19.1	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 1070**

Site: ROCKY FLATS PLANT

Waste Stream Name: MISCELLANEOUS LIQUIDS/LLW MIXED

Matrix: Organic Liquids **Waste Type: MLLW**

General Comments:

Basis of estimate past 3 year generation history.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D002B	Tech.	Deactivation
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Colorado | ID #: 2044

Site: ROCKY FLATS PLANT

Waste Stream Name: SOIL AND CLEANUP DEBRIS-LLW MIXED (374)

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of soil, drill cuttings, blacktop and concrete. The waste stream was previously named "Soil and Cleanup Debris-LLW Mixed." IDC No. 374 This waste is generated from soil/debris removal from areas contaminated with RCRA constituents and radioactivity. The waste in inventory at RFP at this time is believed to be from the 903 Pad area. This waste was generated from soil removal near the pad or well drilling debris generated from groundwater wells drilled near the pad. It also contains materials generated from construction and demolition sites. The waste is packaged in plywood boxes with a PVC bag liner.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	43.6	-	43.6	-	57.5	-

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Colorado **ID #: 2044**

Site: ROCKY FLATS PLANT

Waste Stream Name: SOIL AND CLEANUP DEBRIS-LLW MIXED (374)

Matrix: Inorganic Debris **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado	ID #: 2047
Site: ROCKY FLATS PLANT	
Waste Stream Name: EXCESS CHEMICALS/LLW-MIXED	
Matrix: Multiple	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is excess chemicals, consisting of out of date chemicals being packaged for disposal throughout the plant site, acid waste, and solid excess expired chemicals. It includes IDCs 545, 880, 881, 882, 886, and 890. This waste stream includes lab packs without metals, inorganic sludges/particulates, and aqueous liquid.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	5.7	-	5.7	-	9.0	-

Treatability Group:

MLLW CH/AL, Multiple, Toxic Organics and Metals w/ Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new

State: Colorado ID #: 2047
Site: ROCKY FLATS PLANT
Waste Stream Name: EXCESS CHEMICALS/LLW-MIXED
Matrix: Multiple Waste Type: MLLW

processes.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D001B	Tech.	Deactivation
D001E	Tech.	Deactivation
D001F	Tech.	Deactivation
D002A	Tech.	Deactivation
D002B	Tech.	Deactivation
D003A	Conc.	Chemical Oxidation followed by Alkaline Chlorination
D003B	Tech.	Deactivation
D003D	Tech.	Deactivation
D003E	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D009D	Tech.	Amalgamation

State: Colorado

Site: ROCKY FLATS PLANT

Waste Stream Name: EXCESS CHEMICALS/LLW-MIXED

Matrix: Multiple

Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D038		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F005A	Conc.	Incineration
P015	Tech.	Metals Recovery; or Thermal Recovery of Metals
P029	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P074	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P087	Tech.	Metals Recovery; or Thermal Recovery of Metals
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P121	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
U123	Tech.	Fuel Substitution; or Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Colorado	ID #: 2048
Site: ROCKY FLATS PLANT	
Waste Stream Name: GLASS TRU-MIXED	
Matrix: Inorganic Debris	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream is glass from D&D, labs, etc. IDC 440, 441, 442, 856. This waste stream is made up of glass from analytical labs, recovery processes, ceramics, and glovebox windows. This waste stream was previously named "Glass." Inventory data include mixed residues in the same IDCs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.00	-	12.1	-	12.1	-	3.5	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 2048
Site: ROCKY FLATS PLANT
Waste Stream Name: GLASS TRU-MIXED
Matrix: Inorganic Debris Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado | ID #: 2050

Site: ROCKY FLATS PLANT

Waste Stream Name: SILVER NITRATE

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is nitric acid solution containing siver nitrate from cleaning tools and fixtures in silver process operations. Fixturing and tooling contaminated with silver was stripped using a 50% nitric acid solution. This process is no longer in use. This waste stream is nitric acid solution contaminated with silver.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.840	-	0.840	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:

1) Not Applicable.

This process is no longer in use.

State: Colorado **ID #: 2050**

Site: ROCKY FLATS PLANT

Waste Stream Name: SILVER NITRATE

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001B	Tech.	Deactivation
D002A	Tech.	Deactivation
D011	Conc.	Stabilization

State: Colorado | ID #: 2054
Site: ROCKY FLATS PLANT
Waste Stream Name: CYANIDES/LLW-MIXED
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:
This waste stream contains spent cyanide solutions with radiological contaminants as a result of uranium production operations. It is packaged in 55-gallon bung type drums. Cyanides are generated from production operations in Building 444 and are uranium-contaminated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.1	-	1.1	-	0.000	0.000

Treatability Group:
MLLW CH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:
Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:
Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:
1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:
1) High alpha activity in contact with organics or water can result in radiolysis, with production of hydrogen gas, methane and other degradation products. The buildup of hydrogen gas and radiation interaction with the waste form can affect storage, design and operation of treatment facilities, and stability of the final waste form.
2) Radioactive decay may produce significant amounts of heat that needs to be considered during treatment and disposal.

Waste Minimization Activities:
1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 2054

Site: ROCKY FLATS PLANT

Waste Stream Name: CYANIDES/LLW-MIXED

Matrix: Aqueous Liquid Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003A	Conc.	Chemical Oxidation followed by Alkaline Chlorination
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

State: Colorado **ID #: 2246**

Site: ROCKY FLATS PLANT

Waste Stream Name: TURNINGS/LLW MIXED (IDC 142)

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is IDC 142 and 871 containing metal turnings from a titanium machining process in Building 444. Turnings and chips from the machining operation are placed in containers and covered with sand due to the pyrophoric nature of the titanium chips.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	1.5	-	1.5	-	2.1	-

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 2246**

Site: ROCKY FLATS PLANT

Waste Stream Name: TURNINGS/LLW MIXED (IDC 142)

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003E	Tech.	Deactivation
F001	Conc.	Incineration

State: Colorado ID #: 2247

Site: ROCKY FLATS PLANT

Waste Stream Name: MG OXIDE CRUCIBLES/TRU MIXED (IDC 368)

Matrix: Inorganic Sludges/Particulates Waste Type: MTRU

Waste Stream Description and Source:

This waste stream includes any type or size of ceramic crucibles or liners including LECO crucibles, IDCs 370, 368 and 655. Magnesium oxide crucibles with possible residue salts and reactive metal contamination are also included. This waste stream was generated during plutonium recovery using pyrochemical and electro-chemical processing. Waste is placed in 3-gallon jars, double plastic bagged, placed in clamshell containers, then placed into 55-gallon drums. Inventory data include mixed residues in IDC 368.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	46.3	-	46.3	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 2247

Site: ROCKY FLATS PLANT

Waste Stream Name: MG OXIDE CRUCIBLES/TRU MIXED (IDC 368)

Matrix: Inorganic Sludges/Particulates Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Colorado **ID #: 2376**

Site: ROCKY FLATS PLANT

Waste Stream Name: INSULATION/TRU MIXED (IDC 438)

Matrix: Inorganic Debris **Waste Type: MTRU**

Waste Stream Description and Source:

IDC 438 - This waste stream is contaminated insulation. The insulation is generated from construction and demolition onsite.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.630	-	0.630	-	0.350	-

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Colorado	**ID #: 2376**
Site: ROCKY FLATS PLANT	
Waste Stream Name: INSULATION/TRU MIXED (IDC 438)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Colorado ID #: 2377

Site: ROCKY FLATS PLANT

Waste Stream Name: MISC PU RECOVERY BY-PROD.-SALT/TRU MIXED

Matrix: Multiple Waste Type: MTRU

Waste Stream Description and Source:

IDC's 365, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 418, 427, 429, 433, 434, 435, 473 and 654. This waste is generated during plutonium recovery operations such as direct oxide reduction and salt scrub. Its composition includes mixed salts, a probable presence of magnesium, sodium and potassium metals (reactivity characteristic D003) and chromium (D007). Inventory data include mixed residues in these IDCs. This waste stream includes inorganic sludges/particulates, and reactive metals.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	156.3	-	156.3	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Multiple, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 2377

Site: ROCKY FLATS PLANT

Waste Stream Name: MISC PU RECOVERY BY-PROD.-SALT/TRU MIXED

Matrix: Multiple Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado **ID #: 2379**

Site: ROCKY FLATS PLANT

Waste Stream Name: SAND, SLAG AND CRUCIBLE/TRU MIXED

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

Waste Stream Description and Source:

This waste includes unpulverized slag (IDC 387, 390, 395, 396), unpulverized sand and crucible (IDC 391), unpulverized sand, slag and crucible (IDC 392), sand, slag and crucible heel (IDC 393), sand from button breakout (IDC 394), pulverized sand slag and crucible (IDC 398), and pulverized slag and crucible (IDC 399). This waste is generated during the reduction of plutonium tetrafluoride to plutonium metal. Its composition includes magnesium oxide sand, crucible, calcium metal and stainless steel (contains chromium). The calcium metal gives the reactivity characteristic of D003; the chromium gives the D007. Inventory data include mixed residues in these IDCs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	54.7	-	54.7	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado ID #: 2379

Site: ROCKY FLATS PLANT

Waste Stream Name: SAND, SLAG AND CRUCIBLE/TRU MIXED

Matrix: Inorganic Sludges/Particulates Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado	ID #: 2388
Site: ROCKY FLATS PLANT	
Waste Stream Name: COARSE GRAPHITE/TRU MIXED (IDC 303 & 312	
Matrix: Inorganic Sludges/Particulates	Waste Type: MTRU

Waste Stream Description and Source:

This waste form includes scarfed graphite chunks (IDC 303) and coarse graphite (IDC 312). This waste is a result of broken graphite molds from the classified weapons shape casting process.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.420	-	0.420	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

State: Colorado	**ID #: 2388**
Site: ROCKY FLATS PLANT	
Waste Stream Name: COARSE GRAPHITE/TRU MIXED (IDC 303 & 312	
Matrix: Inorganic Sludges/Particulates	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

State: Colorado **ID #: 2391**

Site: ROCKY FLATS PLANT

Waste Stream Name: MISCELLANEOUS PU RECOVERY BYPRODUCTS

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

Waste Stream Description and Source:

Generation rates and storage volumes were reported by the site. IDC 434. This waste stream is free calcium containing spent salt.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/Particulates, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Alpha emitter, < 10 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Basis of estimate past 3 year generation history.

State: Colorado ID #: 2391

Site: ROCKY FLATS PLANT

Waste Stream Name: MISCELLANEOUS PU RECOVERY BYPRODUCTS

Matrix: Inorganic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation

State: Colorado | ID #: 2396

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED ORGANICS/LLW (IDC 801)

Matrix: Cemented Solids | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream contains solvents and/or oils solidified with gypsum cement. This waste is generated from cementation of waste oils/ solvents arising from degreasing parts, tools, etc. Gypsum cement and oil/solvent mixtures (carbon tetrachloride, 1,1,1-trichloroethane, and 1,1,2-trichloro-1,2,2-trifluoroethane) are specifically identified with this waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.350	-

Treatability Group:

MLLW CH/AL, Cemented Solids, Toxic Organics

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, 10-100 nCi/g
2) Alpha emitter, < 10 nCi/g
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.
3) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 2396**

Site: ROCKY FLATS PLANT

Waste Stream Name: SOLIDIFIED ORGANICS/LLW (IDC 801)

Matrix: Cemented Solids **Waste Type: MLLW**

General Comments:
Basis of estimate past 3 year generation history.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Colorado **ID #: 00000002**

Site: ROCKY FLATS PLANT

Waste Stream Name: Miscellaneous Liquids/TRU Mixed

Matrix: Aqueous Liquid **Waste Type: MTRU**

Waste Stream Description and Source:

IDC No. 070, 400, 401, 500, 503, 508, 527, and 541. As a result of the shutdown of plutonium operations at RFP in November, 1989, several hundred plastic bottles and several tanks of process liquids remained in storage in Buildings 371, 559, 771, and 779. These liquids are included in the list of mixed residues. Basis for the five-year projected generation is an estimate on the past three years generation history.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	14.5	-	14.5	-	1.1	-

Treatability Group:

MTRU CH/AL, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

State: Colorado **ID #: 00000002**

Site: ROCKY FLATS PLANT

Waste Stream Name: Miscellaneous Liquids/TRU Mixed

Matrix: Aqueous Liquid **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Colorado | ID #: 0000002401
Site: ROCKY FLATS PLANT
Waste Stream Name: SOLAR POND WATER/LLW MIXED
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of process water typically containing aqueous and organic wastes from numerous processing and maintenance operations. No IDC assigned. The ponds have also received other waste streams contributing a variety of wastes to the water. Emplacement of process waste material into the ponds ceased in 1986 due to plant changes. The water is currently being processed in order to empty the solar ponds.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	45,425.0	-	45,425.0	-	100.0	-

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics and Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Plans are described in the Comprehensive Treatment and Management Plan dated June 9, 1992.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Alpha emitter, < 10 nCi/g
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

No longer generated.

State: Colorado | ID #: 0000002401
Site: ROCKY FLATS PLANT
Waste Stream Name: SOLAR POND WATER/LLW MIXED
Matrix: Aqueous Liquid | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration
F006	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization; or Incineration; or High Temperature Metals Recovery
F007	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization
F009	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

State: Colorado | ID #: 0000002402

Site: ROCKY FLATS PLANT

Waste Stream Name: CALCIUM METAL - IDC 333

Matrix: Reactive Metals | Waste Type: MTRU

Waste Stream Description and Source:

This material is elemental calcium used in plutonium reduction operations. It is mixed with plutonium tetrafluoride during the reduction process as a pyrotechnic initiator. IDC No.333. It exhibits the characteristic of a RCRA reactive waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MTRU CH/AL, Reactive Metals, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Not Applicable.

This stream no longer produced.

State: Colorado	**ID #: 0000002402**
Site: ROCKY FLATS PLANT	
Waste Stream Name: CALCIUM METAL - IDC 333	
Matrix: Reactive Metals	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D003D	Tech.	Deactivation

TECHNOLOGY

DEVELOPMENT

SUMMARIES

Rocky Flats Plant

RF-TDS-1

April 1993

Target Site: Rocky Flats Plant

Location Site: Lawrence Livermore National Laboratory

Programs/Facilities Supported:

RFP LDR Compliance Program, LLNL Mixed Waste Treatment Facility (MWTF)

ID: 6

Program Title: Mediated Electrochemical Oxidation (MEO) of Mixed Wastes

Summary Description:

The Mediated Electrochemical Oxidation (MEO) process is one part of the Rocky Flats Plant Incineration Alternatives (IA) project. IA is investigating individual technologies for the destruction of mixed combustible waste to allow selection of the most promising incineration alternative technologies for cold pilot scale system demonstration. This activity uses DOE laboratories and commercial firms to evaluate possible technologies. FY 93 activities are focused on the largest volume categories of combustible waste: cutting oils and solid combustibles. The laboratory or subcontractor will define the optimum operating parameters and rates of destruction for each combustible waste stream which apply to MEO. The laboratory or subcontractor will provide a formal report detailing the results of the experimental work, including a basic conceptual design for a cold demonstration of MEO. The conceptual design will include material/energy balances, and identification of secondary waste streams and their treatment requirements. The MEO process uses an electrochemical reactor to oxidize a mediator (e.g. silver, Ag) in an electrolyte (e.g. nitric acid, HNO3). The oxidized mediator in turn oxidizes and destroys the organics in the electrolyte. Also the radioactive components of the mixed waste are rendered soluble by the mediator and can be removed from the solution with an ion exchange column for recovery or concentrated for burial.

Summary Purpose/Need:

The goals of this activity are to identify, develop, test and demonstrate the MEO process as an alternative to incineration for the treatment of RFP low-level mixed combustible wastes and for waste stream treatment across the complex. This activity is intended to meet the requirements of the Comprehensive Treatment and Management Plan (CTMP).

Summary Result/Endpoint/Deliverable:

- FY 93 development summary report - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: CHOXD INCIN

Functional Areas: waste destruction & stabilization
alternative organic destruction - high concentration
primary organic destruction - low concentration
primary organic destruction - high concentration

Target Site: Rocky Flats Plant

Location Site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program, RFP IAG

ID: 132

Program Title: Cement Solidification (Solar Pond Cleanout)

Summary Description:

The Cement Solidification Program is being developed to process waste liquids and sludges from the closure of operating unit 4 (OU4), the solar ponds. The immediate focus of the program is to eliminate the solar ponds as a source of contamination as a soon as possible. This will include solidification of wastes. All wastes remediated from the OU4 will be stored and disposed of in accordance with all regulatory and disposal site acceptance criteria.

Summary Purpose/Need:

The program is required to ensure that the final waste forms will meet Land Disposal Restrictions as well as all waste acceptance criteria. Compared to previous work done on the waste, this method will have a slight volume reduction, and therefore lower storage, transportation and disposal costs. This program is included in the critical path for milestones to complete the OU4 remedial action.

Summary Result/Endpoint/Deliverable:

The effort involves documentation, equipment specification, site preparation, and system procurement and evaluation to support deployment of a full scale waste handling and treatment system.

BDAT: STABL

Functional Areas: final form
final form-grout or macro-encapsulation

Target Site: Rocky Flats Plant

Location site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 134

Program Title: Thermal Treatment Process Unit/Fluidized Bed

Summary Description:

The overall objective of the project is to develop a Fluidized Bed Unit (FBU). The FBU is planned to operate at a low temperature (525-600 degrees C). The first stage of the FBU contains oxidation catalyst (chromia-alumina) and sodium carbonate to neutralize any acid off-gases. The second stage contains only oxidation catalyst. By neutralizing acid gases in-situ in the first stage, no off-gas scrubber is required. This eliminates a known source of a large volume of secondary waste. The low temperatures in the primary and secondary reactors eliminate the need for a refractory lining, thereby eliminating a secondary waste stream as generated from replacement of the lining. Ash generated during system operation will be treated by microwave solidification, polymer solidification, and/or cementation.

Summary Purpose/Need:

The overall goal of this activity is to provide a thermal treatment system which will be capable of treating many of the RFP mixed wastes. The wastes will be treated to meet RCRA, LDR, transportation and waste disposal site waste acceptance criteria.

Summary Result/Endpoint/Deliverable:

- Complete bench scale work on feeder and primary reactor - 9/93
- Develop engineering scope documents for design of production-scale FBU - 8/95
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: INCIN

Functional Areas: waste destruction & stabilization
thermal treatment unit - high residue

Target Site: Rocky Flats Plant

Location site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 135

Program Title: Microwave Solidification

Summary Description:

Microwave solidification is being developed to address treatment of precipitation sludge (by-pass sludge) from the aqueous liquid waste treatment facility in Building 374. Current treatment of this waste stream is accomplished by cementation which is not an optimum treatment technology and results in waste volume increases. Through microwave melting, waste volume is reduced by approximately 5 to 10 times over present solidification procedures. Glass and synthetic minerals offer a leach resistant, stable matrix well suited for hazardous wastes. The high treatment temperatures also ensure destruction of soluble materials such as nitrates. Several other waste streams at RFP have been identified as potentially amenable to microwave solidification. The RFP streams include incinerator ash, slags and crucibles.

Summary Purpose/Need:

The goal of this activity is to develop a process capable of producing a final waste form that meets the Land Disposal Restriction treatment standards, applicable transportation requirements, and disposal site waste acceptance criteria.

Summary Result/Endpoint/Deliverable:

- Complete demonstration-scale tests and data evaluation - 1/96
- Develop system and facility design to complete remaining regulatory compliance requirements - 11/96
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: HLVIT STABL

Functional Areas: final form
final form glass
waste destruction & stabilization

Target Site: Rocky Flats Plant

Location site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 136

Program Title: Cement Solidification of Sludge, Salts and Ash (CTMP Compliance)

Summary Description:

Cement solidification development includes evaluation of current processes, development of new processes, identification of optimum formulas, and establishing operating envelopes. The saltcrete process in Building 374 is being studied now. In the future, improving solidification of the bypass sludge in Building 374, and solidification of FBU ash, FBU oil, particulate sludge, solidified organics, cutoff sludge, and low-level debris will be evaluated for cementation.

Summary Purpose/Need:

The goal of this study is to develop cementation processes that will produce durable waste forms that meet all applicable RCRA, LDR, transportation, and disposal site waste acceptance criteria.

Summary Result/Endpoint/Deliverable:

- Report summarizing results of formulation studies - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: STABL

Functional Areas: final form
final form-grout or macro-encapsulation

Target Site: Rocky Flats Plant

Location site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 137

Program Title: Catalytic Chemical Oxidation

Summary Description:

The Catalytic Chemical Oxidation (CCO) process is one part of the Rocky Flats Plant Incineration Alternatives (IA) project. IA is investigating individual technologies for the destruction of mixed combustible waste to allow selection of the most promising incineration alternative technologies for cold pilot scale system demonstration. This activity uses DOE laboratories and commercial firms to evaluate possible technologies. FY 93 activities are focused on the largest volume categories of combustible waste: cutting oils and solid combustibles. The laboratory or subcontractor will define the optimum operating parameters and rates of destruction for each combustible waste stream which apply to CCO. The laboratory or subcontractor will provide a formal report detailing the results of the experimental work, including a basic conceptual design for a cold demonstration of CCO. The conceptual design will include material/energy balances, and identification of secondary waste streams and their treatment requirements. CCO is a low temperature/pressure treatment process which utilizes a catalyst (such as iron) in the presence of an acid bath to oxidize wastes.

Summary Purpose/Need:

The goals of this activity are to identify, develop, test and demonstrate chemical oxidation process alternatives to incineration for the treatment of RFP low-level mixed combustible waste, and for waste stream treatment across the complex. This activity is intended to meet the requirements of the Comprehensive Treatment and Management Plan (CTMP).

Summary Result/Endpoint/Deliverable:

- FY 93 development summary report - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: CHOXD INCIN

Functional Areas: waste destruction & stabilization
primary organic destruction - high concentration

Target Site: Rocky Flats Plant

Location site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 138

Program Title: Surface Organic Contaminant Removal

Summary Description:

Many of Rocky Flats mixed wastes are hazardous as a result of contamination with low levels of RCRA-listed solvents. Treatment technologies to remove organic contaminants from LDR waste forms to meet LDR may also allow disposal of some wastes as non-hazardous. This activity investigates several organic removal technologies including Supercritical Carbon Dioxide Extraction (SCDE), Volatilization/Cleaning, Hot Nitrogen Stripping (HNS), and other volatilization technologies such as radio frequency (RF) heating, steam cleaning and air stripping.

Summary Purpose/Need:

The goals of this activity are to evaluate SCDE and commercially available removal technologies and determine their feasibility and applicability to treat LDR wastes for organic contaminants, and select appropriate surface cleaning technology for RFP mixed wastes. Treated wastes may then be disposed of in compliance with RCRA, transportation requirements, and disposal site waste acceptance criteria.

Summary Result/Endpoint/Deliverable:

- SCDE Experimental Test Plan - 6/93
- Technology Status Report on HNS - 5/93
- Technology Status Report on selected volatilization technologies - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: RORGS LLEXT

Functional Areas: chemical physical treatment
removal of problem constituents

Target Site: Rocky Flats Plant

Location Site: LANL

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 201

Program Title: Packed-Bed Reactor/Silent Discharge Plasma (PBR/SDP)

Summary Description:

The PBR/SDP process is part of the Incineration Alternatives (IA) project. IA is investigating individual technologies for the destruction of mixed combustible waste to allow selection of the most promising incineration alternative technologies for cold pilot scale system demonstration. This activity uses DOE laboratories and commercial firms to evaluate possible technologies. FY 93 activities are focused on the largest volume categories of combustible waste: cutting oils and solid combustibles. The laboratory or subcontractor will define the optimum operating parameters and rates of destruction for each combustible waste stream which apply to PBR/SDP. The laboratory or subcontractor will provide a formal report detailing the results of the experimental work, including a basic conceptual design for a cold demonstration of PBR/SDP. The conceptual design will include material/energy balances, and identification of secondary waste streams and their treatment requirements.

Summary Purpose/Need:

The goals of this activity are to identify, develop, test and demonstrate the PBR/SDP process as an alternative to incineration for the treatment of RFP low-level mixed combustible wastes and for waste stream treatment across the complex. This activity is intended to meet the requirements of the Comprehensive Treatment and Management Plan.

Summary Result/Endpoint/Deliverable:

- FY 93 development summary report - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: INCIN

Functional Areas: waste destruction & stabilization
primary organic destruction - high concentration
RCRA treatment 2nd stage destruction

Target Site: Rocky Flats Plant

Location Site: Los Alamos National Laboratory

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 202

Program Title: Real-Time Emission Monitoring

Summary Description:

The objective of this task is to develop a method to monitor incinerator off-gases in real-time for the presence of alpha-emitting radionuclides in a continuous manner for the planned Thermal Treatment Process Unit. The on-line alarming detector will be integrated with a conventional sampling detector to provide a complete alpha-emitting radionuclide monitoring system, ready for field testing. This monitoring capability should include both the ability to provide spectroscopic radionuclide identification, as well as a fast response, high-sensitivity alarm.

Summary Purpose/Need:

The overall goal of this activity is to develop real-time emission monitoring for a new thermal treatment system. Although a variety of sampling detectors are available for radionuclide identification, no detection system exists for fast alarming with high sensitivity.

Summary Result/Endpoint/Deliverable:

- Build and test second generation prototype - 5/93
- Test system, establish FOM - 9/93
- Submit interim report on completion of tests - 9/93
- Procure commercial sampling detector - 1/94
- Design and build full scale prototype - 1/94
- Build field test facility - 6/94
- Field demonstration of complete system - 9/94

BDAT: INCIN

Functional Areas: off-gas technology
continuous emission monitoring
atmospheric discharge monitoring

Target Site: Rocky Flats Plant

Location Site: Rocky Flats Plant

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 277

Program Title: Polymer Solidification

Summary Description:

This activity includes development and support for implementation of encapsulation technologies for several radioactive mixed waste forms using both thermoplastic and thermosetting polymers. Activities will focus on identification of compatible production-scale drying technologies, refinement of a leachability model for heavy metals, evaluation of waste form durability, and laboratory-scale treatability studies. The current developmental focus is on polyethylene microencapsulation of nitrate salt waste and macroencapsulation of combustible debris.

Summary Purpose/Need:

The goal of this development activity is to demonstrate the ability of polymer encapsulation to meet applicable RCRA, LDR, transportation and disposal site waste acceptance criteria.

Summary Result/Endpoint/Deliverable:

- Complete equipment evaluation summary - 8/93
- Complete waste form durability study - 9/93
- Complete treatability study summary - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of preferred technology.

BDAT: STABL

Functional Areas: final form
final form-grout or macro-encapsulation

Target Site: Rocky Flats Plant

Location Site: PNL

Programs/Facilities Supported:

RFP LDR Compliance Program

ID: 365

Program Title: Mediated Electrolytic Oxidation (MEO) of Mixed Wastes

Summary Description:

The Mediated Electrolytic Oxidation (MEO) process is one part of the Incineration Alternatives (IA) project. IA is investigating individual technologies for the destruction of mixed combustible waste to allow selection of the most promising incineration alternative technologies for cold pilot scale system demonstration. This activity uses DOE laboratories and commercial firms to evaluate possible technologies. FY 93 activities are focused on the largest volume categories of combustible waste: cutting oils and solid combustibles. The laboratory or subcontractor will define the optimum operating parameters and rates of destruction for each combustible waste stream which apply to MEO. The laboratory or subcontractor will provide a formal report detailing the results of the experimental work, including a basic conceptual design for a cold demonstration of MEO. The conceptual design will include material/energy balances, and identification of secondary waste streams and their treatment requirements. The MEO process uses an electrochemical reactor to oxidize a mediator (e.g. silver, Ag) in an electrolyte (e.g. nitric acid, HNO3). The oxidized mediator in turn oxidizes and destroys the organics in the electrolyte. Also the radioactive components of the mixed waste are rendered soluble by the mediator and can be removed from the solution with an ion exchange column for recovery or concentrated for burial.

Summary Purpose/Need:

The goals of this activity are to identify, develop, test and demonstrate the MEO process as an alternative to incineration for the treatment of RFP low-level mixed combustible wastes and for waste stream treatment across the complex. This activity is intended to meet the requirements of the Comprehensive Treatment and Management Plan (CTMP).

Summary Result/Endpoint/Deliverable:

- FY 93 development summary report - 9/93
- Data sufficient to allow comparison with other candidate technologies and down-select of the preferred technology.

BDAT: CHOXD INCIN

Functional Areas: waste destruction & stabilization
alternative organic destruction - high concentration
primary organic destruction - low concentration
primary organic destruction - high concentration

10.0 CONNECTICUT

Connecticut has one facility that generates, expects to generate, and/or stores DOE-managed mixed waste, the Knolls Atomic Power Laboratory-Windsor Site.

Figure 10-1 shows the location of this facility.

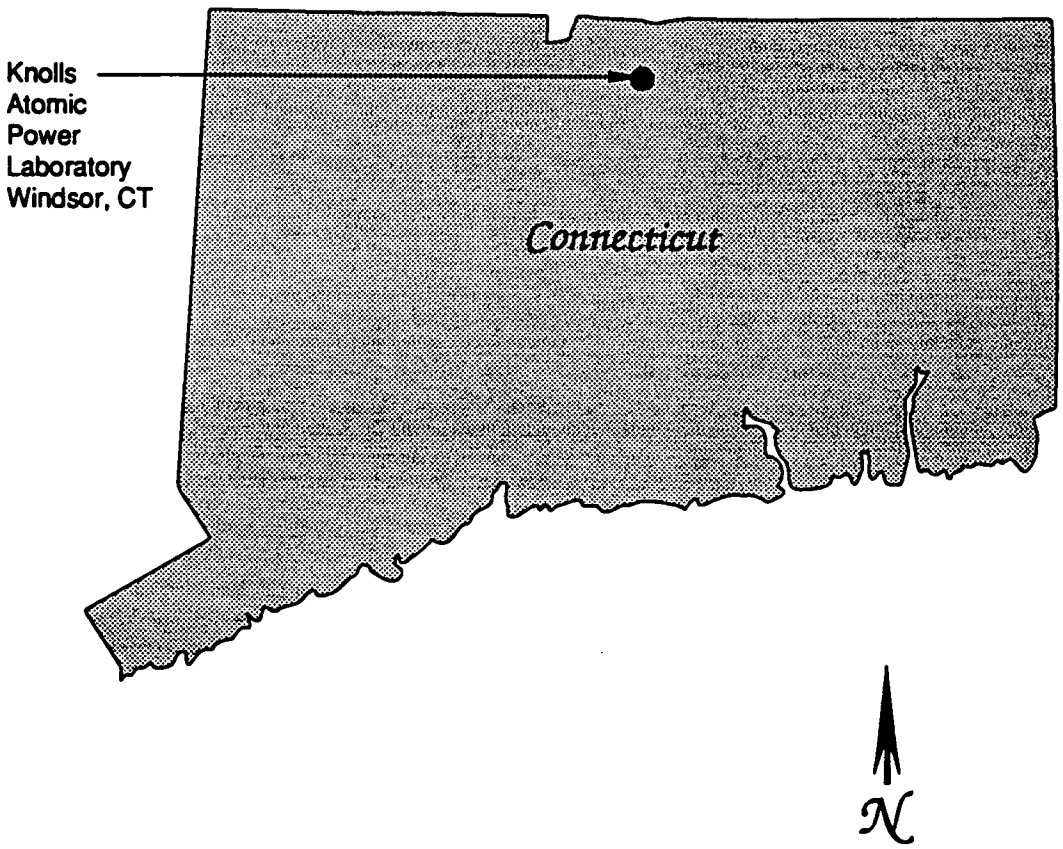

Figure 10-1. Connecticut Facility that Generates, Expects to Generate, and/or Stores DOE-managed Mixed Waste.

10.1 Knolls Atomic Power Laboratory - Windsor Site

The Knolls Atomic Power Laboratory (KAPL) is operated by KAPL, Inc., a wholly owned subsidiary of the Martin Marietta Corporation under contract with the DOE. KAPL consists of 3 sites: the Knolls and Kesselring Sites in New York and the Windsor Site in Connecticut. These sites are engaged solely in research and development for the design and operation of naval nuclear propulsion plants. Activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program, which is described in Section 1.3. The Kesselring and Windsor prototype sites are also used to provide full-scale testing of propulsion plant hardware, and to train personnel to operate these plants. Since the prototype plants are operated and maintained in the same manner as actual ship propulsion plants, the type of maintenance and overhaul work performed is similar to that performed on nuclear-powered ships.

The 0.04-km^2 (10.8-acre) KAPL-Windsor Site is located about 8 km north of Hartford, Connecticut, in the town of Windsor (Figure 10-1). Facilities include a pressurized-water naval nuclear propulsion plant, administrative offices, training facilities, equipment service building, boiler house, cooling tower, and waste-handling facilities.

The only mixed waste generated by site activities is mixed low-level waste (MLLW). None is presently stored and about 10.05 m^3 (about 10,824.50 kg) is expected to be generated in the next 5 years. No treatment facility has been assigned for this waste.

10.1.1 Mixed Waste

10.1.1.1 High-Level Waste

There is no high-level waste currently stored or expected to be generated at KAPL-Windsor site.

10.1.1.2 Mixed Transuranic Waste

There is no mixed transuranic (MTRU) waste currently stored or expected to be generated at KAPL-Windsor site.

10.1.1.3 Mixed Low-Level Waste

The KAPL-Windsor Site currently has no MLLW in storage. The Site is scheduled to begin deactivation in 1993. During the next 5 years, deactivation activities have the potential to generate about 10.05 m^3 (about 10,824.5 kg) of MLLW composed of 8 waste types: lead solids, RCRA-contaminated oil, miscellaneous laboratory chemicals, organic debris, inorganic debris and equipment, and inorganic and organic sludges from piping systems. Estimates of amounts to be generated are presented in Table 10.1-1. As of this date, no treatment facilities for the waste have been identified.

Waste minimization includes eliminating, wherever technically allowed, the use of acetone and other F-listed solvents, lead and chromium-based paints, lead shielding in disposal containers, and chemical paint removers.

Table 10.1-1
Mixed Wastes at Knolls Atomic Power Laboratory - Windsor

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	0	0.00	0.00	1	0.45	562.50
CH, Organic Sludges/particulates	0	0.00	0.00	1	1.60	1,260.00
CH, Inorganic Sludges/particulates	0	0.00	0.00	1	0.20	500.00
CH, Organic Debris	0	0.00	0.00	1	1.50	1,180.00
CH, Inorganic Debris	0	0.00	0.00	1	3.40	2,677.00
CH, Lab Packs With Metals	0	0.00	0.00	1	0.10	68.00
CH, Lab Packs Without Metals	0	0.00	0.00	1	0.30	202.00
CH, Elemental Lead	0	0.00	0.00	1	2.50	4,375.00
Sub-Total MLLW:	0	0.00	0.00	8	10.05	10,824.50
TOTAL:	0	0.00	0.00	8	10.05	10,824.50

10.1.2 Treatment Facilities

Only small quantities of mixed waste are expected to be generated at KAPL-Windsor Site. There are no existing or planned treatment facilities at the KAPL-Windsor site. Where possible, simple treatment by stabilization in the accumulation container will be performed in accordance with applicable state regulations.

10.1.3 Technology Development

Since radiation levels would not be of significance to affect treatment, these mixed waste streams should require technology comparable to that used in treating similar hazardous, but non-radioactive waste streams. Concentrations of radionuclides in treatment residues will need to be considered. There are no site-specific technology development activities for the KAPL-Windsor site.

10.1.4 Excess Heavy Metal Bearing Equipment

During equipment decommissioning, every effort is made to separate lead-bearing and other heavy metal components from the radioactive parts of the equipment to avoid declaring the entire unit mixed waste. The equipment containing recyclable heavy metals expected to become excess in the next 5 years is approximately 129 m^3 (134,300 kg).

4691

WASTE

PROFILE

SHEETS

Knolls Atomic Power Laboratory

Windsor Site

KAPL-WPS-1

April 1993

ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: Connecticut **ID #: 0000000033**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: OIL CONTAINING HEAVY METALS

Matrix: Organic Liquids **Waste Type: MLLW**

Waste Stream Description and Source:

Lubricating, pump and hydraulic oils from maintenance and repair of various equipment and machinery.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.450	562.5

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices.

State: Connecticut **ID #: 0000000033**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: OIL CONTAINING HEAVY METALS

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D011	Conc.	Stabilization

State: Connecticut **ID #: 0000000035**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: MISCELLANEOUS LABORATORY CHEMICALS

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Waste Stream Description and Source:
Unusable chemicals.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.100	68.0

Treatability Group:
MLLW CH, Lab Packs with Metals

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Product change.

General Comments:
Due to nature of work (R & D) virtually any code is possible.

EPA CODES
Waste Characterization Basis: To Be Determined

No applicable RCRA Codes have been identified.

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Connecticut **ID #: 0000000036**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: ORGANIC DEBRIS CONTAINING HEAVY METALS

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Cloths and plastic from maintenance and repair of facility systems and laboratory analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	1.5	1,180.0

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/ Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices.

State: Connecticut **ID #: 0000000036**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: ORGANIC DEBRIS CONTAINING HEAVY METALS

Matrix: Organic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Connecticut	**ID #: 0000000038**
Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR	
Waste Stream Name: INORGANIC DEBRIS AND EQUIPMENT	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:
General laboratory waste.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	3.4	2,677.0

Treatability Group:
MLLW CH, Inorganic Debris, Toxic Metals w/ Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices.

State: Connecticut | ID #: 0000000038

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: INORGANIC DEBRIS AND EQUIPMENT

Matrix: Inorganic Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009B	Tech.	Mercury Roast/Retort
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Connecticut **ID #: 0000000040**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: SLUDGES/PARTICULATES WITH HEAVY METALS

Matrix: Inorganic Sludges/Particulates **Waste Type: MLLW**

Waste Stream Description and Source:
Refurbishment or deactivation of radiological areas; paint chips.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.200	500.0

Treatability Group:
MLLW CH, Inorganic Sludges/Particulates, Toxic Metals w/ Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time. Paint chips will be subjected to RCRA simple treatment by stabilization in the accumulation container in accordance with state regulations.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices. Use of non-hazardous paint where practicable.

State: Connecticut | ID #: 0000000040

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: SLUDGES/PARTICULATES WITH HEAVY METALS

Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

State: Connecticut | ID #: 0000000043

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: ORGANIC SLUDGE CONTAINING HEAVY METALS

Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:
Cleaning/deactivation of piping systems or repair equipment, paint chips.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	1.6	1,260.0

Treatability Group:
MLLW CH, Organic Sludges/Particulates, Toxic Metals w/ Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Good operating practices. Substitution with non-hazardous paint where practicable.

State: Connecticut ID #: 0000000043

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: ORGANIC SLUDGE CONTAINING HEAVY METALS

Matrix: Organic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

State: Connecticut **ID #: 0000000044**

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: LEAD BRICKS, SHEETS, WOOL

Matrix: Elemental Lead **Waste Type: MLLW**

Waste Stream Description and Source:
Lead in outdated equipment.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	2.5	4,375.0

Treatability Group:
MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary.

Waste-Specific Radiation Effects on Treatment:
TBD - waste not yet generated.

Waste Minimization Activities:
1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

During equipment decommissioning, every effort will be made to determine which lead-bearing or other heavy metal components are contaminated in order to avoid declaring the entire unit mixed waste.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Connecticut | ID #: 0000000045

Site: KNOLLS ATOMIC POWER LABORATORY - WINDSOR

Waste Stream Name: MISCELLANEOUS LABORATORY CHEMICALS

Matrix: Lab Packs without Metals | Waste Type: MLLW

Waste Stream Description and Source:
Unusable chemicals.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.300	202.0

Treatability Group:
MLLW CH, Lab Packs without Metals

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat solely hazardous waste.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Radionuclide is Co-60.

Waste Minimization Activities:

Product change.

General Comments:
Due to nature of work (R & D) virtually any code is possible.

EPA CODES
Waste Characterization Basis: To Be Determined

No applicable RCRA Codes have been identified.

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

11.0 FLORIDA

There is one Florida facility that generates, expects to generate, and/or stores DOE-managed mixed waste, the Pinellas Plant.

Figure 11-1 shows the location of this facility.

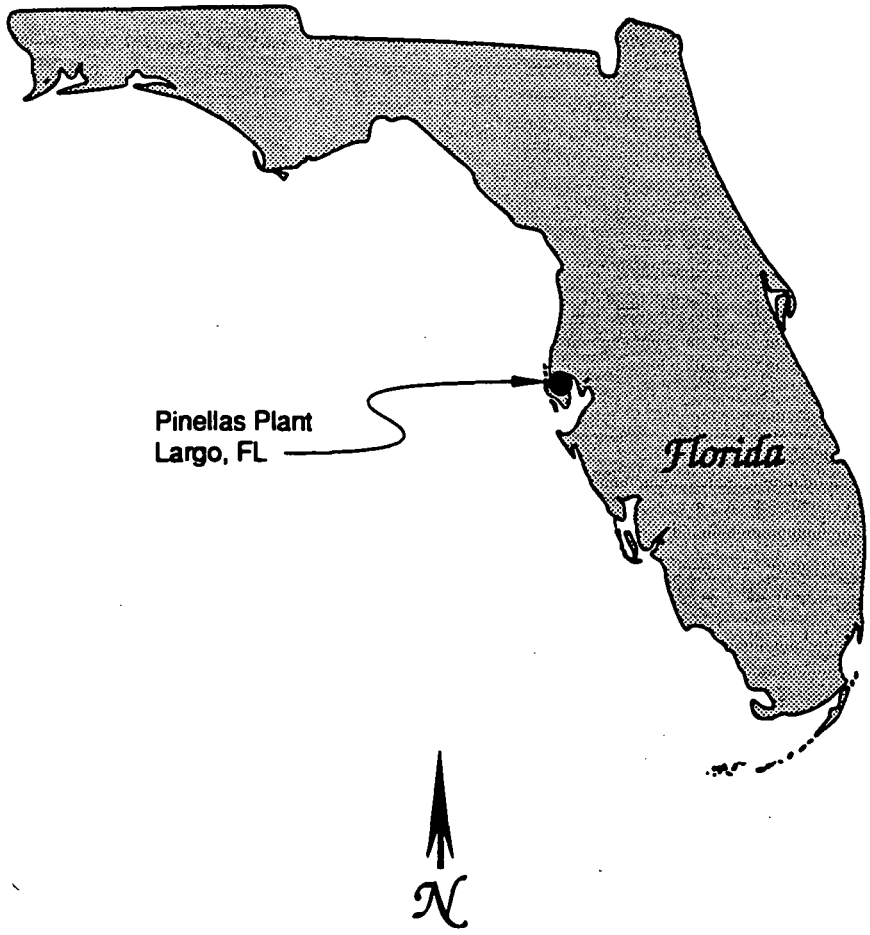

Figure 11-1. Florida Facility that Generates, Expects to Generate, and/or Stores DOE-managed Mixed Waste.

11.1 Pinellas Plant

Site Summary

The Pinellas Plant, located in the Tampa Bay area of Florida, produces high-technology nuclear weapon components. About 0.02 m^3 of potential mixed low-level waste (MLLW) has been generated by these activities. Waste streams are named, described, and their source identified in the Pinellas Plant Waste Profile Sheets (WPS). This waste is not subject to LDR. The waste was produced from a former vacuum system operation and will not be produced again in the next 5 years.

The majority of the Pinellas Plant waste (liquid mercury) is planned to be shipped to an off-site facility for treatment of the hazardous component, with the residue being returned as potential low-level waste.

General

The Pinellas Plant is located in Pinellas County, Florida (Figure 11-1), midway between Largo and Pinellas Park. The Pinellas Plant is the only the DOE facility in Florida. The facility is operated for DOE-HQ by Martin Marietta Specialty Components, Inc. The facility engages in small-volume production of selected high-technology nuclear weapon components, including neutron generators, lightning arrester connectors, capacitors, and optoelectronics. The area of the site is approximately 0.4 km^2. Pinellas employs about 1,100 people.

As of December 31, 1992, 0.02 m^3 (29.2 kg) of potential MLLW was in storage at the Pinellas Plant. This waste consists of tritiated liquid mercury (EPA code D009, elemental mercury) from a dismantled vacuum pump system, and a small amount of glassware and other material also contaminated with mercury. This waste was produced in the 1960s and is therefore not subject to LDR. It was a one-time-only waste stream and will not be produced in the future. The liquid mercury will be shipped off-site in 1993 to remove the hazardous component for a treatability study. The residue will be returned to the Pinellas Plant as a potential low-level waste. The glassware and other material cannot be used for the treatability study and will remain in storage at the Pinellas Plant. This material will be evaluated further to determine the concentration of mercury present in the debris and to determine the appropriate disposal options. Sampling and analysis is difficult because the material is heterogeneous.

11.1.1 Mixed Waste

Table 11.1-1 summarizes waste streams and inventories (both current and projected) by waste type and matrix. This inventory is based on current standards and analytical capability. The small volume of stored potential MLLW is reported as 1 waste stream and was produced from past activities. No new generation of mixed waste is expected from this source. This stream consists of potentially tritiated liquid mercury from a dismantled vacuum pump system, and a small amount of glassware and other material contaminated with mercury. No mixed transuranic waste or high-level waste is generated or stored at the Pinellas Plant. Detailed quantitative and qualitative information for this waste stream may be found in the WPS.

11.1.2 Treatment Facilities

There are no existing or planned mixed waste treatment facilities at the Pinellas Plant.

11.1.3 Technology Development

There is no site-specific technology development activities for the Pinellas Plant.

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Table 11.1.1
Mixed Wastes at Pinellas Plant

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE – MLLW						
CH, Liquid Mercury	1	<0.10	29.20	0	0.00	0.00
Sub-Total MLLW:	1	<0.10	29.20	0	0.00	0.00
TOTAL:	1	<0.10	29.20	0	0.00	0.00

WASTE

PROFILE

SHEETS

Pinellas Plant

PIN-WPS-1

April 1993

ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCA, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCA, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCA, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCA.

State: Florida	**ID #: 0000000002**
Site: PINELLAS PLANT	
Waste Stream Name: POTENTIAL TRITIUM CONTAMINATED MERCURY	
Matrix: Liquid Mercury	**Waste Type: MLLW**

Waste Stream Description and Source:

The tritiated mercury is a one-time waste resulting from a former vacuum system operation and is not a continuing waste stream.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.020	29.2	0.000	0.000	0.020	29.2	0.000	0.000

Treatability Group:

MLLW CH, Liquid Mercury, Toxic Metals w/ Mercury

Treatment Status:

Plan to treat off-site. The liquid mercury will be sent to a commercial off-site facility for a treatability study in FY93. After treatment, it will be returned as low-level (not mixed) waste. There will be a small amount of contaminated glassware and some other material remaining that could not be treated. This remaining material will be evaluated for mixed waste potential and is included in the five-year projection.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

Treatment must consider containment of radioactive off-gases to protect treatment facility personnel and the public. Treatment potentially involves tritium release, which must be reported.

Waste Minimization Activities:

Waste stream is no longer generated.

State: Florida	**ID #: 0000000002**
Site: PINELLAS PLANT	
Waste Stream Name: POTENTIAL TRITIUM CONTAMINATED MERCURY	
Matrix: Liquid Mercury	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009D	Tech.	Amalgamation

12.0 HAWAII

There is one Hawaii facility that generates, expects to generate, and/or stores DOE-managed mixed waste, the Pearl Harbor Naval Shipyard.

Figure 12-1 shows the location of this facilities.

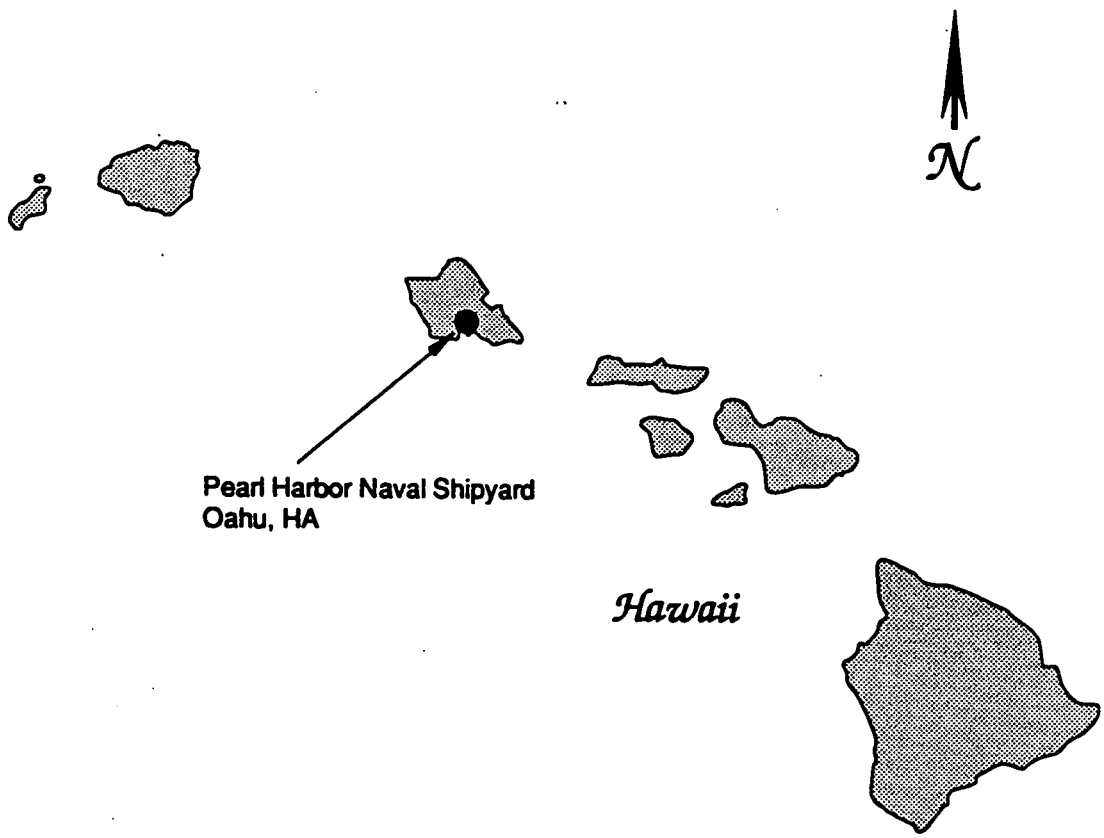

Figure 12-1. Hawaii Facility that Generates, Expects to Generate, and/or Stores DOE-managed Mixed Waste.

12.1 Pearl Harbor Naval Shipyard

Pearl Harbor Naval Shipyard (PHNS) is located on the southeast side of Pearl Harbor on the island of Oahu (Figure 12-1). The shipyard is a U.S. Department of the Navy facility that repairs, overhauls, and maintains Navy ships, including nuclear-powered ships. Drydocks, cranes, waste-handling facilities, and offices are located at the shipyard. Activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program. As described in Section 1.3, the Naval Nuclear Propulsion Program is a joint the DOE and the U.S. Department of the Navy program responsible for all activities relating to naval nuclear propulsion. The only mixed waste generated by the shipyard is mixed low-level waste (MLLW).

12.1.1 Mixed Waste

12.1.1.1 High Level Waste

There is no high-level waste currently stored or expected to be generated at PHNS.

12.1.1.2 Mixed Transuranic Waste

There is no mixed transuranic (MTRU) waste currently stored or expected to be generated at PHNS.

12.1.1.3 Mixed Low-Level Waste

PHNS has in storage as of December 31, 1992, about 1.5 m^3 (about 2260 kg) of MLLW consisting of cemented solids from chromate cleaning solution, aqueous liquid containing 1,1,1-trichloroethane and lead debris (Table 12.1-1). All waste stored on the site is subject to the LDR storage prohibitions. The 5-year projected generation of mixed waste is about 0.90 m^3 (700 kg) (Table 12.1-1).

The MLLW generated at the PHNS is waste resulting from ship overhaul, decommissioning, or routine maintenance in the shipyard. All waste streams are contact-handled, beta/gamma emitters with Co-60 as the primary radionuclide.

Waste minimization includes eliminating, wherever technically allowed, the use of acetone and other F-listed solvents, lead and chromium-based paints, lead shielding in disposal containers, and chemical paint removers.

12.1.2 Treatment Facilities

Small quantities of mixed waste are generated at PHNS. As of this date, no treatment facilities for the waste have been identified. There are no existing or planned treatment facilities at PHNS. Where possible, RCRA simple treatment by stabilization in the accumulation container will be performed in accordance with applicable regulations.

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Table 12.1-1
Mixed Wastes at Pearl Harbor Naval Shipyard

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	1	<0.10	15.00	0	0.00	0.00
CH, Inorganic Sludges/particulates	0	0.00	0.00	1	0.50	550.00
CH, Cemented Solids	1	1.37	2,185.00	0	0.00	0.00
CH, Organic Debris	0	0.00	0.00	1	0.25	125.00
CH, Heterogeneous Debris	1	0.15	61.22	1	0.14	25.00
Sub-Total MLLW:	3	1.54	2,261.22	3	0.89	700.00
TOTAL:	3	1.54	2,261.22	3	0.89	700.00

12.1.3 Technology Development

Since radiation levels are not of significance to affect treatment, these mixed waste streams should require technology comparable to that used in treating similar hazardous, but non-radioactive waste streams. Concentration of radionuclides in treatment residues will need to be considered. There are no site-specific technology development activities for PHNS.

12.1.4 Excess Heavy Metal Bearing Equipment

During equipment decommissioning, every effort is made to separate lead-bearing and other heavy metal components from the radioactive parts of the equipment to avoid declaring the entire unit mixed waste. The excess equipment containing recyclable heavy metals in storage at the shipyard as of December 31, 1992, was 0.90 m^3 (1,000 kg), with no more expected to become excess in the next 5 years.

WASTE

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Pearl Harbor Naval Shipyard

ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCA, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCA, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCA, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCA.

State: Hawaii | ID #: 0000000003

Site: PEARL HARBOR NAVAL SHIPYARD

Waste Stream Name: SOLIDIFIED CHROMATE SOLUTION

Matrix: Cemented Solids | Waste Type: MLLW

Waste Stream Description and Source:
Solidified chromate solution.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	1.4	2,185.0	1.4	2,185.0	0.000	0.000

Treatability Group:
MLLW CH, Cemented Solids, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:
1) Not Applicable.

This waste stream is no longer generated.

State: Hawaii | ID #: 0000000003

Site: PEARL HARBOR NAVAL SHIPYARD

Waste Stream Name: SOLIDIFIED CHROMATE SOLUTION

Matrix: Cemented Solids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Hawaii | ID #: 0000000004
Site: PEARL HARBOR NAVAL SHIPYARD
Waste Stream Name: LIQUID CONTAINING 1,1,1-TRICHLOROETHANE
Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:
Product of chemical testing.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.020	15.0	0.020	15.0	0.000	0.000

Treatability Group:
MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:
1) Not Applicable.

Waste is no longer generated.

State: Hawaii ID #: 0000000004
Site: PEARL HARBOR NAVAL SHIPYARD
Waste Stream Name: LIQUID CONTAINING 1,1,1-TRICHLOROETHANE
Matrix: Organic Liquids Waste Type: MLLW

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: Hawaii | ID #: 0000000005

Site: PEARL HARBOR NAVAL SHIPYARD

Waste Stream Name: CHROMIUM AND LEAD-BASED PAINT CHIPS

Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:
Paint removed from radioactive surfaces.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.500	550.0

Treatability Group:
MLLW CH, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:
Plan to treat at a planned facility. Simple treatment by stabilization in the accumulation container in accordance with applicable regulations.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Radiation Characteristics:
1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Predominant radionuclide is Co-60.

Waste Minimization Activities:
Use of chromium and lead-based paints has been eliminated wherever technically feasible.

State: Hawaii | ID #: 0000000005

Site: PEARL HARBOR NAVAL SHIPYARD

Waste Stream Name: CHROMIUM AND LEAD-BASED PAINT CHIPS

Matrix: Inorganic Sludges/Particulates | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Hawaii	ID #: 0000000006
Site: PEARL HARBOR NAVAL SHIPYARD	
Waste Stream Name: SOLID WASTE CONTAMINATED WITH CHROMATE	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:
Cloth and plastic containing chromate solution residue.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.250	125.0

Treatability Group:
MLLW CH, Organic Debris, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:
This waste cannot be minimized since it results from work on systems where chromate is required.

EPA CODES
Waste Characterization Basis: To Be Determined

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Hawaii	**ID #: 0000000007**
Site: PEARL HARBOR NAVAL SHIPYARD	
Waste Stream Name: LEAD SHAVINGS	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

Waste Stream Description and Source:
Lead solids and debris from decontaminating lead-shielded items.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.150	61.2	0.150	61.2	0.140	25.0

Treatability Group:
MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:
Have not identified a planned facility for this waste stream at this time.

Technology Status:
Technology exists. No modifications are necessary. Technology to treat this waste should be consistent with technology needed to treat equivalent solely hazardous waste.

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is Co-60.

Waste Minimization Activities:
Training and good work practices; engineering work controls.

EPA CODES
Waste Characterization Basis: To Be Determined

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

13.0 IDAHO

There are two Idaho sites that generate, expect to generate, and/or store DOE-managed mixed-waste.

- 13.1 Argonne National Laboratory - West (ANL-W)
- 13.2 Idaho National Engineering Laboratory (INEL)

Figure 13-1 shows the location of these facilities.

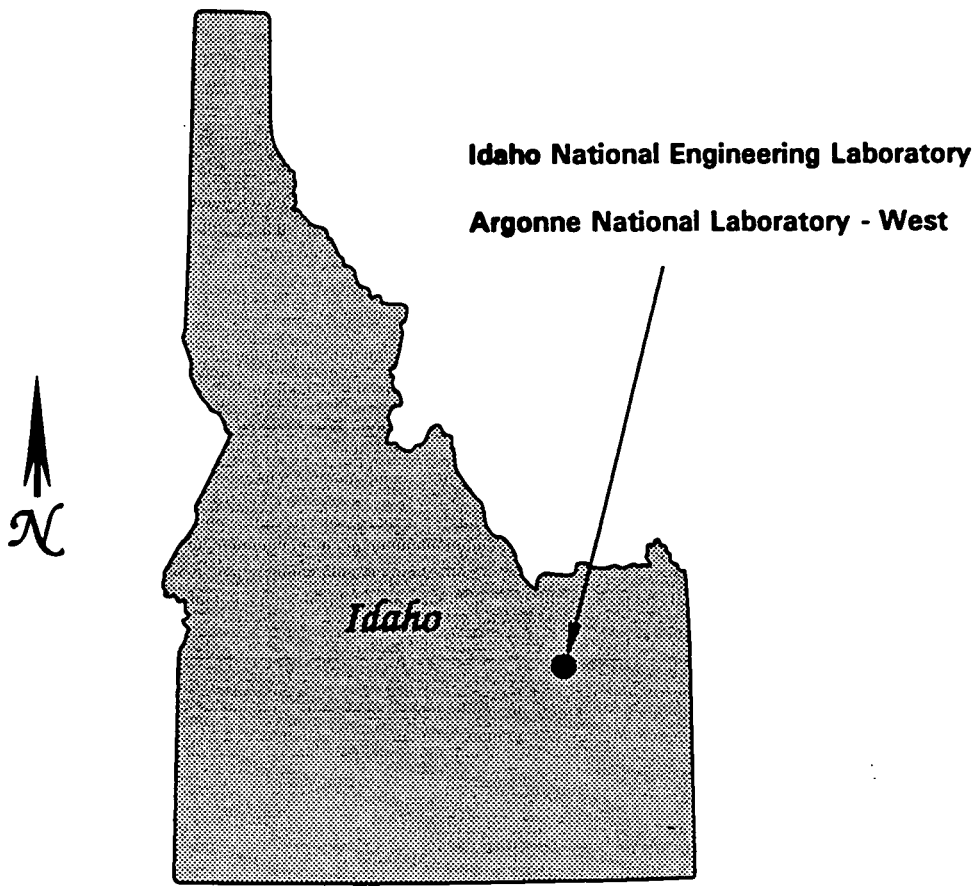

Figure 13-1. Idaho Facilities that Generate, Expect to Generate, and/or Store DOE-managed Mixed Waste.

13.1 Argonne National Laboratory - West

Site Summary

Argonne National Laboratory - West (ANL-W), is located on the southeastern portion of the Idaho National Engineering Laboratory (INEL), near Idaho Falls, Idaho. The laboratory is operated for the Department of Energy (DOE) by the University of Chicago. The primary mission of ANL-W is research and development in support of the nation's fast-reactor program. Approximately 10 m^3 of mixed wastes have been generated to date and an additional 6 m^3 are projected to be generated by the end of 1997.

Transuranic (TRU) Waste. ANL-W currently stores approximately 0.6 m^3 of mixed TRU (MTRU) waste and projects that approximately 2 m^3 of additional TRU wastes will be generated through the end of 1997. This waste, like other MTRU, will be processed as needed (characterized, repackaged, immobilized) to meet the waste acceptance criteria of the Waste Isolation Pilot Plant (WIPP). Planned disposal of TRU waste is at WIPP.

There are no existing facilities at ANL-W that can treat TRU Waste. Currently the ANL-W mixed TRU inventory is not being treated. Planned facilities that could be used to process TRU waste are located at INEL and include the Waste Experimental Reduction Facility (WERF), and FCF.

Mixed Low-Level Waste (MLLW). ANL-W currently stores about 9 m^3 of MLLW, which includes low-level waste and TRU waste reclassified as MLLW. Approximately 4 m^3 of MLLW is projected to be generated through the end of 1997, none of which is from environmental restoration activities.

There are no existing MLLW treatment facilities at ANL-W. Because ANL-W is located on the INEL site, all mixed waste treatment facilities (existing and planned) are addressed under Section 13.2, INEL No on-site treatment of mixed waste is currently performed at ANL-W.

Treatment technology exists for the ANL-W MLLW. Treatment technologies and facilities at INEL have been identified in the ANL-W WPS. These facilities include the WERF, the Lead Reduction Facility, and FCF.

General

ANL-W operates the following facilities at INEL: the Experimental Breeder Reactor-II (EBR-II); the Transient Reactor Test Facility; the Zero Power Physics Reactor; the Hot Fuel Examination Facility; the Fuel Cycle Facility; and the Fuel Manufacturing Facility and Laboratory. ANL-W is responsible for all wastes generated at these facilities, including mixed wastes. The Radioactive Scrap and Waste Facility (RSWF) stores both MLLW and MTRU waste, along with remote-handled TRU waste. The Radioactive Sodium Storage Facility (RSSF) holds mixed waste contaminated with sodium and sodium potassium (NaK). The Na and NaK may be either radioactive (contact-handled) or nonradioactive. In addition to the above 2 mixed waste facilities, there is a process material storage facility (Building 703) containing solid radioactive sodium.

Mixed Waste Sources. The following ANL-W activities generate mixed waste:

- Research and development
- Reactor operations
- Laboratory analytical testing
- Facility maintenance and other support functions
- Decontamination and decommissioning of facilities

Twenty-two mixed waste streams were reported for the site, and eight of these are no longer being generated. Detailed quantitative and descriptive information for each waste stream may be found in the Waste Profile Sheets (WPS).

Mixed-Waste Inventory. As of December 23, 1992, the stored mixed waste inventory was about 10 m^3. Ninety-six percent of this volume is subject to the Land Disposal Restrictions (LDR). All 5 MTRU streams and 4 of the MLLW streams with volumes in storage must be remotely handled. The other eight MLLW streams can be contact-handled. No high-level waste is generated or stored at ANL-W.

As of December 23, 1992, the RCRA characteristics of the 18 streams with waste volumes stored on-site have been characterized by process knowledge. Characterization of the waste is the basis for determining the applicable RCRA hazardous waste codes for each stream, as noted in the Waste Profile Sheets.

Waste Minimization. Efforts to minimize production of mixed waste rely primarily on improving operating practices such as waste segregation, changing inventory procedures across the site, and reducing the use of hazardous materials when possible.

Treatment Technology. No mixed waste is currently treated at ANL-W. Treatment technologies and facilities have been identified for all ANL-W mixed waste except for 1 remote-handled MLLW stream that has radioactivity levels too high for existing or planned facilities.

Waste Management. A Land Disposal Restrictions (LDR) consent order is currently being negotiated between the State of Idaho and DOE.

13.1.1 Mixed Waste

Eighteen mixed waste streams resulting from past laboratory operations at ANL-W are currently in storage at either ANL-W or INEL. Four additional streams to be generated in the next 5 years, but which have not been previously generated, have also been reported. Activities at ANL-W that have generated mixed wastes include decontamination, spill cleanups, reactor maintenance and operations, shielding of high-exposure-rate radioactive materials, and sample analyses.

The total mixed waste storage volume from the 18 mixed waste streams that have been generated at ANL-W is approximately 10.0 m^3. Of these 18 streams, 14 are mixed low-level waste and 4 are MTRU waste. Table 13.1-1 summarizes the waste matrices associated with these 18 waste streams. Ninety-five percent of the MLLW and all of the MTRU waste that has been generated at ANL-W are subject to the LDR. Table 13.1-1 also summarizes the total current inventory, current inventory subject to LDR, and 5-year projection volumes for each type of waste. No mixed wastes from environmental restoration or decontamination and decommissioning are currently in storage or will be generated in the next 5 years. No high-level waste is generated at ANL-W. Data reflect quantities in storage as of December 23, 1992.

Treatment technologies and facilities have been identified for all but 1 ANL-W mixed waste stream, an MLLW stream consisting of remote-handled cadmium debris. The exposure rate associated with this waste is too high for it to be treated at the INEL Waste Experimental Reduction Facility (WERF).

Table 13.1-1
Mixed Wastes at Argonne National Laboratory - West

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE -- MLLW						
CH, Organic Liquids	1	<0.10	18.50	0	0.00	0.00
CH, Aqueous Liquid	1	0.20	-	1	<0.10	75.00
RH, Inorganic Sludges/particulates	0	0.00	0.00	1	0.55	-
CH, Heterogeneous Debris	5	1.52	-	2	0.75	302.50
RH, Heterogeneous Debris	1	0.20	-	1	0.10	-
CH, Reactive Metals	1	1.99	1,921.41	1	0.85	832.10
RH, Reactive Metals	2	4.23	4,060.24	1	1.15	-
CH, Liquid Mercury	1	<0.10	-	1	0.10	-
CH, Elemental Lead	1	0.42	-	1	0.36	-
RH, Elemental Lead	1	0.87	9,812.56	0	0.00	0.00
Sub-Total MLLW:	14	9.47	-	9	3.94	-
WASTE TYPE -- MTRU						
RH, Inorganic Sludges/particulates	0	0.00	0.00	1	0.75	-

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Table 13.1-1 (Continued)
Mixed Wastes at Argonne National Laboratory - West

Waste Type/Matrix	Number of Waste Streams	Inventory		Number of Waste Streams	Five-Year Projection	
		(m^3)	(kg)		(m^3)	(kg)
WASTE TYPE – MTRU						
RH, Heterogeneous Debris	1	0.20	-	1	0.20	-
RH, Reactive Metals	2	0.15	131.13	1	<0.10	4.50
RH, Elemental Lead	1	0.25	2,826.47	0	0.00	0.00
RH, Multiple	0	0.00	0.00	2	1.20	-
Sub-Total MTRU:	4	0.60	-	5	2.15	-
TOTAL:	18	10.07	-	14	6.09	-

Waste-minimization activities at ANL-W include the use of non-hazardous materials, when possible, and the substitution of characteristic materials for listed materials. Materials substitution is not practical for several ANL-W waste streams, however, because the hazardous component is an integral part of the process or waste. For example, operation and maintenance of the sodium-cooled EBR-II will produce wastes containing sodium and radioactive components. The generation of some mixed wastes containing sodium cannot be avoided while this reactor is in operation.

13.1.1.1 High-Level Waste

There is no HLW stored or expected to be generated at ANL-W.

13.1.1.2 Mixed Transuranic Waste

MTRU waste generated at ANL-W is currently reported and managed as seven waste streams. Two of these waste streams are not expected to be active in the future, and their reporting relates only to current inventories. In addition, 3 waste streams have not yet been generated, and their reporting relates only to future projections. All the MTRU waste streams are remotely handled. Four waste streams contribute to the reported MTRU waste inventory of approximately 0.6 m^3 in storage. These waste streams fall into 3 categories: reactive metals, heterogeneous debris, and elemental lead (Table 13.1-1). This is 6 percent of the overall ANL-W inventory in storage. All of this volume is subject to the LDR requirements. The current strategy for managing this remotely handled inventory is to ship it to the Waste Isolation Pilot Plant (WIPP) without additional processing or treatment of the waste unless necessary to meet future transport or acceptance requirements. The final WIPP waste acceptance criteria require that reactive sodium streams be rendered chemically stable before the waste can be accepted for disposal. Additional information concerning these MTRU waste streams is provided in the WPS.

An estimated 2.2 m^3 of MTRU waste will be generated as 5 separate waste streams over the next 5 years. These waste streams will fall into 4 categories: inorganic sludge particulate, reactive metals, heterogeneous debris, and multiple matrices (Table 13.1-1). This volume of MTRU waste will account for approximately 35 percent of the mixed waste generated at ANL-W from 1993 through 1997.

13.1.1.3 Mixed Low-Level Waste

Past laboratory activities at ANL-W have generated a total of 14 MLLW streams. These streams fall into seven categories: heterogeneous debris, elemental lead, reactive metals, organic liquids, liquid mercury, heterogeneous debris, and aqueous liquids (Table 13.1-1). Future laboratory activities at ANL-W are expected to generate nine MLLW streams in six categories: heterogeneous debris, elemental lead, reactive metals, liquid mercury aqueous liquids, and inorganic sludges/particulates.

The approximate volume associated with the 14 MLLW streams generated at ANL-W and in storage at INEL is 9 m^3. This volume accounts for 94 percent of the ANL-W inventory. A total of 95 percent of this volume is subject to the LDR requirements. Six of these 14 waste streams, categorized as organic liquids, heterogeneous debris, elemental lead, and reactive metals, on Table 13.1-1, are no longer generated. The 14 waste streams fall into six waste categories: heterogeneous debris (six streams, 18 percent of the MLLW volume); elemental lead (2 streams, 13 percent of the volume); reactive metals (3 streams, 66 percent of the volume); organic liquids (1 stream, <1 percent of the volume); liquid mercury/heterogeneous debris (1 stream, <1 percent of the volume); and aqueous liquids (1 stream, 2 percent of volume).

Four of the 14 MLLW streams, 2 reactive-metal waste streams, 1 heterogeneous debris, and 1 elemental-lead stream, are remotely handled. These remotely handled wastes account for 56 percent of the ANL-W MLLW volume currently in storage at INEL. Additional information on all waste streams is provided in the WPS.

ANL-W expects to generate a total of nine MLLW streams from 1993 through 1997. The approximate volume of these wastes will be 4 m^3. These nine waste streams will account for 65 percent of the mixed wastes generated at ANL-W from 1993 through 1997.

The nine MLLW streams to be generated in the future will fall into six waste categories (Table 13.1-1): heterogeneous debris (3 streams, 21 percent of the volume); elemental lead (1 stream, 10 percent of the volume); reactive metals (2 streams, 50 percent of the volume); liquid mercury (1 stream, 2 percent of the volume); aqueous liquids (1 stream, 2 percent of the volume); and inorganic sludges/particulates (1 stream, 14 per cent of the volume).

Three of these nine waste streams, the inorganic sludges/particulates stream, 1 reactive-metal stream and 1 heterogeneous debris stream, will be remotely handled. These wastes will account for 45 percent of the MLLW generated at ANL-W in the future.

13.1.2 Treatment Facilities

Because ANL-W is located on the INEL site, all mixed waste treatment facilities (existing and planned) are addressed under Section 13.2, Idaho National Engineering Laboratory. No on-site treatment of mixed wastes is currently performed at ANL-W. Treatment technologies and facilities at INEL have been identified in the attached Waste Profile Sheets for all but 1 of the ANL-W mixed waste streams, a MLLW stream consisting of remotely handled cadmium debris. The exposure rate associated with this waste is too high for treatment at the INEL WERF.

13.1.3 Technology Development

Treatment technology exists for all ANL-W mixed waste streams.

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WASTE

PROFILE

SHEETS

Argonne National Laboratory - West

ANL-W-WPS-1

April 1993

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: Idaho | ID #: ANL-111

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: URANIUM/CADMIUM FROM IFR EXPERIMENTS

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

Cadmium metal ingots contaminated with depleted uranium. There are also metal containers, poly bottles, "oil dri", tissues and rags. This waste is generated from Integral Fast Reactor Fuel Cycle Facility Demonstration support experiments. Specifically, the waste was generated as part of the FCF electrorefiner development experiments in the ANL-W Analytical Lab.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.220	-	0.220	-	0.250	-

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Inorganic debris treatment is the identified treatment technology. Treatment facility and date of treatment are currently unknown.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Radionuclides include:
K-40 (8.5E-9 Ci)
Ru-106 (2.8E-9 Ci)
Cs-134 (1.8E-9 Ci)
Cs-137 (2.2E-8 Ci)
U-235 (7.9E-13 Ci)

State: Idaho **ID #: ANL-111**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: URANIUM/CADMIUM FROM IFR EXPERIMENTS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

U-238 (5.7E-11 Ci)

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ANL-142**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: LEAD CONTAMINATED SOLIDS - IFR EXPERIMEN	
Matrix: Elemental Lead	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is contaminated shielding material and gloves. Contaminated shielding material and gloves out of the experimental fuels laboratory for Integral fast reactor development.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.420	-	0.420	-	0.360	-

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Macroencapsulation to be done at EG&G Idaho's Lead Recycling Facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Radionuclides include:
Nb-95 (1.7E-4 Ci)
Zr-95 (1.0E-4 Ci)
Cs-137 (1.6E-4 Ci)
Ce-144 (4.9E-4 Ci)
Pu-239 -trace-
note: Curie amounts are totals for both containers stored at MWSF.

State: Idaho	**ID #: ANL-142**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: LEAD CONTAMINATED SOLIDS - IFR EXPERIMEN	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ANL-143
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: LEAD SOLIDS, RADIOACTIVE	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of contaminated shield plugs in the ANL-771 Radioactive Scrap and Waste Facility. Plugs are an integral part of waste containers stored at RSWF.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.870	9,812.6	0.870	9,812.6	0.000	0.000

Treatability Group:

MLLW RH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at EG&G Idaho's planned Lead Reduction Facility.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Not Applicable.

Waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ANL-176
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ETHANOL-VERMICULITE-SPILL IGNITABLE SOLN	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is ethanol (hazardous constituent) in absorbent media of diatomite, vermiculite and "kitty litter" with other miscellaneous cleanup materials such as cloth rags, paper teri-towels, plastic booties and gloves and disposable Tyvek coveralls. Generated from a spill of ethanol absorbed in floor dry and denatured alcohol with sodium salts absorbed on diatomite.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.420	131.8	0.000	0.000	0.420	131.8	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Ignitable, Corrosive, or Reactive Only

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Volatile radionuclide
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not Reported

Waste Minimization Activities:

1) Not Applicable.

Waste stream is the result of a spill cleanup and is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

State: Idaho	**ID #: ANL-176**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ETHANOL-VERMICULITE-SPILL IGNITABLE SOLN	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ANL-178
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: POTASSIUM CHROMATE ON BLOTTER PAPER	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is mostly blotter paper with absorded pump cooling water containing chrome salts. There are also some booties and gloves (plastic) and some polyethylene sheeting used in the waste cleanup. Waste stream generated from a spilled solution containing chrome salts.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.230	78.2	0.230	78.2	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat on-site at the existing WERF facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Not Applicable.

This waste stream is the result of a spill and is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical,

State: Idaho	**ID #: ANL-178**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: POTASSIUM CHROMATE ON BLOTTER PAPER	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ANL-179**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: SODIUM (CONTAMINATED) TIN BISMUTH ALLOY	
Matrix: Reactive Metals	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste consists mainly of radioactive tin-bismuth alloy, paper towels and cloth rags, plastic contained in small metal cans inside larger drums. The alloy is used as a sealant for the EBR-II Reactor rotating shield plugs. The waste is generated during maintenance of the plugs.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	2.0	1,921.4	2.0	1,921.4	0.850	832.1

Treatability Group:

MLLW CH, Reactive Metals

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment is by deactivation by water reaction.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Idaho **ID #: ANL-179**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM (CONTAMINATED) TIN BISMUTH ALLOY

Matrix: Reactive Metals **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003D	Tech.	Deactivation

State: Idaho	ID #: ANL-180
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: SODIUM - LLW	
Matrix: Reactive Metals	Waste Type: MLLW

Waste Stream Description and Source:

Sodium is used as a primary and secondary coolant for the EBR-II Reactor. Waste sodium metal is a hazardous constituent of much of the LLW stored at the ANL-W Radioactive Scrap and Waste Facility (RSWF) and the Radioactive Sodium Storage Facility (RSSF). Waste at RSWF is remote-handled. Waste stored at RSSF is contact-handled. The waste is generated during maintenance and operational activities. The sodium typically coats waste metal equipment, experiments and components removed during reactor operations and maintenance activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	4.0	3,902.3	4.0	3,902.3	1.2	-

Treatability Group:

MLLW RH, Reactive Metals

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment is be deactivation by water reaction.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.
2) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Idaho **ID #: ANL-180**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM - LLW

Matrix: Reactive Metals **Waste Type: MLLW**

General Comments:

This waste stream is both RH (at RSWF) and CH (at RSSF).

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003D	Tech.	Deactivation

State: Idaho	ID #: ANL-182
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: SODIUM POTASSIUM - NAK	
Matrix: Reactive Metals	Waste Type: MLLW

Waste Stream Description and Source:

Sodium potassium alloy (NaK) is used as a coolant for some components of the EBR-II Reactor. Waste NaK metal is a hazardous constituent of some LLW stored at the ANL-W Radioactive Scrap and Waste Facility (RSWF) and the Radioactive Sodium Storage Facility (RSSF). NaK waste at RSWF is remote-handled. NaK waste stored at RSSF is contact-handled. The waste is generated during maintenance and operational activities. At RSWF, the waste is metal pieces and rods from reactor experiments. At RSSF, waste NaK is contained in stainless steel tubing and small components of heat exchangers on spent EBR-II sodium "cold traps."

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.190	157.9	0.190	157.9	0.000	0.000

Treatability Group:

MLLW RH, Reactive Metals

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Treatment is deactivation by water reaction.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled
2) Activation Products
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.
2) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Not Applicable.

Waste stream is no longer generated.

State: Idaho **ID #: ANL-182**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM POTASSIUM - NAK

Matrix: Reactive Metals **Waste Type: MLLW**

General Comments:

Waste can be either contact-handled or remote-handled. Radionuclides include (in varying concentrations) Cr-51, Mn-54, Co-58, Co-60, Fe-59, Cs-137, and U-235.
Waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003D	Tech.	Deactivation

State: Idaho	**ID #: ANL-183**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: RADIOACTIVE PAINT STRIPPING WASTE	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is methylene chloride (major hazardous constituent) and methanol based paint stripper liquids absorbed in a solid matrix of paint solids, absorbent compounds (vermiculite and/or Floor Dry), rags, gloves, booties, and Tyvek coveralls. Pigments in stripped paint solids also contain chromium and lead compounds. The waste is generated after occasional stripping of painted surfaces (floors or equipment) that are radioactively contaminated. Part of this waste stream comes from maintenance of shipping casks; paint is stripped off cask welds for certification inspection.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.440	274.6	0.440	274.6	0.500	302.5

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. BDAT for this waste stream is incineration.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Raw material changes: raw material purification; and substitution.

General Comments:

Radionuclides present include:
Co-60 (8.02E-4 Ci)
Cs-137 (6.12E-4 Ci)
Eu-152 (1.37E-4 Ci)
Eu-154 (8.42E-5 Ci)

State: Idaho	**ID #: ANL-183**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: RADIOACTIVE PAINT STRIPPING WASTE	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

Pu-239 (1.39E-7 Ci)
Curie content is for the entire waste volume.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ANL-184

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SOLVENT DECON SOLUTION (NON-HALOGENATED)

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is liquid mixture containing xylene, toluene, methyl isobutyl ketone, and other non-listed organic liquids. The waste was generated after a decontamination solution was used on radioactively contaminated floors.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.020	18.5	0.020	18.5	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. BDAT for this waste is incineration.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Radionuclides include:
Co-60 (5.0E-9 Ci)
Cs-137 (1.8E-8 Ci)

State: Idaho ID #: ANL-184

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SOLVENT DECON SOLUTION (NON-HALOGENATED)

Matrix: Organic Liquids Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F005A	Conc.	Incineration

State: Idaho **ID #: ANL-185**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: XYLENE DECONTAMINATION WASTE

Matrix: Heterogeneous Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is xylene (hazardous constituent) absorbed in vermiculite with other miscellaneous cleanup materials -- cloth rags, paper towels, and plastic booties and gloves. Solvent used to radiologically decontaminate floor and equipment surfaces.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.210	-	0.210	-	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Organics

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Change in operations status; process interruptions; work stoppages; mission changes; and new processes.

General Comments:

Radionuclides include:
Co-60 (2.5E-9 Ci)
Cs-137 (1.28E-6 Ci)

State: Idaho **ID #: ANL-185**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: XYLENE DECONTAMINATION WASTE

Matrix: Heterogeneous Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ANL-218
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ELECTROREFINER STRIPPED SALT - BA AND CD	
Matrix: Inorganic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of chloride salts containing residual amounts of metallic cadmium and barium. This waste stream will be generated from the Fuel Cycle Facility operations.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.550	-

Treatability Group:

MLLW RH, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Stabilization (specified treatment technology) may be performed in FCF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

General Comments:

Radionuclides (in varying amounts) will include:
Sr-90, Y-90, I-129, Cs-134, and Cs-137.

State: Idaho	**ID #: ANL-218**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ELECTROREFINER STRIPPED SALT - BA AND CD	
Matrix: Inorganic Sludges/Particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization

State: Idaho	**ID #: ANL-224**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: CONTAMINATED HG-IBC CASK MAINT.	
Matrix: Liquid Mercury	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is paper, teri-towels, vacuum container bags and liquid mercury extracted from the interbuilding transfer cask (IBC) and any of the related parts on which mercury was found. Mercury is used as the emergency cooling mechanism on the IBC. On occasion, mercury has been found in the cooling cavity which carries radioactive components. When this occurs, the cavity is cleaned out.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.019	-	0.019	-	0.100	-

Treatability Group:

MLLW CH, Liquid Mercury, Toxic Metals w/ Mercury

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Radionuclides present include:
Mn-54 (7.8E-5 Ci)
Co-60 (6.1E-4 Ci)
Cs-137 (2.1E-3 Ci)

State: Idaho **ID #: ANL-224**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: CONTAMINATED HG-IBC CASK MAINT.

Matrix: Liquid Mercury **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D009D	Tech.	Amalgamation

State: Idaho	ID #: ANL-242
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: RADIOACTIVE CADMIUM DEBRIS	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is composed of sludge, rags, filters, crushed cans, plastic bottles, teri-towels and petro-set. The waste stream is generated from waste received from the L & O Jr. Cave Cleanup. Because this waste is currently stored in a satellite accumulation area, and not in a RCRA-permitted storage area, it is assumed that the volume is less than 55 gallons (0.2 cubic meters).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.200	-	0.200	-	0.100	-

Treatability Group:

MLLW RH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Have not identified a planned facility for this waste stream at this time. Technology exists but needs modification or verification.

Proposed treatment is incineration. However, the waste is highly radioactive and currently unacceptable under waste acceptance criteria for the EG&G Idaho WERF.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Activation Products
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.
2) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
3) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Idaho	**ID #: ANL-242**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: RADIOACTIVE CADMIUM DEBRIS	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

General Comments:

Radionuclide conc. (in microCi/gm) includes:
Co-60 1.0E-3
Sr-90 7.0E-1
Y-90 7.0E-1
Rh-106 2.0E-1
Cs-134 5.0E-3
Cs-137 4.0E-1
Ce-144 2.0E-2
Eu-155 5.0E-2

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ANL-244**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ICP WASTE SOLUTIONS W/HEAVY METALS	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste is an aqueous solution with dissolved heavy metals including barium, cadmium, chromium, lead, silver and/or mercury. During sample analyses, waste liquid solutes are collected in proper DOT containers. The liquids are initially prepared for use in an inductively coupled plasma GCMS. The waste is generated from Integral Fast Reactor Fuel Cycle Facility Demonstration support experiments in the ANL-W Analytical Lab. Because this waste is stored in a satellite accumulation area, and not in a RCRA-permitted storage area, it is assumed that the volume is less than 55 gallons (0.2 cubic meters).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.200	-	0.200	-	0.075	75.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury

Treatment Status:

Plan to treat on-site at the existing TAN-726 Treatment facility. Treatment identified is ion exchange. This could be performed at the INEL TAN portable water treatment facility, which is operational.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Beta/gamma emitter
2) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Idaho **ID #: ANL-244**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: ICP WASTE SOLUTIONS W/HEAVY METALS

Matrix: Aqueous Liquid **Waste Type: MLLW**

General Comments:

Radionuclides (in varying amounts) include:
H-3, Cs-134, and Cs-137.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation
D006B	Conc.	Chemical Precipitation
D009C	Conc.	Chemical Precipitation

State: Idaho	ID #: ANL-246
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ELECTROREFINER STRIPPER CADMIUM	
Matrix: Multiple	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream consists of waste cadmium metal. This waste stream will be generated from the Electrorefiner station in the ANL-W Fuel Cycle Facility Integral Fast Reactor demonstration.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	1.1	-

Treatability Group:

MTRU RH, Multiple, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

General Comments:

Radionuclides (in varying amounts) will include:
Sr-90, Y-90, I-129, Cs-134, Cs-137, U-235, U-238, andPu-239.

State: Idaho ID #: ANL-246

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: ELECTROREFINER STRIPPER CADMIUM

Matrix: Multiple Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

State: Idaho **ID #: ANL-177T**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: LEAD SHIELD PLUGS, TRU

Matrix: Elemental Lead **Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream consists of TRU-contaminated shield plugs in the ANL-771 Radioactive Scrap and Waste Facility (RSWF). Plugs are an integral part of waste containers stored at RSWF.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.251	2,826.5	0.251	2,826.5	0.000	0.000

Treatability Group:

MTRU RH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Not Applicable.

Waste stream is no longer generated.

State: Idaho ID #: ANL-177T

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: LEAD SHIELD PLUGS, TRU

Matrix: Elemental Lead Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho | ID #: ANL-180T

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM - TRU

Matrix: Reactive Metals | Waste Type: MTRU

Waste Stream Description and Source:

Sodium is used as a primary and secondary coolant for the EBR-II Reactor. Waste sodium metal is a hazardous constituent of some of the TRU waste stored at the ANL-W Radioactive Scrap and Waste Facility (RSWF). The waste is generated during maintenance and operational activities. The sodium typically coats waste metal equipment, experiments and components removed during reactor operations and maintenance activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.140	126.1	0.140	126.1	0.005	4.5

Treatability Group:

MTRU RH, Reactive Metals

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.
2) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Technology changes: process changes; equipment, piping, or layout changes; automation; changes in operational settings; and energy, water conservation.

State: Idaho **ID #: ANL-180T**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM - TRU

Matrix: Reactive Metals **Waste Type: MTRU**

General Comments:

Radionuclides include Co-60, Sr-90, Cs-137, Eu-154, U-235, U-238, Pu-239, Pu-240. Nuclide concentrations vary.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003D	Tech.	Deactivation

State: Idaho	**ID #: ANL-182T**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: SODIUM POTASSIUM - NAK - TRU	
Matrix: Reactive Metals	**Waste Type: MTRU**

Waste Stream Description and Source:

Sodium potassium alloy (NaK) is used as a coolant for some components of the EBR-II Reactor. Waste NaK metal is a hazardous constituent of some transuranic wastes stored at the ANL-W Radioactive Scrap and Waste Facility(RSWF). The remote-handled NaK waste at RSWF is contained in stainless steel capsules or tubing and placed inside carbon steel waste cans which then placed in stainless steel outer cans. The entire package is then stored in RSWF storage liners (carbon steel soil storage vaults). The NaK is generated during maintenance and operational activities. NaK waste is in canisters with TRU waste metal pieces and rods from reactor experiments.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.006	5.0	0.006	5.0	0.000	0.000

Treatability Group:

MTRU RH, Reactive Metals

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.
2) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Not Applicable.

State: Idaho **ID #: ANL-182T**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: SODIUM POTASSIUM - NAK - TRU

Matrix: Reactive Metals **Waste Type: MTRU**

Waste stream is no longer generated.

General Comments:

Radionuclides (in varying concentrations) include Mn-54, Co-58, Co-60, Cs-137, Ce-144, Eu-144, U-238, and Pu-239.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D003D	Tech.	Deactivation

State: Idaho	**ID #: ANL-241T**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: TRU-CD-HOT CELL WASTE	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream consists of metallic cadmium, salts, and associated cleanup materials (paper towels and cloth rags). The waste is contaminated with activation and fission products as well as with plutonium. This waste stream is generated for Integral Fast Reactor/Fuel Cycle Facility demonstration support experiments. Because this waste is currently stored in a satellite accumulation area, and not in a RCRA-permitted storage area, it is assumed that the volume is less than 55 gallons (0.2 cubic meters).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	-	0.200	-	0.200	-	0.200	-

Treatability Group:

MTRU RH, Heterogeneous Debris, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled
2) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.
2) Many activation products are short-lived and treatment could be delayed to allow radiation levels to subside.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.

State: Idaho	**ID #: ANL-241T**
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: TRU-CD-HOT CELL WASTE	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

General Comments:

Radionuclides (in varying amounts) include:
Mn-54, Co-60, Cs-137, Ce-144, and Pu-239.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ANL-243T
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ELEMENT HARDWARE FCF WASTE	
Matrix: Inorganic Sludges/Particulates	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream consists of metal ends of EBR-II fuel elements. This waste stream will be generated from the "Element Chopper" station in the ANL-W Fuel Cycle Facility Integral Fast Reactor demonstration.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.750	-

Treatability Group:

MTRU RH, Inorganic Sludges/Particulates, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

General Comments:

Radionuclides (in varying amounts) will include:
Sr-90, Y-90, I-129, Cs-134, Cs-137, U-235, U-238, and Pu-239.

State: Idaho **ID #: ANL-243T**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: ELEMENT HARDWARE FCF WASTE

Matrix: Inorganic Sludges/Particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization

State: Idaho	ID #: ANL-246T
Site: ARGONNE NATIONAL LABORATORY - WEST	
Waste Stream Name: ELECTROREFINER INSOLUBLES W/CADMIUM	
Matrix: Multiple	Waste Type: MTRU

Waste Stream Description and Source:

This waste stream consists of cadmium metal with other heavy metals and "noble" metals (that is, they are not reactive in the FCF electrorefining process). This waste stream will be generated from the Electrorefiner station in the ANL-W Fuel Cycle Facility Integral Fast Reactor demonstration. This waste stream includes inorganic sludges/particulates, and inorganic sludges/particulates.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.095	-

Treatability Group:

MTRU RH, Multiple, Toxic Metals w/o Mercury

Treatment Status:

Treatment of most mixed transuranic waste to meet LDR treatment standards is not applicable because DOE plans to ship these wastes to the Waste Isolation Pilot Plant (WIPP), pending issuance of a No-Migration Determination of the operational phase. Pretreatment to meet the WIPP Waste Acceptance Criteria may be required.

Technology Status:

Not Applicable.

Radiation Characteristics:

1) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

1) Improved operating practices: changes in material handling and inventory procedures; waste segregation; and changes in production scheduling.
2) Waste avoidance due to recycling/reuse: solvent, oil, and metals recycling; chemical exchange and reuse; and packaging material reuse.

State: Idaho **ID #: ANL-246T**

Site: ARGONNE NATIONAL LABORATORY - WEST

Waste Stream Name: ELECTROREFINER INSOLUBLES W/CADMIUM

Matrix: Multiple **Waste Type: MTRU**

General Comments:

Radionuclides (in varying amounts) will include:
Sr-90, Y-90, I-129, Cs-134, Cs-137, U-235, U-238, and Pu-239.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D006B	Conc.	Stabilization

13.2 Idaho National Engineering Laboratory

Site Summary

The Idaho National Engineering Laboratory (INEL) covers nearly 2,300 km^2 (~890 square miles) of dry, cool desert in southeastern Idaho (Figure 13-1). Most of this land is undeveloped. Local population centers are Idaho Falls, 21 miles to the east, Pocatello, 44 miles to the south, and Arco, 7 miles to the west. The INEL was established in 1949 to conduct research and development on nuclear reactors and related equipment; since that time 52 reactors have been built on-site and 12 are still operating or operable.

The INEL is a multi-program laboratory whose primary mission is to provide the nation with innovation in nuclear technologies and unique scientific and engineering capabilities in non-nuclear programs that provide commercialization potential or enhance the quality of the environment. Areas of primary emphasis include nuclear reactor technology research and development, waste management and environmental restoration (ER), advanced energy production and utilization technology development, defense-related support, safety and health, technology transfer, education, and non-nuclear research and development projects.

INEL is a government-owned site managed by the DOE under the administration of 3 DOE field offices that share responsibility for conducting programs: 1) the Idaho Field Office (DOE-ID); 2) the Pittsburgh Naval Reactors Office (PNR); and 3) the Chicago Field Office (DOE-Chicago). Five Management and Operations (M&O) contractors support DOE's activities at the INEL: EG&G Idaho, Inc. (EG&G Idaho); Westinghouse Idaho Nuclear Company (WINCO); Babcock and Wilcox Idaho, Inc. (B&W) for the Department of Defense; Westinghouse Electric Corporation (WEC); and Argonne National Laboratory-West (ANL-W). (The data presented in this section does not include data for ANL-W. ANL-W is discussed in section 13.1.) DOE-ID operates the Radiological and Environmental Services Laboratory (RESL), which performs various laboratory functions and generates small quantities of mixed waste. In addition to the major contractors, DOE-ID has many other support contractors to provide services which do not generate mixed waste on a routine basis. Approximately 10,000 people are employed at the INEL site.

The DOE report in response to section 3021(a)2 of the Act is summarized below:

- ***Inventories*** - The 133 waste streams that resulted from operations are named, described, and their sources identified in the INEL Waste Profile Sheets (WPS). These and other information in this INEL Section (a) specify the high level, transuranic, and low level radioactive wastes currently stored at INEL that are known to contain RCRA-regulated hazardous wastes, (b) identify the amounts of these wastes that are subject and not subject to the land disposal restriction (LDR) requirements of Section 3004, (c) give the number of waste streams in each category, (d) provide an inventory of wastes that are not characterized by sampling and analysis, and (e) estimate the amount of waste the Department expects to generate in the next 5 years.

- ***Waste minimization*** - Applicable waste minimization actions are noted by waste streams in the INEL WPS. These actions are 1 or more of the following: good operating practices, technology changes, raw material changes, product changes,

waste avoidance due to solvent recycling, change in operations status and other actions.

- ***EPA hazardous waste codes*** - Assignment of applicable hazardous waste codes for each waste stream is also made in the INEL WPS. The basis for determining these codes is sampling and analysis, or process knowledge as detailed by waste stream in the WPS. The number of codes assigned to individual INEL waste streams varies as reported in the WPS.

- ***LDR treatment*** - Land disposal prohibitions, Best Demonstrated and Available Technologies (BDAT) treatment technologies are identified by waste stream in the WPS.

- ***Radiation Effects*** - Whether or how the radionuclide content of each waste stream alters or affects use of treatment technology is described by waste stream in the WPS. These effects are 1 or more of the following: off-gas treatment, radiation confinement/containment, dust control, worker exposure, and radiation effects on waste form. As discussed in Chapter 6.0, Technology Development, facility and technology modifications will have to be developed and implemented to address these effects.

Information provided in the Federal Facility Compliance Act inventory and treatment technology status report reflects the best information available at the time of the report. Information regarding development of treatment technologies and capacities is being provided to assist the reader in understanding the DOE-ID's present status, circumstances, and plans.

However, there are a number of current and future activities which may influence the choices of treatment technologies and capacities discussed in this report. Examples of these activities include the development and negotiation of a LDR Consent Order with the State of Idaho for development of treatment. DOE is also preparing a Programmatic Environmental Impact Statement (PEIS) that will address DOE's national policy and strategy for waste management (and environmental restoration) activities.

DOE-ID is preparing the INEL Environmental Restoration and Waste Management EIS, which will address similar issues on a site-specific basis. In addition to these activities, the DOE facilities will be developing site treatment plans for mixed waste in accordance with the Federal Facility Compliance Act of 1992, which will be reviewed and discussed among the states and other interested parties. As a consequence of the above on-going activities, the reader should recognize planned treatment or treatment capacity as presented in this report may change.

High-Level Waste (HLW). The total volume of HLW currently in storage at INEL from 3 waste streams (calcine solids, liquid waste, and HEPA filters) is approximately 11,000 m^3, or 1.3×10^7 kg. A tabular summary of the mixed waste types at INEL is provided in Table 13.2-1, Operations Mixed Wastes at INEL.

HLW at the Idaho Chemical Processing Plant (ICPP) is generated at the rate of 700 m^3/yr for liquid waste, and 465 m^3/yr of calcine solids. The 700 m^3/yr liquid waste generation is based on 189.5 m^3/yr from the Process Equipment Waste (PEW) Evaporator bottoms and 226.5 m^3/yr from the Liquid Effluent Treatment and Disposal (LET&D) system. Both streams are sodium based-waste currently managed as HLW. In addition, 141.5 m^3/yr of HLW is generated from the periodic dissolution of the calcine bed

Table 13.2-1
Operations Mixed Wastes at INEL[a]

	# of Waste Streams	Inventory		# of Waste Streams	Five-Yr Projection	
		Kg	m^3		Kg	m^3
WASTE TYPE--HLW MATRIX						
Inorganic Debris (HEPA Filters)[b]	1	19,588	20	1	32,664	34
Aqueous Liquids (Liquid Waste)	1	7,397,621	7,700	1	3,362,555	3,500
Calcine Solids	1	5,879,668	3,600	1	3,797,285	2,325
Sub-Total	3	13,296,877	11,320	3	7,192,504	5,859
WASTE TYPE--MTRU MATRIX						
Inorganic Debris	4	755,044	1,244	0	0	0
Inorganic Sludges/Particulates	5	5,235,130	5,119	0	0	0
Organic Sludges/Particulates	2	1,462,138	1,372	0	0	0
Heterogeneous Debris	7	7,686,191	22,997	0	0	0
Other	2	4,093,569	7,470	0	0	0
Sub-Total	20	19,232,072	38,202	0	0	0
WASTE TYPE--MLLW MATRIX						
Aqueous Liquid	16	151,608	149	8	9,870	10
Cemented Solids	1	1,956	3	2	36,750	20
Elemental Lead[c]	9	3,729,550	7,774	7	559,600	199

[a] Data are as of December 31, 1992

[b] These filters are managed as HLW at the INEL because they are contaminated with HLW particles.

[c] One of the elemental lead waste streams is also categorized as heterogeneous debris.

[d] One of the inorganic debris waste streams is also categorized as elemented lead.

[e] Liquid HLW at the INEL is generated at a rate of 1172 m^3 per year. Operation of the NWCF reduces the HLW inventory by 400 m^3 per year; this allows INEL to realize a 2000 m^3 HLW volume reduction over the next 5 years.

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Table 13.2-1
Operations Mixed Wastes at INEL[a]

	# of Waste Streams	Inventory		# of Waste Streams	Five-Yr Projection	
		Kg	m^3		Kg	m^3
Heterogeneous Debris	12	3,014,755	9,140	7	1,726,495	2,021
Inorganic Debris[d]	17	381,366	702	11	115,115	131
Inorganic Sludges/Particulates	13	1,704,741	1,702	7	34,075	96
Lab Packs With Metals	3	139	0.4	1	1,278	1
Organic Debris	6	4,903	13	4	3,731	24
Organic Liquids	18	27,343	29	5	15,508	14
Organic Sludges/Particulates	7	1,382,402	1,411	3	58,924	97
Reactive Metals	2	692	1	0	0	0
Soils With < 50% Debris	1	14	<0.1	0	0	0
Soils	1	243	1	1	8,625	6
Other Waste Types	4	1,559,102	2,290	0	0	0
Sub-Total	110	11,958,814	23,216	56	2,569,971	2,620

[a] Data are as of December 31, 1992

[b] These filters are managed as HLW at the INEL because they are contaminated with HLW particles.

[c] One of the elemental lead waste streams is also categorized as heterogeneous debris.

[d] One of the inorganic debris waste streams is also categorized as elemented lead.

[e] Liquid HLW at the INEL is generated at a rate of 1172 m^3 per year. Operation of the NWCF reduces the HLW inventory by 400 m^3 per year; this allows INEL to realize a 2000 m^3 HLW volume reduction over the next 5 years.

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Table 13.2-1
Operations Mixed Wastes at INEL[a]

	# of Waste Streams	Inventory		# of Waste Streams	Five-Yr Projection	
		Kg	m^3		Kg	m^3
WASTE TYPE--HLW MATRIX[c]						
Sub-Total	3	13,296,877	11,320	3	7,192,504	5,859
WASTE TYPE--MTRU MATRIX						
Sub-Total	20	19,232,072	38,202	0	0	0
WASTE TYPE--MLLW MATRIX						
Sub-Total	110	11,958,814	23,216	56	2,569,971	2,620
TOTAL	133	44,487,817	72,737	59	9,762,475	8,479

[a] Data are as of December 31, 1992

[b] These filters are managed as HLW at the INEL because they are contaminated with HLW particles.

[c] One of the elemental lead waste streams is also categorized as heterogeneous debris.

[d] One of the inorganic debris waste streams is also categorized as elemented lead.

[e] Liquid HLW at the INEL is generated at a rate of 1172 m^3 per year. Operation of the NWCF reduces the HLW inventory by 400 m^3 per year; this allows INEL to realize a 2000 m^3 HLW volume reduction over the next 5 years.

with the remaining volume from the D&D and miscellaneous sources. In addition, 6.8 m^3 of HEPA filters are generated which contain HLW particles. However, the operation of the calciner and resulting generation of 465 m^3 of calcine solids removes ~1100 m^3 of liquid waste from the tank farm inventory. The net effect is a reduction in liquid HLW inventory at the rate of approximately 400 m^3/yr. DOE is evaluating alternate means of segregation or recycle to reduce HLW generation.

Activities initiated by DOE-ID are intended to examine the technical options for preparing the HLW at INEL for disposal in a geologic repository. Other sites are planning to vitrify the HLW into a borosilicate glass waste form, but the INEL is developing the glass ceramic waste form in order to realize a drastic reduction in MLLW generated by other vitrification techniques. This waste form is more dense than borosilicate glass and is capable of higher waste loadings to reduce the volume produced for final disposal.

Mixed Transuranic (MTRU) Waste. INEL currently stores 38,202 m^3 of MTRU waste. The waste stream profile for these 20 streams is presented in the WPS. Three of the MTRU streams are reported to be remote-handled, but account for only about 0.3 percent of overall INEL MTRU waste. The remaining waste streams are contact-handled waste. There are 2 treatment facilities planned for this waste, the Idaho Waste Processing Facility and the Waste Characterization Facility. This waste, like other MTRU, will be processed as needed (characterized, repackaged, and immobilized) to meet the waste acceptance criteria of the Waste Isolation Pilot Plant (WIPP). Planned disposal of MTRU waste is at WIPP. The technology development required for the MTRU waste involves an evaluation of engineered alternatives (incineration, compaction, stabilization) to comply with the transportation and disposal requirements for the WIPP.

Only a limited amount (1,121 m^3) of the MTRU waste at INEL is not considered to be mixed waste. The INEL has initiated efforts to improve waste characterization and verification for MTRU stored in above-ground storage. This effort has been focused on historical wastes such as those in the INEL inventory received prior to implementation of the RCRA.

Mixed Low-Level Wastes (MLLW). The INEL's current inventory of MLLW, including both alpha-MLLW and other MLLW, is reported to be approximately 23,000 m^3 (about 12 x 10^6 kg) resulting from 110 waste streams. The vast majority of the volume of these wastes are alpha-MLLW received at the INEL as MTRU waste, but are now classified as alpha-MLLW. No more of this alpha-MLLW is expected to be received or generated at the INEL within the next 5 years. None of this alpha-MLLW is subject to the LDR storage prohibitions, as it was all received prior to the applicable LDR effective date. Some of the non-alpha MLLW (about 148 m^3) is subject to the storage prohibitions because it was placed into storage after the LDR effective date.

DOE estimates that the INEL planned operations for the next 5 years will result in the projected generation of approximately 2,600 m^3 of MLLW (about 2.6 x 10^6 kg). This projected volume will result from 56 waste streams that can be grouped into 11 categories based on waste matrix (Table 13.2-1).

Treatment technologies and existing or planned facilities have been identified for all but 4 of the INEL MLLW waste streams. These 4 waste streams are discussed in Section 13.2.1.3. Additional information concerning these historical wastes must be obtained before RCRA characteristics and treatment options can be identified.

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General

At the INEL, Babcock and Wilcox is responsible for the Specific Manufacturing Capability (SMC), which involves fabricating military armor from depleted uranium at Test Area North (TAN). The SMC manufacturing development occurs within the restricted portion of the TAN Complex.

EG&G Idaho operates the largest number of facilities for DOE-ID. Besides many office complexes and the INEL Research Center in Idaho Falls, EG&G Idaho is responsible for most of TAN, the Test Reactor Area (TRA), the Central Facilities Area (CFA), the Power Burst Facility (PBF), the Waste Reduction Operations Complex (WROC), and the RWMC. Most mixed wastes from these facilities are stored at the Mixed Waste Storage Facility (MWSF) awaiting treatment or disposal options. Most of these wastes will be sent to the Waste Experimental Reduction Facility (WERF), which when operational, will treat a significant portion of the MLLW currently in storage at the INEL . The EG&G Idaho Waste Management Program mission is to plan, develop, and operate facilities and projects for the safe and cost-effective management of radioactive, mixed, hazardous, and solid wastes. The EG&G Idaho Waste Management Program also provides technology transfer and consultation to DOE-ID and other agencies in support of waste management activities elsewhere.

Until recently, WINCO was responsible for reprocessing spent nuclear fuel at the ICPP in order to recover enriched uranium for recycling. This recovery generated high-level liquid waste, which was sent to a tank farm for interim storage before calcining into a granular solid. Due to the DOE decision to curtail reprocessing, WINCO's mission is shifting to conditioning spent nuclear fuel for storage and eventual disposal. HLW generated at ICPP must be treated and stored for eventual permanent disposal. An inventory of liquid HLW remains in the tank farm awaiting solidification into calcine. After solidification, the calcine will be stored in stainless steel storage bins contained in concrete vaults. Liquid low-level waste (LLW) generated from maintenance, laboratories and decontamination activities at the ICPP is reduced in volume by the PEW Evaporator. In addition, other INEL contractors transfer liquid LLW to the ICPP for treatment in the PEW.

The Naval Reactors Facility (NRF) is also located at the INEL and operated by Westinghouse Electric Corporation under contract with DOE. NRF is engaged in research and development for design and operation of naval nuclear propulsion plants. Activities relating to naval nuclear propulsion systems are performed in accordance with the requirements and authority of the Naval Nuclear Propulsion Program. As described in Section 1.3, the Program is a joint DOE and Department of Navy program responsible for all activities related to naval nuclear propulsion. NRF prototype facilities are also used to provide full-scale testing of propulsion plant hardware, as well as to train personnel to operate these plants. The prototype plants are operated and maintained in the same manner as actual shipboard propulsion plants, hence the type of maintenance and overhaul work performed is similar. The only mixed waste generated by NRF is MLLW.

The NRF site encompasses 17.8 km^2, but only about 0.34 km^2 is developed. Consistent with longstanding practice, other INEL facilities provide for the storage and disposal (or contracted treatment and disposal) of wastes, including low-level radioactive waste, hazardous waste and mixed waste, for NRF. NRF generated very little mixed waste (less than 20 kg per year) that requires storage, treatment and disposal.

In addition, as a part of the DOE complex and DOE-ID waste minimization program, extensive INEL management efforts have been established to identify and eliminate potential sources of mixed waste prior

to generation. In addition to this aggressive waste minimization effort, decisions have been made to not generate mixed waste except where necessary or when treatment is available. INEL contractors have implemented management procedures to identify and eliminate potential sources of mixed waste and/or change materials and processes to eliminate potential future generation of mixed waste.

The State of Idaho has authority for RCRA enforcement including LDRs through the Third Thirds. DOE-ID and the State of Idaho have initiated negotiations for an LDR Consent Order addressing management and treatment of INEL mixed wastes.

13.2.1 Mixed Waste

Historically, the DOE has received waste from both off-site and on-site generators for storage and treatment. In the past few years, this activity has been limited to on-site waste receipt only. Environmental Restoration (ER) and Decontamination and Decommissioning (D&D) waste are discussed in section 13.2.4 of the report.

Table 13.2-2, Source Categories for INEL Mixed Wastes, presents a summary of the operations activities at the INEL that generate mixed wastes. Based on the data in this report, approximately 95 percent of the mixed waste stored as of December 31, 1992, is the result of production activities.

Newly-generated mixed wastes will result primarily from production operations, maintenance laboratory activities, and laboratory activities. The DOE defines a production source waste as a waste which is derived from a process, operation, or project. Treatment source waste is a waste derived from the treatment of a waste, thereby producing a secondary mixed waste.

The total amount of mixed waste in storage at the INEL prior to December 31, 1992, was approximately 73,000 m^3 (4 x 10^7 kg) from 133 waste streams (including NRF wastes in storage). This total volume does not include the waste associated with the 18 streams generated at the ANL-W. This volume does include contributions from HLW, mixed transuranic waste (MTRU), and mixed low-level waste (MLLW) (Table 13.2-1 and Figure 13.2-1, Summary of INEL Mixed-Waste Types by Volume). Alpha-contaminated MLLW (waste with a transuranic content between 10-100 nCi/gm), which traditionally has been managed as MTRU waste, is now included in the INEL MLLW volume data presented in this report.

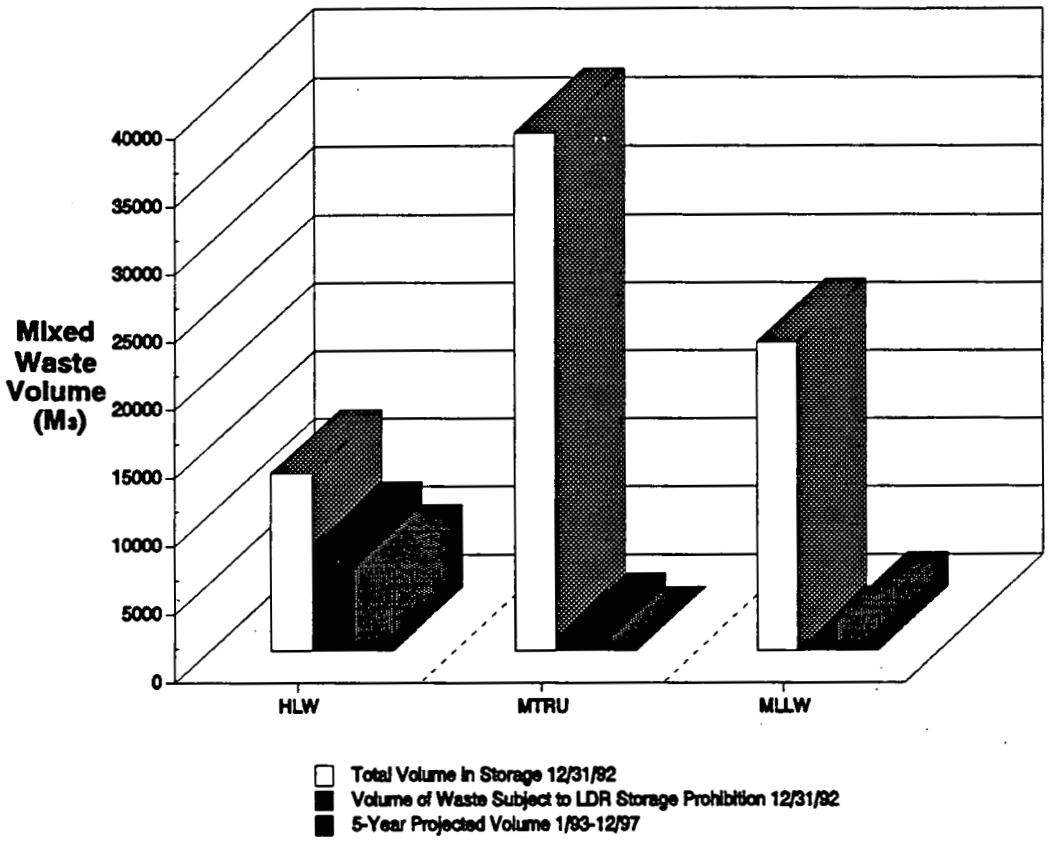
Existing facilities and treatment units presented in this report reflect all available INEL mixed waste treatment capacity. Where potential management exceptions exist, notes have been added to that particular treatment unit description. The DOE anticipates that while the generation of MLLW and small quantities of HLW will continue, little MTRU waste (ANL-W and ICPP MTRU HEPA filters) is expected to be generated on-site in the next 5 years and no receipts of MTRU waste are expected. Generation of MTRU waste at ANL-W is discussed in section 13.1 of this report. More than half of the MLLW waste streams will not be produced in the future. Only a small fraction of the INEL's MTRU waste and MLLW was placed into storage after the applicable LDR effective date and is subject to the LDR storage prohibitions (Figure 13.2-1).

Table 13.2-1 presents the waste matrices, number of waste streams, and quantities for each of the 3 waste types reported in this report. Additional information is provided in the following text of this section.

Table 13.2-2 Source Categories for INEL Mixed Wastes

Source	Current Inventory (Pre-Dec. 31, 1992) (%)	5-Yr Projected Estimate (Jan. 1993-Dec. 1997) (%)
Production	95.5	72.5
Treatment	<1.0	1.7
Laboratory	3.9	<1.0
Maintenance	<1.0	25.2
Research and Development	<1.0	<1.0
Characterization	0	<1.0
Recycling Operations	<1.0	0
Other	<1.0	<1.0
Construction	1.0	<1.0
Environmental Monitoring	0	<1.0

Figure 13.2-1. Summary of INEL Mixed-Waste Types by Volume



13.2.1.1 High-Level Waste

The reprocessing of spent nuclear fuel to recover highly enriched uranium began at the INEL in the late 1950s. During the reprocessing operations, waste solutions (i.e., high-level liquid waste) were sent to storage in underground stainless steel tanks. Beginning in 1963, liquid waste was withdrawn from tank storage and calcined (dried to a granular solid by evaporating waste and decomposing nitrates in a high-temperature fluidized bed). This calcined solid is also categorized as HLW. Environmental controls on the process resulted in the production of contaminated high-efficiency particulate air (HEPA) filters which are considered to be MTRU waste contaminated with HLW particles. In addition, decontamination activities at the INEL have resulted in a sodium-bearing liquid waste which is managed in the same manner as the high level-liquid waste (i.e., stored in the same tanks and blended with the liquid prior to calcining). All these streams are remote-handled. The HLW is currently being characterized through sampling and analysis and process knowledge, while the RCRA characteristics of the calcine solids and HEPA filters were identified through process knowledge and limited sampling and analysis.

The total volume of HLW currently in storage at INEL from these 3 waste streams (calcine solids, liquid waste, and HEPA filters) is approximately 11,000 m^3, or 1.3 x 10^7 kg. The contribution of each waste stream to this total volume is summarized in Table 13.2-1, and is discussed below. Additional details on each waste stream are given in the waste profile sheets at the end of this section.

Approximately 5,900 m^3 (about 7 x 10^6 kg) of HLW will be generated at the INEL from 1993 through 1997. The relative contribution of HLW to this total volume is summarized in Figure 13.2-1. Approximately 2,300 m^3 (about 3.8 x 10^6 kg) of calcine solids and approximately 3,500 m^3 (about 3.4 x 10^6 kg) of high-level liquid waste will be generated during this time frame. In addition, approximately 34 m^3 of HEPA filters contaminated with HLW particles will be generated.

HLW at ICPP is generated at the rate of 700 m^3/yr for liquid waste, and 465 m^3/yr for calcine solids. The 700 m^3/yr liquid waste generation is based on 189.5 m^3/yr from the PEW evaporator bottoms and 226.5 m^3/yr from the LET&D system. Both streams are sodium-based waste currently managed as HLW. In addition, 141.5 m^3/yr of HLW is generated from the periodic dissolution of the calcine bed with the remaining volume from the D&D and miscellaneous sources. In addition, 6.8 m^3 of HEPA filters are generated which contain HLW particles. However, the operation of the calciner and resulting generation of 465 m^3 of calcine solids removes ~1100 m^3 of liquid waste from the tank farm inventory. The net effect is a reduction in liquid HLW inventory at the rate of approximately 400 m^3/yr. DOE is evaluating alternate means of segregation or recycle to reduce HLW generation.

Since 1963, approximately 3,600 m^3 (about 5.9 x 10^6 kg) of calcine solid have been produced at the INEL. This calcine is stored in 5 storage bins or 'sets,' some of which are partially underground, and are full; 2 additional bin 'sets' have been constructed. A sixth bin set has completed an operational readiness review prior to acceptance of the calcine solid. DOE-ID has determined that the calcine solids currently in storage are not subject to LDR storage prohibitions.

Currently the INEL HLW tank farm contains approximately 7,700 m^3 (about 7.4 x 10^6 kg) of liquid HLW (Table 13.2-1). All of this volume is subject to LDR storage prohibitions. In addition, approximately 20 m^3 (20,000 Kg) of MTRU HEPA filters are stored at the INEL. These calcine contaminated HEPA filters will be treated in the HEPA filter leach system. The resulting leachate will be calcined and the calcine will eventually be vitrified. For this reason, these filters are reported on Table 13.2-1 as HEPA filters contaminated with HLW particles.

The 3 HLW streams generated at INEL have been assigned multiple EPA codes including those associated with the characteristic metals, spent solvents, and a number of F-, P-, and U-listed wastes. The presence of F-, P-, and U-listed materials is the result of contributions to the tank wastes from an analytical laboratory connected to the HLW tank farm. The EPA Best Demonstrated Available Technology (BDAT) for the treatment of the characteristic metals in HLW is vitrification (HLVIT; 40 CFR 268.42). The DOE has expressed to the EPA the position that to utilize glass ceramic would meet the vitrification standard.

The DOE-ID has initiated activities intended to examine the technical options for preparing the HLW at INEL for disposal in a geologic repository. Other sites are planning to vitrify the HLW into a borosilicate glass waste form, but the INEL is developing the glass ceramic waste form in order to realize a drastic reduction in MLLW generated by other vitrification techniques.

13.2.1.2 Mixed Transuranic Waste

As the historical recipient of defense-generated MTRU waste from the Rocky Flats Plant and other DOE facilities for the last several decades, approximately 38,200 m^3 (about 1.9 x 10^7 kg) of MTRU waste is stored at the Radioactive Waste Management Complex (RWMC). The INEL is not expecting to generate or receive MTRU waste in the next 5 years, except for ANL-W which is presented in another section of this report. Approximately 3 percent of the MTRU waste inventory is believed to be subject to the LDR prohibitions because the majority of the waste was placed in storage prior to the applicable LDR effective date (Figure 13.2-1).

The INEL manages and reports MTRU waste volume as 20 distinct waste streams that can be categorized into 5 groups, depending on the waste matrix (Figure 13.2-2, Summary of INEL Mixed TRU Waste Matrices by Volume). The number of waste streams, volumes and mass associated with these matrices are summarized in Table 13.2-1. All MTRU waste at the INEL is expected to be solid in nature with only very limited free liquid present. Additional information about individual waste streams is available in the waste profile sheets at the end of this section.

Three of the MTRU waste streams are suspected to be remote-handled (RH), but these streams account for only 0.3 percent (approximately 100 m^3) of the overall INEL MTRU waste inventory. One RH stream is described as a solid inorganic debris that includes sample plutonium and americium sources and other hot cell waste that was generated from past research and development efforts. The second remote-handled stream represents a much smaller volume, and is an inorganic sludge that was generated when a wastewater catch basin from an INEL analytical laboratory was remediated as part of a corrective action. This volume of inorganic sludge is estimated to be 2 m^3. The third RH stream is a small volume of heterogeneous lead debris from various sources.

Of the 20 MTRU waste streams, seven are identified as heterogeneous debris from various sources and operations. Together these seven streams represent more than half the overall volume of the MTRU waste at INEL. Four inorganic debris waste streams represent approximately 1250 m^3 of MTRU, which is about 3 percent of the total volume of MTRU waste. Five streams are characterized as inorganic

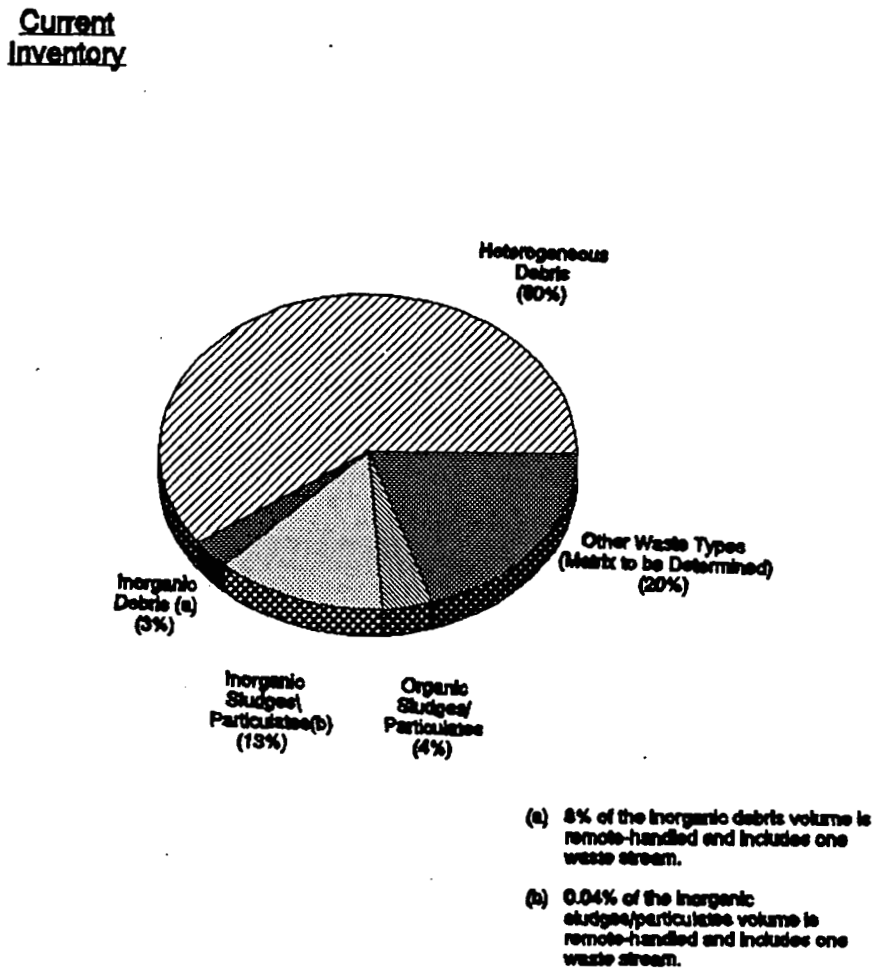


Figure 13.2-2. Summary of INEL Mixed TRU Waste Matrices by Volume

Note: Current inventory only; no mixed TRU production is expected in the next 5 years.

sludges/particulates, which include resins, smaller particulate materials and uncemented sludges. These 5 streams account for an additional 13 percent of the total MTRU waste inventory. Two other sludge-derived streams are identified as containing organic components in addition to the solid matrices, and this organic sludge/particulate volume of approximately 1,372 m^3 is 4 percent of the contact-handled volume. Finally, 2 streams that predate package inventory records (pre-1973) cannot be reliably categorized with respect to matrix and contribute an additional 7,470 m^3 (20 percent) to the total volume of MTRU waste in storage at INEL.

An additional amount (1,121 m^3) of the MTRU waste inventory at the INEL is not considered to be mixed waste. The INEL has initiated efforts to improve waste characterization and verification for MTRU stored in above ground storage. This effort has been focused on historical wastes such as those in the INEL inventory received prior to implementation of the Resource Conservation and Recovery Act (RCRA).

Only 1 MTRU waste stream at the INEL has been identified for which potential treatment or disposal facilities have not been identified. This waste stream is a NRC licensee-generated waste stream which may require treatment in an NRC-licensed facility, which has not yet been identified. Supporting information for this waste can be found on data sheet ID-EGG-142T.

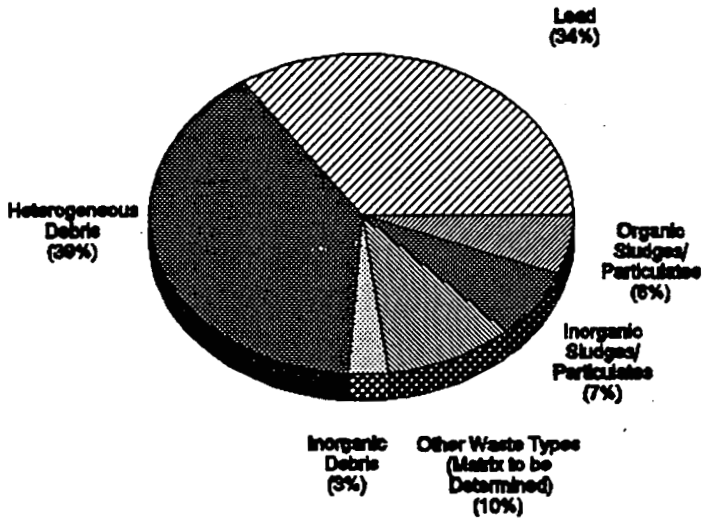
13.2.1.3 Mixed Low-Level Waste

At the INEL, MLLW is typically managed as either non-alpha MLLW or as alpha-MLLW, depending on the concentration of transuranic elements. Alpha-MLLW is generally considered to have between 10 and 100 nCi/gm of transuranic elements present. Historically, this alpha-MLLW was shipped to the INEL as MTRU waste and has been managed at the same facilities as the MTRU waste. While the current plans call for MTRU waste to be shipped to WIPP, alpha-MLLW is expected to be processed at the INEL in the proposed Idaho Waste Processing Facility. Other MLLW streams at the INEL will be processed at a variety of treatment facilities that will be discussed in the following sections.

The INEL's current inventory of MLLW, including both alpha-MLLW and other MLLW, is reported to be approximately 23,000 m^3 (about 12 x 10^6 kg) resulting from 110 waste streams. The vast majority of the volume of these wastes are alpha-MLLW received at the INEL as MTRU waste, but are now classified as alpha-MLLW. No more of this alpha-MLLW is expected to be received or generated at the INEL within the next 5 years. None of this alpha-MLLW is subject to the LDR storage prohibitions, as it was all received prior to the applicable LDR effective date. Some of the non-alpha MLLW (about 148 m^3) is subject to the storage prohibition because it was placed into storage after the LDR effective date.

The entire inventory of MLLW at the INEL can be grouped into 14 categories based on waste matrix. The number of waste streams associated with each matrix are given in Table 13.2-1. Additional details concerning individual waste streams are provided in the Waste Profile Sheets at the end of this section. All data reported are as of December 31, 1992. As shown in Figure 13.2-3 (Summary of the Major INEL MLLW Matrices by Volume), waste streams categorized as heterogeneous debris and lead represent the largest fractions of the total MLLW inventory. Other MLLW matrices in the current inventory include organic sludges/particulates, inorganic sludges/particulates, other (uncategorized) wastes, and inorganic debris. Less than 1 percent of the MLLW volume currently in storage is remote-handled.

Current Inventory



Five-Year Projection

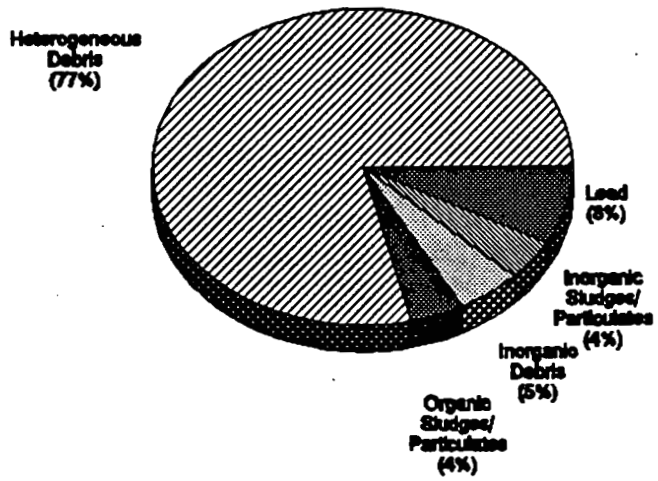


Figure 13.2-3. Summary of the Major INEL MLLW Matrices by Volume

Note: Waste categories not shown contribute less than 2 percent of the total volume.

However, some of the wastestreams do contain multiple elements that are both remote- and contact-handled. Wastes received prior to RCRA regulation have typically been characterized by process knowledge, while more recently generated waste is typically characterized by both process knowledge and analytical testing.

The DOE estimates that the INEL planned operations for the next 5 years will result in the projected generation of approximately 2,600 m^3 of MLLW (about 2.6 x 10^6 kg). This projected volume will result from 56 waste streams that can be grouped into 11 categories based on waste matrix (Table 13.2-1).

As shown in Figure 13.2-1, the generation of MLLW at INEL will decrease in the next 5 years. in comparison to the current inventory. Out of the identified 110 MLLW waste streams, approximately 70 are not planned to be generated from 1993 through 1997. In general, these waste streams are from 1-time generation, facility decontamination and spill cleanup activities that are not expected to occur again. Changes in operations and successful waste minimization activities have helped to reduce the generation of MLLW.

Treatment technologies and existing or planned facilities have been identified for all but 4 of the INEL MLLW waste streams. Table 13.2-3, INEL MLLW Streams For Which No Treatment Has Been Identified, summarizes these 4 waste streams. The volume currently in storage from these waste streams is approximately 2,300 m^3. Wastes placed into storage prior to 1973, "Uncategorized (A-MLLW)," make up 92 percent of this volume. Additional information concerning these historical wastes must be obtained before RCRA characteristics and treatment options can be identified. The total volume of alpha-LLW in storage at the INEL is about 26,000 m^3, of which about 3250 m^3 is not considered to be mixed waste.

13.2.2 Treatment Facilities

The DOE-ID operates several mixed waste treatment facilities. Currently these facilities accept only mixed waste from INEL waste generators. Waste must meet applicable waste acceptance criteria for each facility. As existing facilities resume operations, approximately 60 percent of the current inventory of non-alpha-contaminated MLLW will be treatable. When all proposed treatment facilities become operational, the INEL is anticipated to be able to treat essentially all of the mixed waste streams generated by INEL waste generators.

The INEL is currently storing MTRU waste pending the opening of WIPP. Assuming that the WIPP No Migration Petition is approved and the WIPP waste acceptance criteria finalized, most of the currently stored INEL MTRU waste is expected to be shipped to WIPP for disposal. Waste that contains from 10 to 100 nCi/gm of transuranic contamination will be addressed as MLLW and is expected to be treated at the proposed Idaho Waste Processing Facility.

Some MTRU waste will not be acceptable by WIPP in its present form. This waste will require development of treatment and repackaging options. The INEL is currently planning facilities which will directly support MTRU waste characterization, WIPP packaging, and/or treatment if appropriate.
HLLW has been previously generated from the reprocessing of irradiated spent fuel and is currently stored in the ICPP tank farm. Additional waste results from plant decontamination, laboratory analysis,

Table 13.2-3 INEL MLLW Streams For Which No Treatment Has Been Identified

Waste Stream	Current Inventory (m^3)	Five-Year Projection (m^3)	Comments/ Status
EBR-I NaK	0.68	0	Evaluation of treatment at proposed RSWPF or commercial facility is being considered.
S1G Sodium	0.25	0	Evaluation of treatment at proposed RSWPF or commercial facility is being considered.
Unknown (A-MLLW) (trash and solidified liquids)[a]	185	0	Individual containers require characterization; treatment is anticipated to be available at proposed IWPF.
Uncategorized (A-MLLW)[a]	2105	0	Individual containers require characterization; treatment is anticipated to be available at proposed IWPF.
Total (m^3)	2,291	0	

[a] Adequate characterization information on each container in this category does not exist to establish, with a level of confidence, the appropriate treatment technologies needed.

and experiments normally classified as LLW. The waste is highly radioactive, acidic, and contains heavy metals and radionuclides. HLLW at the INEL is now being pre-treated by a fluidized bed calcination process to achieve a more environmentally stable calcined dry granular solid. Final treatment of the calcine solids is pending development and construction of the Idaho Waste Immobilization Facility (IWIF).

13.2.2.1 Existing Treatment Facilities

The Drum Evaporator (TAN 681) is used to concentrate MLLW liquids and sludges that do not contain PCBs, ignitable materials, corrosive materials, or organics. The evaporator has a 138.2 m^3/yr operating capacity and is currently being used to treat a backlog of non-acid liquid waste at a rate of 30 m^3/year. The treatment residue has passed TCLP limits for all RCRA constituents.

The Drum Evaporator (TAN 681) unit may be closed under interim status upon completion of the backlog processing. This unit is being eliminated because the waste stream source has been stopped and a subsequent decision has been made by the Department of Defense to exclude the unit from the INEL RCRA Part B permit.

The HEPA Filter Leach System at INEL is used to remove radionuclides and other hazardous constituents from used HEPA filters by chemical extraction. The resulting leachate from the leaching of the filter will be solidified as a pretreatment in a fluidized bed calciner. After leaching, the filters are then packaged for LLW disposal. Additional testing of the leachate stream needs to be completed and modifications performed, prior to full-scale operations.

The Portable Water Treatment Unit (PWTU) contains a solids filter, an activated carbon bed, an ion exchange unit and a pH neutralization step. The PWTU treats only liquid waste and is used to treat groundwater and process waste waters contaminated with low-levels of radioisotopes, TCLP organics such as trichloroethylene and tetrachloroethylene, and heavy metals. The system is mobile, but is currently operated at 1 location. The treatment unit is operated in a batch mode and does not handle PCBs. The interim status treatment capacity for the PWTU is 187 m^3/yr.

The New Waste Calcining Facility (NWCF) performs pretreatment of mixed wastes by calcination of liquid waste streams resulting in conversion of the liquid to a solid granular form. Calcination of the liquid waste was accomplished by blending aluminum and zirconium bearing wastes (created from spent fuel reprocessing) with sodium bearing waste generated from decontamination of plant equipment. The blending of a sodium waste with either aluminum or zirconium fluoride has been essential for the calcination process. Storage of the sodium waste for extended periods of time has been necessary to facilitate blending and proper treatment. However, sodium waste can be blended with commercially available aluminum nitrate or other commercially-available chemicals. Sodium wastes are currently being managed as HLW.

The calcination process results in a "5 to 1 to 8 to 1" volume reduction and satisfies requirements for treatment of the California List wastes which establishes liquid waste storage prohibitions. This treatment satisfies LDR California List wastes requirements but does not satisfy other LDR treatment requirements. Currently the facility is operating under RCRA interim status. With a liquid input of 5,200 gal/day approximately 465 m^3/yr of calcine is produced. The calcine is being stored until a proposed glass ceramic vitrification facility, the Idaho Waste Immobilization Facility (IWIF), is operational. The proposed glass ceramic vitrification process is planned to meet LDR treatment requirements.

The PEW evaporator system processes large amounts of plant wastewater. A concentrated mixed waste solution (evaporator bottoms) results from the evaporation of this waste and is sent to the HLW tank farm for eventual treatment at the calcine facility. The vaporized condensate (evaporator overheads) resulting from evaporation is condensed and sent to the Liquid Effluent Treatment and Disposal (LET&D) system.

The LET&D facility receives dilute condensate from the PEW evaporation system (overheads) and, through chemical fractionation, produces a concentrated liquid acid solution. The concentrated acid will be sent to the tank farm or may be recycled in the New Waste Calcining Facility. The LET&D facility emits gaseous water vapor from the fractionation process which will pass through HEPA filters and out the ICPP stack. The remaining fractionated acidic liquid is stored in the tank farm or at the LET&D acid recycle tank prior to processing in the calcine system. The LET&D system is operating under RCRA interim status and is considered an LDR pre-treatment. A feed rate of 550 gallons per hour (1,100 gallons per hour with both fractionators in operation) results in approximately 227 m^3/yr of solution being introduced into the tank farm, producing a significant reduction in liquid waste volume.

In addition, treatment of mixed waste debris is planned at the INEL under LDR debris treatment standards published in the May 15, 1992 FR. This approach assures treatment will be available, allowing for generation of mixed waste debris (porous and non-porous) subsequent to treatment and disposal. The INEL has applied for an extension of the Debris Case-by-Case beyond May 8, 1993 (currently under EPA-HQ review). This extension to May 1994 would allow the INEL to use this approach to complete several upgrade projects and to support completion of small-scale decontamination and decommissioning projects. This combines the use of existing facilities with planned facilities to treat the various types of debris generated by the INEL. Debris that can be incinerated will be treated at the existing WERF incinerator. Debris amenable to physical or chemical extraction technologies are proposed to be treated at existing facilities with minor modifications.

The DOE-ID has successfully implemented treatment for several small volume waste streams where full scale treatment facilities are not available or needed. The INEL has previously treated small volumes of waste through the use of bench scale treatment studies such as amalgamation and ion exchange. The INEL is planning to also use generator treatment plans to document the treatment of small, specific quantities of various MLLW from sources such as laboratories and small processes. Examples of such treatments include generator neutralization and/or stabilization of wastes. Treatments as allowed under 40 CFR 262.34 and 268.7 at the generator level have proven an effective alternative for treatment of planned mixed wastes. In demonstrating and proving that these technologies are viable for mixed waste, several waste streams have been totally eliminated, such as elemental mercury and various heavy metal contaminated liquids. Since the INEL generates many small quantities of unique one-time wastes, success in these areas indicates that many of these wastes can be treated without the development of full-scale production facilities.

13.2.2.2 Existing Treatment Facilities Not Currently Treating Mixed Waste

The following text provides a description of facilities that are available but not currently being used to process mixed waste at the INEL.

The INEL Waste Experimental Reduction Facility (WERF) employs 2 major treatment processes, incineration and stabilization. MLLW meeting WERF's waste acceptance criteria (e.g. <20 mrem/hr at contact, low average levels of chlorinated materials, no fissile materials, no PCB's, etc.) is processed at WERF.

The WERF incinerator is a dual-chambered, controlled-air unit that will burn combustible solids and organic liquids. The incinerator will accept many F, P, and U-listed wastes along with a few K listed wastes. The WERF incinerator, which is not currently operating, has historically treated approximately 3000 m^3 per year, which is below permitted capacity. The WERF was shut down for material and configuration management upgrade and is currently completing operational readiness review preparations in accordance with DOE orders.

The WERF Waste Stabilization Unit, which is a part of the WERF complex, is principally designed to stabilize WERF incinerator ash. Typically, the WERF incinerator ash generated from treatment of RCRA sub-title C MLLW is mixed with portland cement for stabilization. The stabilized matrix is tested by TCLP and if the material meets LDR treatment standards and is no longer subject to RCRA Subtitle C regulation, is typically disposed of as LLW at the RWMC. If the solidified ash does not pass TCLP or would be designated as a derived-from waste, it is placed in storage awaiting further treatments or disposal options.

The WERF Waste Stabilization Unit has a normal treatment capacity of 2765 m^3/yr. The WERF Waste Stabilization Unit is also used to stabilize other INEL MLLW.

The Waste Engineering Development Facility (WEDF) is a RCRA interim status facility for the stabilization of hazardous and mixed low-level wastes. The facility in which this unit is located is not operational at this time. Upgrades to the facility such as ventilation and safety documentation are required before this facility can operate again. The operation schedule of this facility will be included in negotiations between the State of Idaho and the DOE.

TAN 726A ion exchange treatment capacity is planned to be utilized during 1993 to treat the waste currently in storage at the TAN 726 tanks. Once treatment of this waste is accomplished, both the TAN 726A treatment unit and the TAN 726 storage unit may undergo closure procedures under RCRA. TAN 726A was designed to treat wastewaters with relatively low concentrations of heavy metal constituents. Improvements to the documentation and safety equipment are required prior to this facility resuming operations in FY93.

13.2.2.3 Planned Treatment Facilities

The Idaho Waste Immobilization Facility (IWIF) is a proposed facility. The intended purpose for the IWIF is to immobilize the calcine stored at the ICPP. Candidate technologies and waste form options to immobilize the calcine have been identified based on waste characteristics, plant compatibility, process feasibility, and cost. However, the glass ceramic process has been identified as the preferred treatment and is currently undergoing verification testing and research. The treatment process will be designed specifically for treatment of calcine; other waste forms are not likely to be accepted at the facility.

Feasibility and treatability studies are currently being completed for the treatment of high-level and low-level radioactive liquid sodium waste at the Radioactive Sodium Waste Processing Facility (RSWPF), which will be located at ANL-W. Most of this waste has been generated through the operation, testing and maintenance of the experimental breeder reactor (EBR-II). DOE-CH is currently pursuing funding for completion of Title I design for the RSWPF.

The ICPP Decontamination Facility is currently being prepared to support material decontamination and debris treatment using existing decontamination techniques and carbon dioxide (CO_2) pellet blasting technologies. A demonstration project is being funded during FY93 by DOE-ID to evaluate the effectiveness of CO_2 treatment for decontamination of lead identified for reuse within the DOE system, and for treatment of debris generated during plant maintenance and facility decommissioning. The ICPP Decontamination Facility is also being prepared for a second demonstration project in FY93 demonstrating the effectiveness of non-porous debris treatment using a water washing technique. Both projects are expected to become fully operational in FY94.

The purpose of the Waste Characterization Facility (WCF) at the INEL is to characterize MTRU waste and alpha-MLLW and repackage as necessary MTRU waste for shipment to the WIPP. MTRU waste that meets the WIPP waste acceptance criteria and transportation criteria will be shipped to WIPP when available. The WCF will have the ability to treat small quantities of waste by stabilization, amalgamation, neutralization, and adsorption in order to meet the WIPP waste acceptance criteria.

The Idaho Waste Processing Facility (IWPF) is intended to treat mixed waste with transuranic contents from 10-100 nCi/gm (Phase I, IWPF) and MTRU wastes that do not meet the waste acceptance and transportation criteria for WIPP in New Mexico (Phase II, IWPF). Processes that may be included in the IWPF are thermal destruction, debris treatment, macroencapsulation, stabilization and/or casting, soil processing, and remote handling. The operating capacity of the facility has not yet been determined.

Additionally the INEL may develop metal refining, primarily for lead. Lead pieces that are radioactively contaminated may be melted. During the melting process, radioactive impurities are removed from the lead and the clean lead is poured into shapes. Lead that cannot be decontaminated (particularly activated lead) is planned to be macroencapsulated. Macroencapsulation is the BDAT for radioactive lead solids.

The DOE-ID is currently evaluating various options for design and construction of a Mixed-Low Level Waste Treatment Facility (MLLWTF). Pre-decisional planning anticipated that this facility could be the focal point for non-alpha MLLW treatment at the INEL.

The DOE-ID has requested expansion of interim status for treatment capacity for several small scale treatment operations including macroencapsulation, amalgamation, neutralization, and various debris physical treatments. The DOE-ID is also evaluating other treatment options including a plasma arc incinerator, an evaporation unit, and a mercury extraction unit. Commercial or private sector treatments are also being evaluated.

Some NRC licensee-generated mixed waste that was placed in storage at the INEL may require treatment in an NRC-licensed facility. Currently there is no NRC licensed facility available for the treatment of this waste.

13.2.2.4 Summary of INEL Treatment Facilities

Tables 13.2-4 through 13.2-7 provide a comprehensive summary of the treatment facilities at the INEL for INEL wastes. Utilization of surplus capacity which might be available at facilities after the processing of current INEL mixed waste backlog is complete will require an update to the planned INEL LDR Consent Order with the State of Idaho. Table 13.2-8 provides a brief summary of general waste acceptance parameters.

Table 13.2-4
INEL Compaction, Evaporation, Shredding, Sorting, Size Reduction, and Packaging Facilities Currently in Use for Mixed Wastes

FACILITY/SYSTEM[1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	NORMAL CAPACITY m^3/Yr
		RADIOACTIVE TYPES	MATRIX		
Drum Evaporator (Drum evaporator may be closed upon treatment of current backlog.)	Evaporator	MLLW/CH	Liquids	ID-SMC-135	138.2

Note (1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..

Table 13.2-5
INEL Mixed Waste Treatment Facilities
Currently in Use for Mixed Wastes

FACILITY/SYSTEM [1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	NORMAL CAPACITY m^3/Yr
		RADIOACTIVE TYPES	MATRIX		
HEPA Filter Leach (CPP-659)	Chemical Extraction	MLLW, HLW, RH, MTRU, CH	Inorganic Debris	ID-WIN-172, ID-WIN-305, ID-WIN-308	16
Portable Water Treatment System (PWTU)	Ion Exchange, Neutralization, Carbon Adsorption, Filtration	MLLW	Aqueous Liquids, containing D004-D043, D002	ID-EGG-121, ID-EGG-170, ID-EGG-192, ID-EGG-251, ID-EGG-279, ID-SMC-301, NR-NRF-189	187 m^3/Yr. Note [2]
New Waste Calcining Facility (NWCF)	Calcination Pre-treatment	HLLW/RH/MTRU/MLLW	Aqueous Liquid	ID-WIN-173	2,300
Liquid Effluent Treatment and Disposal (LET&D) [3]	Chemical Fractionation (Pre-treatment)	MLLW/CH	Aqueous Liquid	ID-WIN-216, ID-WIN-301	10,991

514
4691

Table 13.2-5
INEL Mixed Waste Treatment Facilities
Currently in Use for Mixed Wastes

FACILITY/SYSTEM [1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	NORMAL CAPACITY m^3/Yr
INEL Waste Generator Treatment Plans	Ion Exchange, Neutralization, Stabilization	MLLW, CH	Aqueous Liquids, Solids	ID-WIN-302, ID-EGG-269, ID-EGG-283, ID-SMC-133, ID-SMC-400	Note[4]
INEL Waste Generator Use of Debris Treatments	Surface Treatment	MLLW/CH	Porous/Non-Porous Solids, Heterogenous Debris	ID-WIN-154, ID-WIN-300, ID-WIN-304, ID-WIN-305, ID-WIN-308, ID-SMC-400	Note[5]

Notes
(1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..
(2) PWTU maximum capacity, based on interim status capacity of 50,000 gallons per year.
(3) PEW evaporation waste stream is included with LET&D as ID-WIN-216 and is not shown as treatment. LET&D capacity assumes operation of 1 fractionator at a time.
(4) TBD based on number of generator plans required.
(5) Waste generators have completed required Debris CBC documentation. Treatability studies to be done by 09/30/93. Operations scheduled to start FY94. Current Debris CBC ends May 93 with a possible extension being requested. Primary planned treatments include CO_2 pellet blasting and water washing technologies (for INEL wastes.)

Table 13.2-6
INEL Mixed Waste Treatment Facilities
Existing, But Not Currently Being Used For Mixed Wastes

FACILITY/SYSTEM[1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	CAPACITY m^3/Yr
		RADIOACTIVE TYPES	MATRIX		
WERF Incinerator	Incineration	MLLW <0.1 nCi/gm TRU isotopes, PCB <50 ppm Total WERF Facility limited to less than 15 grams of fissile material in facility at any 1 time.	Liquid Organics, Combustible Solids	ID-EGG-103, ID-EGG-107, ID-EGG-128, ID-EGG-142, ID-EGG-155, ID-EGG-157, ID-EGG-161, ID-EGG-162, ID-EGG-188, ID-EGG-209, ID-EGG-217, ID-EGG-219, ID-EGG-220, ID-EGG-221, ID-EGG-222, ID-EGG-256, ID-EGG-257, ID-EGG-258, ID-EGG-262, ID-EGG-263, ID-EGG-264, ID-EGG-267, ID-EGG-268, ID-EGG-276, ID-EGG-285, ID-EGG-286, ID-EGG-289, NR-NRF-113, NR-NRF-131, ID-WIN-111, ID-WIN-131, ID-WIN-201, ID-WIN-217, ID-WIN-303, ID-WIN-304, ID-WIN-306, ID-WIN-307, ID-DOE-662, ID-DOE-664, ID-DOE-734, ID-SMC-133, ID-SMC-149A, ID-SMC-149B, ID-SMC-303, ID-SMC-412, ID-SMC-305 ID-SMC-101D, ID-SMC-301 ID-SMC-302	49,625 m^3/yr[2]

516

46691

Table 13.2-6
INEL Mixed Waste Treatment Facilities
Existing, But Not Currently Being Used For Mixed Wastes

FACILITY/SYSTEM[1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	CAPACITY m^3/Yr
WERF Waste Stabilization Unit	Stabilization	MLLW, <10 nCi/gm TRU isotopes. Total WERF Facility limited to less than 15 grams of fissile material in facility at any 1 time.	WERF Ash, other Liquids, Solids	ID-EGG-128, ID-EGG-147, ID-EGG-212, ID-EGG-254, ID-EGG-255, ID-EGG-270, ID-EGG-271, ID-EGG-274, ID-EGG-275, ID-EGG-277, ID-EGG-284, ID-EGG-291, NR-NRF-190, ID-SMC-304	2765 m^3/Yr Note[3]

Note (1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..
(2) WERF incineration maximum capacity based on a interim status capacity of 1000 lbs per hour, 24 hours day, 365 days per year. Normal operations based on 120 days per year.
(3) WERF stabilization maximum capacity based on a capacity of 2000 gallons per day and 365 days operations per year.

TABLE 13.2-6
INEL Mixed Waste Treatment Facilities
Existing, but Not Currently Being Used for Mixed Wastes

FACILITY/SYSTEM[1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TREATED	NORMAL CAPACITY m^3/Yr
		RADIOACTIVE TYPES	MATRIX		
Bench Scale Treatments	Ion Exchange	MLLW, MTRU	Liquids with Heavy Metals	CH-ANL-111, CH-ANL-142, CH-ANL-143, CH-ANL-177T, CH-ANL-179, CH-ANL-180, CH-ANL-180T, CH-ANL-182, CH-ANL-182T, CH-ANL-241, CH-ANL-242, CH-ANL-243, CH-ANL-244, CH-ANL-245, CH-ANL-246	Note[2]
Waste Engineering Development Facility (WEDF)	Stabilization	MLLW	Liquids, Solids	ID-EGG-124, ID-EGG-147, ID-EGG-153, ID-EGG-213, ID-EGG-255, ID-EGG-265, ID-SMC-400, NR-NRF-189, NR-NRF-190	2765 m^3/Yr Note[3]
TAN 726A Treatment	Ion Exchange	MLLW	Liquids	ID-EGG-168, ID-EGG-290	128 m^3/Yr Note[4]

Note
(1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..
(2) Bench scale treatments will be implemented as appropriate and available.
(3) WEDF stabilization maximum capacity based on a capacity of 2000 gallons per day and 365 days per year operation. Normal operating capacity will be determined by the amount of waste generated requiring treatment when operation begin.
(4) TAN 726A treatment is expected to be closed under Interim Status in FY93 after it completes treatment of the 106 m^3 of the waste stored in TAN 726 and the rinsate generated from closing the TAN 726 Tank Storage Unit.

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TABLE 13.2-7
INEL Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

FACILITY/SYSTEM[1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TO BE TREATED	DESIGN CAPACITY m^3/Yr	DATE AVAILABLE FOR HANDLING MW
		RADIOACTIVE TYPES	MATRIX			
Waste Engineering Development Facility (WEDF)	Macroencapsulation	MLLW	Lead Solids, Cadmium Solids, debris	ID-EGG-108, ID-EGG-117, ID-EGG-143, ID-EGG-213, ID-EGG-253, ID-EGG-266, ID-EGG-269, ID-EGG-272, ID-EGG-280, ID-EGG-281, ID-EGG-282, NR-NRF-117, NR-NRF-143	864 m^3/Yr Note [2]	FY95
ICPP Decontamination Facility	CO2 Decontamination	MLLW, RH, CH, HLW	Debris	ID-EGG-143, ID-EGG-280, ID-EGG-281, ID-EGG-282, ID-WIN-154, ID-WIN-300, ID-WIN-304, ID-WIN-305, ID-WIN-308, NR-NRF-280, ID-SMC-413	Note[3]	9/30/93
ICPP Decontamination Facility	Water Washing	MLLW, CH, RH, HLW	Debris	ID-WIN-154, ID-WIN-300, ID-WIN-304, ID-WIN-305, ID-WIN-308, ID-SMC-411	Note[3]	9/30/93
Idaho Waste Immobilization Facility (IWIF)	Vitrification	HLW, MTRU, RH, MLLW	Calcine Solids	ID-WIN-174	Note[4]	Note[5]
Radioactive Sodium Waste Processing Facility (RSWPF)	Water Reaction	MLLW, alpha-MLLW	Liquid	CH-ANL-179, CH-ANL-180, CH-ANL-242	Note[4]	Note[5]

Note
(1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..
(2) WEDF macroencapsulation capacity based on a request for expansion under Interim Status of 5000 lbs. per day, 365 days per year operation, and a density of 8 lbs. per gallon.
(3) Proposed facility only. Needed treatments are being evaluated for inclusion in facility conceptual design.
(4) This is a planned facility with no capacity design developed.
(5) This is a planned facility with no planned date available.

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Table 13.2-7
INEL Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

FACILITY/SYSTEM [1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TO BE TREATED	DESIGN CAPACITY m^3/Yr	DATE AVAILABLE FOR HANDLING MW
		RADIOACTIVE TYPES	MATRIX			
Mixed Low Level Waste Treatment Facility (MLLWTF)	Incineration, Decontamination, Macroencapsulation and/or Melt Recycling, Debris Decontamination, Thermal Desorption, Stabilization, Chemical Precipitation	MLLW	Liquids, Combustible Solids, Debris	ID-EGG-124, ID-EGG-126, ID-EGG-127, ID-EGG-155, ID-EGG-210, ID-EGG-213, ID-EGG-214, ID-EGG-221, ID-EGG-252, ID-EGG-256, ID-EGG-257, ID-EGG-259, ID-EGG-260, ID-EGG-261, ID-EGG-267, ID-EGG-285, ID-EGG-289, ID-EGG-143, NR-NRF-143, ID-EGG-266, ID-EGG-272, ID-EGG-280, ID-EGG-281, ID-EGG-282, NR-NRF-190, ID-EGG-293, ID-EGG-292	Note[2]	TBD
Idaho Waste Processing Facility (IWPF)	Debris Decontamination	alpha-MLLW, MTRU	Solids, Debris	ID-EGG-115, ID-EGG-119, ID-EGG-132	Note[2]	TBD
Idaho Waste Processing Facility (IWPF)	Thermal Destruction	alpha-MLLW, MTRU	Liquids, Combustible Solids	ID-EGG-102, ID-EGG-109, ID-EGG-112, ID-EGG-114, ID-EGG-118, ID-EGG-134, ID-EGG-137, ID-EGG-141, ID-EGG-145, ID-EGG-146, ID-EGG-158, ID-EGG-158T, ID-EGG-287, ID-EGG-288	Note[2]	TBD
Idaho Waste Processing Facility (IWPF)	Macroencapsulation	alpha-MLLW, MTRU	Debris, Lead Solids	ID-EGG-120, ID-EGG-144	Note[2]	TBD
Idaho Waste Processing Facility (IWPF)	Stabilization	alpha-MLLW, MTRU	Solids, Liquids	ID-EGG-163, ID-EGG-291T	Note[2]	TBD

Note (1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..

(2) This facility is in the pre-conceptual design phase with as yet unspecified capacities.

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Table 13.2-7
INEL Mixed Waste Treatment Facilities
Planned or Under Construction for Mixed Wastes

FACILITY/SYSTEM [1]	TREATMENT TYPES(s)	ALLOWABLE WASTE		MW STREAMS TO BE TREATED	DESIGN CAPACITY m^3/Yr	DATE AVAILABLE FOR HANDLING MW
		RADIOACTIVE TYPES	MATRIX			
Waste Characterization Facility (WCF)	This facility is a characterization and repackaging facility with limited Stabilization, Amalgamation, Neutralization, and Adsorption capabilities.	alpha-MLLW, MTRU,	Solids, Liquids	ID-EGG-102, ID-EGG-102T, ID-EGG-109, ID-EGG-109T, ID-EGG-112, ID-EGG-112T, ID-EGG-114, ID-EGG-114T, ID-EGG-115, ID-EGG-115T, ID-EGG-118, ID-EGG-118T, ID-EGG-119, ID-EGG-119T, ID-EGG-120, ID-EGG-120T, ID-EGG-132, ID-EGG-132T, ID-EGG-134, ID-EGG-134T, ID-EGG-137, ID-EGG-137T, ID-EGG-141, ID-EGG-141T, ID-EGG-142T, ID-EGG-144, ID-EGG-144T, ID-EGG-145, ID-EGG-145T, ID-EGG-146, ID-EGG-146T, ID-EGG-158, ID-EGG-158T, ID-EGG-287, ID-EGG-287T, ID-EGG-288, ID-EGG-288T	Note[2]	TBD

Note (1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..

(2) The primary purpose of this facility is characterization of wastes in compliance with RCRA treatment and disposal requirements. Also included are repackaging and certification of waste for WIPP with only minor treatments available.

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Table 13.2-8

Idaho National Engineering Laboratory
Mixed Waste Treatment Facilities

Facility/System [1]	Operating Status[1]	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha	RH/ CH	Hg	Other Toxic Metals	Toxic Organics
Bench Scale Treatments	Planned, Year 1994	Liquids & Solids- Heavy Metals	Solidified Solids	MTRU MLLW	✓	CH	✓	✓	✓
HEPA Filter Leaching System (CPP-659)	Operating	HEPA Filters/Inorganic Debris	Liquid Leachate	HLW MTRU MLLW	✓	RH/CH	✓	✓	✓
ICPP Decontamination Facility/Water Washing System	Planned, Year 1994	Debris	Debris	MLLW HLW	✓	RH/CH	✓	✓	✓
ICPP Decontamination Facility/Unit 2: CO2 Decontamination System	Planned, Year 1994	Debris	Debris	MLLW HLW	✓	RH/CH	✓	✓	✓
Idaho Waste Immobilization Facility	Planned, Year TBD	Calcined Solids	Ceramic Glass	HLW MTRU MLLW	✓	RH	✓	✓	✓
Idaho Waste Processing Facility/Debris Decontamination System	Planned, Year TBD	Debris, Heterogeneous Debris, combustible solids	Depends on Process	MTRU MLLW	✓	RH/CH	✓	✓	✓
Idaho Waste Processing Facility/Macroencapsulation System	Planned, Year TBD	Debris, Lead Solids	Depends on Process	MTRU MLLW	✓	RH/CH		✓	
Idaho Waste Processing Facility/Stabilization System	Planned, Year YBD	Liquids, Soil, Solids	Depends on Process	MTRU MLLW	✓	RH/CH	✓	✓	
Idaho Waste Processing Facility/Thermal Destruction System	Planned, Year TBD	Combustible Solids, Liquids	Depends on Process	MTRU MLLW	✓	RH		✓	
INEL Waste Generator Treatment Plans	Operating	Aqueous Liquids, Solids, Debris	Solidified Liquids, Neutralized Liquids, Absorbed Liquids	MLLW		CH	✓	✓	✓
INEL Waste Generator Use of Debris Treatment	Operating	Heterogeneous Debris, Porous/Non-Porous Solids	Debris, Aqueous Liquids	MLLW		CH	✓	✓	
Mixed Low-Level Waste Treatment Facility	Planned, Year TBD	Combustible Solids, Debris, Liquids	To Be Determined	MLLW		CH			✓
Radioactive Sodium Waste Processing Facility	Planned, Year TBD	Not Reported	Not Reported	MLLW	✓	RH			
TAN/Portable Water Treatment System (PWTU)	Operating	Aqueous Liquids (D004-D043,D002), Liquids	Liquids	MLLW		CH	✓	✓	✓
TAN/TAN 726-A Pretreatment Unit	Exists, Resume operation in 1993	Liquids, Wastewater	Wastewater	MLLW		CH	✓	✓	
Waste Engineering Development Facility/Macroencapsulation Unit	Planned, Year TBD	Cadmium Solids, Debris, Lead Solids, Solids	Macroencapsulated solids	MLLW		CH		✓	
Waste Engineering Development Facility/Stabilization Unit	Exists, plan to use in TBD[1]	Liquids, solids	Cemented Solids	MLLW		CH	✓	✓	✓
WERF Incinerator	Exists, Resume operation in 1993	Liquids, Solids	Ash	MLLW		CH	✓	✓	✓

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Table 13.2-8
INEL Waste Acceptance Parameters For Current And Planned Treatment Facilities

Facility/System [1]	Operating Status[1]	Feed Types	Final Waste Form	HLW MTRU MLLW	Alpha	RH/ CH	Hg	Other Toxic Metals	Toxic Organics
New Waste Calcining Facility (NWCF)	Operating	Aqueous Liquid	Calcine Solid	HLW MLLW MTRU	✓	RH	✓	✓	✓
Liquid Effluent Treatment & Disposal Facility (LET&D)	Operating	Aqueous Liquid	Corrosive Liquid	MTRU MLLW	✓	RH	✓	✓	✓
WERF/Waste Stabilization Unit	Exists, Resume operation in 1993	WERF Ash, Other Liquids, Solids	Cemented Solids	MLLW		CH	✓	✓	✓

Note (1) These facilities are currently in various stages of the planning and design process or operation activities. As such, function, scope, schedules, and capacity are subject to change depending on funding availability, treatability studies, permit issuances, etc..

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In summary, the DOE-ID has aggressively managed the treatment, storage and disposal of mixed wastes. Efforts are continuing to ensure adequate characterization for treatment of all waste. Several mixed waste streams have been either treated and/or eliminated through waste minimization and treatment efforts. The INEL's planned LDR Consent Order with the State of Idaho will establish mutually agreed upon priorities for treatment and milestones for treatment capacity for INEL mixed wastes.

13.2.3 Technology Development

The availability of waste management technologies has been examined for all INEL mixed wastes. The different degrees of availability of waste-specific technology treatment are included in the waste profile sheets.

For some wastes, technologies exist or are considered readily available based on previous commercial sector or DOE experience. No significant process modifications are required for the treatment of waste streams with this determination.

In many cases, the determination has been made that the technology exists but has to be modified for application to INEL mixed wastes. Most technology development efforts fall in this group. Modifications may include adaptations of design and operation to assure containment of radionuclides. Other modifications may be aimed at treatment of the mixed waste matrix. Typically, the INEL site-specific treatment technologies are being adapted from processes developed for radioactive material processing (with no RCRA LDR constituents) or other applications.

For some wastes the decision has not been made on the availability of treatment technology. If the wastes are not yet well enough characterized from sampling or process knowledge, the necessary evaluations of potential treatment processes cannot be carried out. For other wastes the analysis and review process is still going on. For this latter set of wastes, it would seem likely that technology with or without modification is available.

Four INEL waste streams have been identified for which no treatment technology can be identified with confidence at this time. As improved characterization information becomes available, it is felt that existing treatment technologies, with minor modification, have a high probability of being suitable for treatment of these wastes to meet LDR storage prohibitions.

At the current time, 8 Site-Specific Technology Development (SSTD) activities are occurring in connection with the INEL. Of these activities, all are directly or indirectly involved with mixed radioactive wastes. Other cross-complex technology development activities at the INEL which may assist in the treatment, stabilization, or compaction of mixed waste are included in Appendix B, but do not appear in this section.

These technology development activities are generally intended to treat waste streams classified as mixed low-level radioactive wastes. Because of their hazardous characteristics, these wastes are subject to LDR. Consequently, the SSTD activities are typically aimed at developing treatments to convert these wastes into simple low-level radioactive wastes that are suitable for shallow burial. Most of the techniques are intended to separate hazardous constituents, such as heavy metals, and then to

stabilize them in an inert form. Once developed and proven, these technologies will complement the incineration and compaction technologies already available at the INEL.

SSTD activities with numerically indexed narrative descriptions (following the waste profile sheets) and tables of titles are presented in the following sections of this chapter as well as in Appendix B. The following SSTD activities lists site-specific technology development activities which are potentially applicable to the treatability groups and BDATs identified in Chapter 6.0 are listed below. Additionally, crosscutting technology development activities not assigned to treatability groups are included. Where the BDAT is indicated as NA, or is blank, the technology development activity does not link to specific BDAT RCRA treatment functions, but is intended to provide other supporting functions.

Site-Specific Technology Development Activities

(by BDAT:
by Summary Technology (Tech) Area ID:
by ID number: (references numerically indexed narrative descriptions presented later in this chapter and Appendix B)
by Title:)

BDAT: AMLGM
Summary Tech Area ID: chemical physical treatment
339 Elemental mercury amalgamation

BDAT:HLVIT
Summary Tech Area ID: chemical physical treatment
345 Treatment of sodium-bearing HLLW
370 ESPIP Pyrochemical Process for ICPP HLW Calcine

Summary Tech Area ID: final form
344 Immobilization of calcine HLW
345 Treatment of sodium-bearing HLLW

BDAT: MACRO
Summary Tech Area ID: final form
341 Lead macroencapsulation (Support of the Radioactive Waste Management Complex (RWMC))

BDAT: RMETL
Summary Tech Area ID: chemical physical treatment
340 Treatment of mixed heavy metal waste

Summary Tech Area ID: final form
345 Treatment of sodium-bearing HLLW

BDAT: STABL
Summary Tech Area ID: final form
345 Treatment of sodium-bearing HLLW

342 Sulfur polymer cement immobilization
343 Iron enriched basalt (IEB) waste forms and processing

Technology development activities that do not link to specific BDAT RCRA treatment functions

BDAT:
Summary Tech Area ID: chemical physical treatment
370 ESPIP Pyrochemical Process for ICPP HLW Calcine

13.2.4 Environmental Restoration Waste

INEL activities have resulted in the generation of radioactive waste, hazardous waste, and mixed waste. This waste includes radioactive HLW, transuranic waste and low-level waste, acids, solvents, asbestos, PCBs, and heavy metals. Past treatment, storage, and disposal of this waste has resulted in the contamination of structures, groundwater, surface water, and surrounding properties at several locations.

Environmental restoration activities include the remediation of inactive waste sites and groundwater in compliance with CERCLA, the remediation of underground storage tanks, and the D&D of surplus facilities. The environmental restoration activities are being conducted in compliance with the Federal Facilities Agreement and Consent Order (FFA/CO) signed by DOE, EPA, and the State of Idaho.

Environmental restoration accomplishments include the following activities: signing 7 RODs; evaluating contractor proposals for the remediation of Pit 9; initiating the remediation of INEL; treating 3,000 gallons of water from Test Area North injection wells that were contaminated with radionuclides and hazardous substances; remediating 259,000 gallons of water from all sources at Test Area North using a portable water treatment unit; completing the D&D of Boiling Water Reactor Experiment V Turbine Building; initiating Phase I cleanup of unexploded ordinance locations; remediating asbestos burnpit at Test Area North; and cleanup of radioactively contaminated soil at the Chemical Processing Plant.

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WASTE

PROFILE

SHEETS

Idaho National Engineering Laboratory

INEL-WPS-1

April 1993

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ROADMAP TO WASTE PROFILE SHEETS (WPS)

Waste Profile Sheets (WPS) have been compiled in this report for each of the mixed waste streams identified at the different DOE sites. Each WPS is a concise summary of the information required by the FFCAct-1992, with waste stream specific data primarily derived from the Waste Management Information System (WMIS) database. Each WPS consists of the following items:

Header: The information in the header in each WPS includes the State, the official name of the site, an identification number, an identifying waste stream name, the waste type, and the waste matrix. The identification number is either a number assigned by the WMIS database or a number assigned by the site. The waste stream name is a unique identifier which corresponds to the name used in the WMIS database, or is assigned by the site. The waste type is either HLW, MTRU, or MLLW. The waste matrix corresponds to the categories (or their further subdivisions) defined earlier based on the physical and chemical form of the waste.

Waste Stream Description and Source: This section of the WPS presents a short description of the source of the waste and the waste stream characteristics.

Inventory Table: The inventory table in each WPS reports the volume (m^3) and/or mass (kg) of each waste stream currently in storage, and projected to be generated in the next five years. The table also indicates the date assumed in calculating the current and projected inventories. As required by the FFCAct-1992, the table also differentiates between waste not subject to LDR and that subject to LDR for the current inventory.

Treatability Group: This section lists the name of the treatability group to which the waste stream belongs.

Treatment Status, Technology Status: This section of the WPS lists the status of the technology that could be applied to the waste stream for compliance with the LDR. This section provides information on if the waste stream is currently being treated, and if technology options and facilities for the treatment exist.

Radiation Characteristics Section: This section of the WPS provides additional information on the radiological characteristics of the waste (in addition to characterizing the waste stream as HLW, MTRU, or MLLW). This section of the WPS specifies whether the waste stream is contact handled or remote handled, if the radionuclides are alpha or beta/gamma emitters, and if they contain activation products.

Radiation Effects Section: As required by the FFCAct-1992, this section of the WPS lists possible effects of the radiological characteristics of the waste stream on treatment technologies that could be applicable to that waste stream. For example, radiation levels may require remote handling of the waste and affect the design and operation of the treatment facility. The presence of volatile radionuclides may require the containment of all off-gases from the treatment system.

Waste Minimization Activities: As required by the FFCAct-1992, this section of the WPS provides information on the waste minimization practices being used for the waste stream. This section provides information on if the waste minimization practices include good operating practices, technology changes, raw material changes, product changes, etc.

EPA Code: This table of the WPS reports the EPA hazardous waste codes applicable to the waste stream, the basis for assigning the codes (process knowledge or sampling/analysis), the LDR basis (which is either technology based or concentration based), and the BDAT for each of the EPA hazardous waste codes.

In summary, the WPS for each waste stream, along with the site sections in the report for each State (Section B), summarize the site-specific information required by the FFCAct-1992.

State: Idaho | ID #: ID-DOE-662

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: INSTA-GEL XF SCINTILLATION COCKTAILS

Matrix: Lab Packs with Metals | Waste Type: MLLW

Waste Stream Description and Source:

50% water and 50% insta-gel XF liquid, flammable/ignitable (118 degrees Farenheit). Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.040	37.4	0.000	0.000	0.040	37.4	0.000	0.000

Treatability Group:

MLLW CH, Lab Packs with Metals, Ignitable, Corrosive, or Reactive Only. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. May be able to treat at WERF incinerator. If the chromium content is too high for WERF, treatment may have to be performed at the planned MLLWTF.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Waste is no longer generated, substitute scintillation cocktail found, experimental work may generate a slight amount.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

State: Idaho	ID #: ID-DOE-662
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: INSTA-GEL XF SCINTILLATION COCKTAILS	
Matrix: Lab Packs with Metals	Waste Type: MLLW

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Idaho	ID #: ID-DOE-664
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: EDTA AND LEAD	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

Residue from analysis of environmental media for SR, Na2, CrO4, Na2SO4, acetic acid, Pb, EDTA = 1-3%, 97-99% water. Waste stream generated from laboratory.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.019	22.0	0.000	0.000	0.019	22.0	0.025	96.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. WERF incinerator is expected to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices. (Analytical procedure cannot be significantly altered without jeopardizing data quality.)

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho	ID #: ID-DOE-667
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MIXED LEAD	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Solid lead bricks used for shielding. Lead pigs used to store radioactive sources. Miscellaneous lead. Waste stream generated from laboratory.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.030	104.0	0.000	0.000	0.030	104.0	0.150	520.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Interim status has been requested for the macroencapsulation process for small quantities of lead.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. Periodically review the need for lead and dispose of that which is not needed. Lead inventory steadily reduced to reduce the amount of lead subject to decontamination.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ID-DOE-732
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONTAMINATED GROUNDWATER SAMPLES	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of excess groundwater samples containing radionuclides and organics. These samples were collected by the NRC in Michigan.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.006	5.6	0.006	5.6	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. No BDATS have been established for the RCRA codes associated with this waste stream so treatment options cannot be identified at this time.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste contains: H-3, C-14, P-32, S-35, Cr-51, Sc-75, Y-88, I-125, I-137, and Cs-137.

Waste Minimization Activities:

Change in operations. This waste stream is no longer generated.

State: Idaho **ID #: ID-DOE-732**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CONTAMINATED GROUNDWATER SAMPLES

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D018		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-DOE-734

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: XYLENE AND ALIQUAT 336 WITH PERCHLORATE

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

2.5 gallons of lab generated liquid wastes containing 66%-70% xylene, 27% aliquate 336, and 6%-7% perchlorate waste. Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.010	9.4	0.010	9.4	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream is no longer generated.

State: Idaho **ID #: ID-DOE-734**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: XYLENE AND ALIQUAT 336 WITH PERCHLORATE

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F003	Conc.	Incineration

State: Idaho | ID #: ID-EGG-102

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED INORGANIC SLUDGE (A-LLW)

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Miscellaneous inorganic setups. Waste stream generated from production. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1,160.0	1,246,272.0	0.000	0.000	1,160.0	1,246,272.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Idaho Waste Processing Facility (IWPF) anticipates treatment to be available.
Waste Characterization Facility (WCF). The WCF will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

The waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-102

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED INORGANIC SLUDGE (A-LLW)

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Idaho | ID #: ID-EGG-103

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LIQUID LAB WASTE W/METALS AND ORGANICS

Matrix: Lab Packs with Metals | Waste Type: MLLW

Waste Stream Description and Source:

Three specific but chemically related wastes were generated during cleanup of ARA-1. These lab wastes (labpacks) contain various amounts of methylene choride, methyl ethylketone, and corrosives. Waste stream generated from maintenance. This waste stream is no longer generated - one time only decontamination.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.210	81.6	0.210	81.6	0.000	0.000

Treatability Group:

MLLW CH, Lab Packs with Metals, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. WERF incinerator does not require significant development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
Waste stream is no longer generated. One time only decontamination.

State: Idaho	**ID #: ID-EGG-103**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LIQUID LAB WASTE W/METALS AND ORGANICS	
Matrix: Lab Packs with Metals	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001B	Tech.	Deactivation
D002A	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization
F002	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Idaho | ID #: ID-EGG-107

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ARA IV SUMP SLUDGE

Matrix: Organic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Sump sludge from D&D effort for the ARA IV facility. In national report as solvent waste. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.640	200.0	0.640	200.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Sludges/particulates, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-107**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ARA IV SUMP SLUDGE	
Matrix: Organic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: Idaho | ID #: ID-EGG-108
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: BA AND CD CALIBRATION SOURCES
Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:
Abandoned radioactive calibration sources from ARA III. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.004	1.4	0.000	0.000	0.004	1.4	0.000	0.000

Treatability Group:
MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:
Plan to treat on-site at the existing Waste Engineering Development Facility. Strategy utilizes proven technologies.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
The waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-108**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BA AND CD CALIBRATION SOURCES	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-109
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BENELEX, PLEXIGLASS (A-LLW)	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of disassembled equipment of Benelex neutron shields and plexiglass glovebox windows. Waste may also include surgeon's gloves, metal hinges, pieces of angle iron, and rubber gaskets.Waste stream generated from production. Alpha emitters, 10-100 nCi/g. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
65.0	37,135.0	0.000	0.000	65.0	37,135.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-109**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BENELEX, PLEXIGLASS (A-LLW)	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-112
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: CEMENTED SLUDGES (A-LLW)
Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

Waste stream consists of cemented liquid wastes from paint strippers, degreasers, and cleaning solvents. This waste sludge is generated by removal from processing tanks that collected liquid effluents from floor drains. Waste stream generated from production. Waste contains Alpha emitters, 10-100 nCi/g. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
395.0	360,299.8	0.000	0.000	395.0	360,299.8	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Sludges/Particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-112**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CEMENTED SLUDGES (A-LLW)	
Matrix: Organic Sludges/Particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Idaho	ID #: ID-EGG-114
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: COMBUSTIBLES (A-LLW)	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

Line/nonline generated combustible material, D&D of a plutonium laboratory, maintenance and cleanup operations. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
6,011.0	1,991,542.0	0.000	0.000	6,011.0	1,991,542.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-114**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: COMBUSTIBLES (A-LLW)	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-115

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CONCRETE - BRICK (A-LLW)

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of whole and broken pieces of construction bricks, cinderblocks, firebrick, concrete and asphalt. Waste may also contain small amounts of dirt and combustible waste. Waste stream generated from D&D. This waste stream contains Alpha emitters, 10-100 nCi/g. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
199.0	142,399.9	0.000	0.000	199.0	142,399.9	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-115**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONCRETE - BRICK (A-LLW)	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-117
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONTAMINATED CADMIUM SHEETING	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Cadmium sheeting used as shielding for LOFT (Loss Of Fluid Test) reactor and other purposes. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	412.8	0.000	0.000	0.320	412.8	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Waste Engineering Development Facility. Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
Waste Stream is no longer generated.

State: Idaho	**ID #: ID-EGG-117**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONTAMINATED CADMIUM SHEETING	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-118
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: FILTERS (A-LLW)
Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of filters (HEPA, absolute, glass, fiberglass, and filter media) that have been removed from incineration processes, scrubbers, offgas systems and intake/exhaust systems. Pipe insulation, asbestos, gloves, fire blankets, etc. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1,464.0	408,710.0	0.000	0.000	1,464.0	408,710.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Heterogeneous Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.
Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho **ID #: ID-EGG-118**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: FILTERS (A-LLW)

Matrix: Heterogeneous Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-119
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLASS (A-LLW)	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Discarded labware, windows, containers, and Raschig rings. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
399.0	170,000.1	0.000	0.000	399.0	170,000.1	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-119**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLASS (A-LLW)	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-120

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: GLOVEBOX GLOVES - (A-LLW)

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of leaded glovebox gloves and aprons. The waste may contain limited amounts of unleaded gloves, lead bricks, and lead sheeting. Waste stream generated from production. Alpha emitters, 10 - 100 nCi/g. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
8.0	5,069.8	0.000	0.000	8.0	5,069.8	0.000	0.000

Treatability Group:

MLLW CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products
4) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-120**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLOVEBOX GLOVES - (A-LLW)	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-121

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL LIQUID LAB WASTES

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is heavy metal liquid wastes. Waste stream generated in lab. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.150	56.7	0.000	0.000	0.150	56.7	0.265	-

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Portable Water Treatment System (PWTU) facility. Technologies recommended require no further development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.

State: Idaho **ID #: ID-EGG-121**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL LIQUID LAB WASTES

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009B	Tech.	Mercury Roast/Retort
D010	Conc.	Stabilization
D011	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-124
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HTRE-3 CONTAMINATED CONCRETE WASTE	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Poorly formed concrete from unsuccessful solidification effort. Waste stream generated from D&D activities at HTRE-3. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
5.8	8,425.9	0.000	0.000	5.8	8,425.9	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. Waste is no longer generated.

State: Idaho	**ID #: ID-EGG-124**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HTRE-3 CONTAMINATED CONCRETE WASTE	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho | ID #: ID-EGG-126

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HTRE-3 SPILL CLEAN-UP MATERIAL

Matrix: Organic Debris | Waste Type: MLLW

Waste Stream Description and Source:

Spill-X absorbent used to clean-up mercury contaminated rinse solution. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.1	1,224.7	0.000	0.000	1.1	1,224.7	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-126**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HTRE-3 SPILL CLEAN-UP MATERIAL	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-127

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TRA SCINTILLATION COCKTAILS (ALPHA LLW)

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of scintillation cocktails and solvent extraction waste generated from experiments. This wastes is 49% water and 49% xylene. It is contaminated with low-level alpha emitters and some beta, gamma activity due to radiotracers. This waste is generated from laboratory. This waste contains alpha emitters, 10-100 nCi/g. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	90.7	0.000	0.000	0.320	90.7	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Liquids, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g
4) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste is no longer generated.

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State: Idaho	**ID #: ID-EGG-127**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TRA SCINTILLATION COCKTAILS (ALPHA LLW)	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D006B	Conc.	Stabilization
D022		Not currently prohibited under the LDR Program.

State: Idaho	ID #: ID-EGG-128
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LABORATORY EQUIPMENT AND DEBRIS	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

Laboratory equipment and debris from analysis of TRA ERD samples. Sludge samples and sampling debris from sampling operation of the TRA warm waste pond at the INEL. Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.420	254.0	0.000	0.000	0.420	254.0	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
WERF Incinerator. Treatment strategies recommended do not require development.
WERF Waste Stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

State: Idaho **ID #: ID-EGG-128**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LABORATORY EQUIPMENT AND DEBRIS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-132

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METALS (A-LLW)

Matrix: Multiple | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of LLW scrap from line and non-line generated metal wastes, cut-up gloveboxes, process equipment, machinery, motors, pumps, tools, tanks, and scrap from cleanup projects. Waste stream generated from production. Waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated. This waste stream includes elemental lead, and heterogeneous debris.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
7,241.0	2,804,059.0	0.000	0.000	7,241.0	2,804,059.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Multiple, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Idaho Waste Processing Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter
4) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-132**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METALS (A-LLW)	
Matrix: Multiple	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D028		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-134

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS(PAPER, METAL,etc.) (A-LLW)

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

General plant waste, alpha-gamma Hot Cell Facility waste, laboratory waste from ANL-W and ICPP, and americium process residue. Waste stream generated from laboratory. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1,579.0	562,430.0	0.000	0.000	1,579.0	562,430.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Waste Characterization Facility (WCF). The WCF will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat waste during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Alpha emitter, 10-100 nCi/g
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-134

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS(PAPER, METAL,etc.) (A-LLW)

Matrix: Heterogeneous Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D006B	Conc.	Stabilization
D008C	Tech.	Macroencapsulation
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-137

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: NONMETAL MOLDS AND CRUCIBLES (A-LLW)

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

Waste consists of graphite molds, Graphite Cores, Leco crucibles and caps, and graphite electrodes. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
20.0	10,229.9	0.000	0.000	20.0	10,229.9	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-137**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NONMETAL MOLDS AND CRUCIBLES (A-LLW)	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-141
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: PARTICULATE WASTES (A-LLW)	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Dirt, soil, etc. from floor sweepings and cleanups, grit from grit blasting operations and recovery from incinerator processing. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
501.0	422,710.0	0.000	0.000	501.0	422,710.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Idaho Waste Processing Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-141

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: PARTICULATE WASTES (A-LLW)

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F004	Conc.	Incineration

State: Idaho | ID #: ID-EGG-142

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LEAD CONTAMINATED DEBRIS

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste is lead contaminated debris from various INEL sources. This debris includes lead pieces, galvanized sheet metal, stainless steel, copper/bronze wire, silicon, impregnated fiberglass, paper, HEPA filters, duct, etc. Waste stream generated from maintenance. This waste stream is still generated. The waste code basis is both process knowledge and sampling and analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
6.9	2,434.4	0.000	0.000	6.9	2,434.4	6.4	3,000.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-142**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LEAD CONTAMINATED DEBRIS

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-EGG-143**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: RADIOACTIVELY CONTAMINATED LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is lead brick, sheet, blankets, scrap, etc., used throughout INEL as shielding. Waste stream generated from production and maintenance activities such as the ATR reactor upgrades or the repackaging of the TMI waste. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
397.1	812,868.9	0.000	0.000	397.1	812,868.9	50.0	114,375.0

Treatability Group:

MLLW CH/AL, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste is available, treatment facilities are no available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
Chemical extraction, CO2 blasting, decon at CPP-659 decontamination facility.
Waste Engineering Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants
4) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-EGG-143**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVELY CONTAMINATED LEAD	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ID-EGG-144
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE SOURCES (A-LLW)	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Sample fuel and hot-cell waste. Waste stream generated from laboratory. This waste contains alpha emitters, 10-100 nCi/g. The waste category is Pu and Am sources shielded with lead. This waste may not be a mixed waste, as lead shielding is the only hazardous component. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
54.0	12,702.9	0.000	0.000	54.0	12,702.9	0.000	0.000

Treatability Group:

MLLW RH/AL, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available. Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Remote handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-144**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE SOURCES (A-LLW)	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho **ID #: ID-EGG-145**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: RESINS (A-LLW)

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

Waste Stream Description and Source:

Leached and unleached ion column exchange resins used in the purification and recovery of plutonium and americium. Waste stream generated from production. This waste stream contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
11.0	7,675.7	0.000	0.000	11.0	7,675.7	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the IWPF anticipates treatment to be available.

Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

4691

State: Idaho **ID #: ID-EGG-145**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: RESINS (A-LLW)

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

58C

State: Idaho | ID #: ID-EGG-146

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SALTS (A-LLW)

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Evaporator salts and pyrochemical salts. Waste stream generated from production. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
14.0	10,849.9	0.000	0.000	14.0	10,849.9	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/particulates, Ignitable, Corrosive, or Reactive Only. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste is available, treatment facilities are not available. Planning for the design and construction of the IWCF anticipates treatment to be available.

Waste Characterization Facility (WCF) will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

4691

State: Idaho	**ID #: ID-EGG-146**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SALTS (A-LLW)	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation

588

State: Idaho	**ID #: ID-EGG-147**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SOLIDIFIED WERF ASH (FAILED TCLP)	
Matrix: Cemented Solids	**Waste Type: MLLW**

Waste Stream Description and Source:

WERF ash that was solidified and did not pass the EP TOX test or TCLP test. Waste stream generated from treatment. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.3	1,956.3	0.000	0.000	3.3	1,956.3	5.0	9,500.0

Treatability Group:

MLLW CH, Cemented Solids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. WERF waste stabilization; strategy utilizes proven technologies. Waste Engineering Development Facility (WEDF) stabilization; strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-147**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SOLIDIFIED WERF ASH (FAILED TCLP)

Matrix: Cemented Solids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

State: Idaho | ID #: ID-EGG-153

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TAN/IET HOT WASTE SLUDGE

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Piping, sludge, dirt, water, HG and vermiculite from D&D of IET radioactive waste piping system. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.8	3,308.5	0.000	0.000	2.8	3,308.5	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
Waste Engineering Development Facility (WEDF) stabilization; strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

44691

State: Idaho	**ID #: ID-EGG-153**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN/IET HOT WASTE SLUDGE	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009B	Tech.	Mercury Roast/Retort

State: Idaho | ID #: ID-EGG-155

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TRA LAB SCINTILLATION COCKTAILS

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

The waste stream is a commercial liquid scintillation cocktail mixed with water (50:50) and contaminated with tritium. The cocktail mixture is proprietary but usually contains xylene or toluene at above 70%. Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.440	90.8	0.110	27.2	0.550	118.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
WERF Incinerator, incineration is a well developed technology.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Raw material changes. Laboratory has switched to a cocktail with no hazardous components. This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-155**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TRA LAB SCINTILLATION COCKTAILS	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
F005A	Conc.	Incineration

State: Idaho | ID #: ID-EGG-157

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TRA WARM WASTE POND SAMPLES

Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

TRA warm waste pond sludge samples containing characteristic metals and sampling debris. Waste stream generated from laboratory. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.9	3,143.4	0.000	0.000	1.9	3,143.4	0.050	84.0

Treatability Group:

MLLW CH, Organic Sludges/Particulates, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho ID #: ID-EGG-157

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TRA WARM WASTE POND SAMPLES

Matrix: Organic Sludges/Particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization
F002	Conc.	Incineration

State: Idaho | ID #: ID-EGG-158

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED ORGANIC SLUDGE (A-LLW)

Matrix: Organic Sludges/Particulates | Waste Type: MLLW

Waste Stream Description and Source:

Miscellaneous organic setups. Waste stream generated from production. This waste stream is no longer generated. This waste contains alpha emitters, 10-100 nCi/g.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1,009.0	1,016,261.0	0.000	0.000	1,009.0	1,016,261.0	0.000	0.000

Treatability Group:

MLLW CH/AL, Organic Sludges/Particulates, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Idaho Waste Processing Facility (IWPF) anticipates treatment to be available.
Waste Characterization Facility (WCF), will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment or disposal.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho **ID #: ID-EGG-158**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED ORGANIC SLUDGE (A-LLW)

Matrix: Organic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F004	Conc.	Incineration

State: Idaho	ID #: ID-EGG-161
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN TCLP SLUDGE (TCE,PCE)	
Matrix: Organic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Remediation of TAN injection well (TSF-05). This is a newly identified TCLP waste. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.8	2,268.0	0.000	0.000	3.8	2,268.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Sludges/particulates, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste stream is no longer generated.

State: Idaho **ID #: ID-EGG-161**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TAN TCLP SLUDGE (TCE,PCE)

Matrix: Organic Sludges/particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-162
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: TAN DECON SOLVENTS WASTES
Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:
Decontamination and decommissioning of a decontamination facility. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	5.9	5,936.6	5.9	5,936.6	0.000	0.000

Treatability Group:
MLLW CH, Organic Liquids, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:
Plan to treat on-site at the existing WERF Incinerator facility. Recommended treatments do not require significant devlopment.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:
1) Unknown.

Waste Minimization Activities:
Change in operations status.
This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-162
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: TAN DECON SOLVENTS WASTES
Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002B	Tech.	Deactivation
D004	Conc.	Vitrification
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Idaho	ID #: ID-EGG-163
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN DECON HEAVY METAL SOLIDS AND DEBRIS	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is dry solids (appears as sand) water rinsed from contaminated materials. The waste is from decontamination and decommissioning of a decontamination facility. High alpha content. Waste stream generated from maintenance. This waste contains alpha emitters, 10-100 nCi/g. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	263.1	0.000	0.000	0.320	263.1	0.000	0.000

Treatability Group:

MLLW CH/AL, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Idaho Waste Processing Facility. While the technology required to treat this waste stream is available, treatment facilities are not. Planning for the design and construction of the IWPF anticipates teatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream no longer generated.

State: Idaho **ID #: ID-EGG-163**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TAN DECON HEAVY METAL SOLIDS AND DEBRIS

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-168
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN 726 WASTE	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

This waste consists of 28,000 gallons of lead and mercury contaminated water with a pH of 2.8. The waste came from D&D of surplus facilities. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	106.0	101,698.1	106.0	101,698.1	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing TAN-726 Treatment facility. Tan 726A treatment strategies recommended can be implemented without technology development. These tanks are scheduled for closure. The waste is to be treated by ion exchange.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. Waste stream no longer generated.

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State: Idaho	**ID #: ID-EGG-168**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN 726 WASTE	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Chemical Precipitation
D009C	Conc.	Chemical Precipitation

State: Idaho	ID #: ID-EGG-170
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: IET LIQUID WASTE	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:
D&D of a nuclear facility. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.420	240.4	0.000	0.000	0.420	240.4	0.000	0.000

Treatability Group:
MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:
Plan to treat on-site at the existing Portable Water Treatment System (PWTU) facility. Treatment strategies recommended above do not require technology development.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:
1) Unknown.

Waste Minimization Activities:
Change in operations status. This waste stream no longer generated.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Chemical Precipitation
D009C	Conc.	Chemical Precipitation

4691

State: Idaho	**ID #: ID-EGG-187**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: S1G SODIUM	
Matrix: Reactive Metals	**Waste Type: MLLW**

Waste Stream Description and Source:

Sodium from decommissioning of the S1G reactor. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.250	226.8	0.000	0.000	0.250	226.8	0.000	0.000

Treatability Group:

MLLW CH, Reactive Metals, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. No treatment is currently available. The technology exists for treating this waste (deactivation of sodium), but no facility is available. Treatment of this waste might be possible at the proposed Radioactive Sodium Waste Processing Facility, but the mercury content may prohibit treatment.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Changes in operations status. This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-187**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: S1G SODIUM	
Matrix: Reactive Metals	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation
D009B	Tech.	Mercury Roast/Retort

4691

State: Idaho	ID #: ID-EGG-188
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TURCO DECON SOLUTION (UNUSED)	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

The waste is a "one time" clean-up of materials stored in radiologically contaminated area (Zone II). Decon solution is known commercially as Turco-Decon solvent. Excess decon solution. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.110	70.3	0.000	0.000	0.110	70.3	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. WERF incinerator is a well developed technology.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D040		Not currently prohibited under the LDR Program.

State: Idaho	**ID #: ID4691**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ISV WASTEWATER	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste is an aqueous scrub solution containing low levels of radionuclides. Scrubber water generated during testing of insitu vitrification process. Waste stream generated from R&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.2	1,494.6	0.000	0.000	2.2	1,494.6	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Portable Water Treatment System (PWTU) facility. The recommended treatment strategy is not expected to require significant technology development.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream no longer being generated.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Chemical Precipitation

State: Idaho	ID #: ID-EGG-193
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: EBR I NaK	
Matrix: Reactive Metals	Waste Type: MLLW

Waste Stream Description and Source:

This waste was generated during the decommissioning of EBR I reactor. It consists of NaK, a liquid metal at room temperature. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.680	464.9	0.000	0.000	0.680	464.9	0.000	0.000

Treatability Group:

MLLW RH, Reactive Metals, Ignitable, Corrosive, or Reactive Only. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. No treatment facility is currently available. The technology exists for treating this waste (sodium deactivation), but no facility is currently available. Treatment of this waste might be accomplished at the proposed Radioactive Sodium Waste Processing Facility, but mercury levels in the waste may prohibit treatment.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Beta/gamma emitter
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste no longer generated.

State: Idaho **ID #: ID-EGG-193**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: EBR I NaK

Matrix: Reactive Metals **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001E	Tech.	Deactivation

State: Idaho **ID #: ID-EGG-209**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TURCO DECON (OXIDIZER)

Matrix: Inorganic Solids **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is the remaining unused product that was used at the TAN Decon Shop in the process of radionuclide decontamination. This product became waste when the TAN Decon Shop was decommissioned and cleaned up. Waste stream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.420	186.0	0.000	0.000	0.420	186.0	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Solids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream no longer generated.

State: Idaho **ID #: ID-EGG-209**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TURCO DECON (OXIDIZER)

Matrix: Inorganic Solids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho	ID #: ID-EGG-210
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: FREON DECON WASTE	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste was produced from maintenance of a closed loop freon decontamination unit. The freon has likely evaporated but the waste still carries the code. This waste stream is: rags and filters that are contaminated with freon. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.210	46.7	0.210	46.7	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho **ID #: ID-EGG-210**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: FREON DECON WASTE

Matrix: Organic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D011	Conc.	Stabilization
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-212

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: PB AND CD CONTAMINATED SOIL

Matrix: Soil with <50% Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste was generated by WEDF solidification tests. Waste stream generated from R&D. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.030	13.6	0.000	0.000	0.030	13.6	0.000	0.000

Treatability Group:

MLLW CH, Soil with <50% Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility. Stabilization technologies are not expected to require significant technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-212

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: PB AND CD CONTAMINATED SOIL

Matrix: Soil with <50% Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-213
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MERCURY CONTAMINATED DEBRIS & ASBESTOS	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

The waste stream is shoe covers, gloves, plastic airhoods, paper towels, plastic buckets, Tyvek coveralls, respirator cartridges, and asbestos. This waste resulted from a clean-up of a mercury spill at HTRE III. Wastestream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.620	136.1	0.000	0.000	0.620	136.1	0.000	0.000

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste is available, treatment facilities are not available. Planning for the MLLWTF anticipates treatment to be available. Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This wastestream no longer generated.

State: Idaho	**ID #: ID-EGG-213**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MERCURY CONTAMINATED DEBRIS & ASBESTOS	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-214
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: 1,1,2-TRICHLORO-1,2,2-TRIFLUORETHANE	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is liquid freon generated from laboratory activities. This liquid freon waste was the decontamination medium used inside a closed loop decontamination unit which is no longer used. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.210	308.4	0.210	308.4	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-214

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: 1,1,2-TRICHLORO-1,2,2-TRIFLUORETHANE

Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: Idaho	ID #: ID-EGG-217
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HEAVY METAL RADIOACTIVE OIL	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

This waste is the result of maintenance activities. Waste stream generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.7	796.5	0.000	0.000	1.7	796.5	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. The treatment strategy does not require technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho	**ID #: ID-EGG-219**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: PPE W/TETRACHLOROETHYLENE & TCE	
Matrix: Organic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Personal protective equipment contaminated with sludge containing tetrachloroethylene and trichloroethylene. Waste stream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.8	453.6	0.000	0.000	1.8	453.6	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. The recommended technology does not require significant development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operation status. This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-219**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: PPE W/TETRACHLOROETHYLENE & TCE	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-EGG-220**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ACTIVATED CARBON LLMW	
Matrix: Organic Sludges/particulates	**Waste Type: MLLW**

Waste Stream Description and Source:

Waste stream is activated carbon that has become "spent" by absorbing contaminants to capacity and is no longer applicable to regeneration. This waste stream generated by treatment of aqueous or gaseous phase waste streams. Waste stream generated from treatment. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.210	208.7	0.000	0.000	0.210	208.7	2.1	2,080.0

Treatability Group:

MLLW CH, Organic Sludges/particulates, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. The treatment strategy recommended does not require technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-220

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ACTIVATED CARBON LLMW

Matrix: Organic Sludges/particulates | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-220

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ACTIVATED CARBON LLMW

Matrix: Organic Sludges/particulates | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-221
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: IGNITABLE LIQUID
Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

Ethyl alcohol w/anti-seize compound created by the decontamination and cleaning of the lid and chain on a 55 ton cask. Wastestream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.020	9.5	0.000	0.000	0.020	9.5	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Ignitable, Corrosive, or Reactive Only. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration is a well developed technology.

While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-221**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: IGNITABLE LIQUID	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration

State: Idaho	ID #: ID-EGG-222
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CARBURETOR GREASE	
Matrix: Other	Waste Type: MLLW

Waste Stream Description and Source:

This waste was created by the decontamination and cleaning of the lid and chain of a 55 ton cask. It is anti-seize compound mixed with a carburetor cleaner & diatomaceous earth. Waste stream generated from maintenance. This waste stream is no longer generated. The basis for the EPA code is both process knowledge and sampling analysis. Other waste category = grease.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.020	9.1	0.020	9.1	0.000	0.000

Treatability Group:

MLLW CH, Other, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices

State: Idaho | ID #: ID-EGG-222

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CARBURETOR GREASE

Matrix: Other | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration
F005A	Conc.	Incineration

State: Idaho	ID #: ID-EGG-251
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ELECTROPLATING SOLUTION	
Matrix: Lab Packs with Metals	Waste Type: MLLW

Waste Stream Description and Source:

The waste is aqueous plating solution with heavy metals (F007). This waste stream was generated from laboratory experiments using electroplating. This waste stream is no longer generated. EPA codes basis is both process knowledge and sampling analysis.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.110	20.4	0.000	0.000	0.110	20.4	0.000	0.000

Treatability Group:

MLLW CH, Lab Packs with Metals, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Portable Water Treatment System (PWTU) facility. Portable Water Treatment Unit. Treatment strategies recommended above do not require technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho | ID #: ID-EGG-251

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ELECTROPLATING SOLUTION

Matrix: Lab Packs with Metals | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D011	Conc.	Stabilization
F007	Conc.	Alkaline Chlorination followed by Chemical Precipitation; and Stabilization

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Idaho	ID #: ID-EGG-252
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: FREON SLUDGE	
Matrix: Organic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Rags from sludge cleanup containing about 5% freon and ppm amounts of chromium, lead and other halogenated organic compounds. Waste stream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.040	20.9	0.040	20.9	0.000	0.000

Treatability Group:

MLLW CH, Organic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

State: Idaho ID #: ID-EGG-252

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: FREON SLUDGE

Matrix: Organic Sludges/particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D019		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.
F002	Conc.	Incineration

State: Idaho **ID #: ID-EGG-253**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CADMIUM FUEL GRID

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Cadmium strips from handling ETR fuel grid elements. Waste stream generated from maintenance. This waste strean is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
26.4	5,987.4	0.000	0.000	26.4	5,987.4	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Waste Engineering Development Facility. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

State: Idaho	**ID #: ID-EGG-253**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CADMIUM FUEL GRID	
Matrix: Inorganic Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-254
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HTRE-III TREATMENT SLUDGE	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Filtered mercury sulfide sludge from the treatment of TAN mercury contaminated rinse solution that came from decontamination activities at HTRE-III. Waste stream generated from treatment. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.830	809.7	0.830	809.7	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility. The treatment recommended does not require significant development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer being generated.

State: Idaho ID #: ID-EGG-254

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HTRE-III TREATMENT SLUDGE

Matrix: Inorganic Sludges/particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009B	Tech.	Mercury Roast/Retort

State: Idaho | ID #: ID-EGG-255

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MERCURY CONTAMINATED SOIL

Matrix: Soils | Waste Type: MLLW

Waste Stream Description and Source:

Soil contaminated with mercury and radionuclides from remedial investigation sampling efforts at ACID PIT #9 located at the radioactive waste management complex (RWMC). Waste stream generated from characterization. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.630	242.7	0.000	0.000	0.630	242.7	6.3	8,625.0

Treatability Group:

MLLW CH, Soils, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. WERF Waste Stabilization. Strategy utilizes proven technologies. Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-EGG-255**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MERCURY CONTAMINATED SOIL	
Matrix: Soils	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho	ID #: ID-EGG-256
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METHANOL SOLUTION	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

Methanol/water rinsates from cleaning lab analysis purge tubes from 824D Analysis Procedure, containing sodium hydroxide and radionuclide traces. Waste stream generated from laboratory. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.040	13.6	0.040	13.6	0.011	119.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-256

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHANOL SOLUTION

Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-256

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHANOL SOLUTION

Matrix: Organic Liquids | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.

State: Idaho **ID #: ID-EGG-256**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHANOL SOLUTION

Matrix: Organic Liquids **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration

4691

State: Idaho	ID #: ID-EGG-257
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METHYLENE CHLORIDE LAB WASTE	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

Liquid lab waste contaminated with methylene chloride from the analysis of mixed waste samples at the Environmental Chemistry Lab. Waste stream generated from laboratory. Waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.080	40.8	0.080	40.8	0.012	200.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration does not require significant development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D012	Conc.	Incineration
D013	Conc.	Incineration

618

State: Idaho **ID #: ID-EGG-257**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHYLENE CHLORIDE LAB WASTE

Matrix: Aqueous Liquid **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-257

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHYLENE CHLORIDE LAB WASTE

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Idaho | ID #: ID-EGG-258

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: D&D RESIDUE AND SLUDGE

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Waste generated from D&D operations at the old hot laundry facility. Paint scale, washer residue and dryer reisdue contaminated with cadmium and lead and trace amounts of radionuclides. Waste stream generated from D&D. The waste codes associated with this waste stream were identified based on both process knowledge and sampling/analysis. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.030	15.9	0.000	0.000	0.030	15.9	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. These technologies can be implemented without a development effort.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Changes in operations status. This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-258**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: D&D RESIDUE AND SLUDGE	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho	ID #: ID-EGG-259
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE PCB OIL W/TCLP ORGANICS	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

Used motor oil contaminated with benzene, PCBs, and CS-137. Waste stream generated from maintenance. This waste stream is no longer generated. One-time waste stream only.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.420	396.9	0.000	0.000	0.420	396.9	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology required to treat this waste is available, treatment facilitites are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Volatile radionuclide

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	ID #: ID-EGG-259
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE PCB OIL W/TCLP ORGANICS	
Matrix: Organic Liquids	Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D018		Not currently prohibited under the LDR Program.

State: Idaho	ID #: ID-EGG-260
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE PCB OIL W/HEAVY METALS	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

Hydraulic oil from D&D operations on SL1 cranes, contaminated with lead and PCBs. Waste stream generated from mainteneance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.210	192.8	0.000	0.000	0.210	192.8	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology to treat this waste stream is available, the treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste is no longer generated.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-261
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF BAGHOUSE BAGS (TEFLON)	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Teflon bags used to control emissions from the WERF incinerator. The Teflon bags have been replaced with bags manufactured from another material. Waste stream generated from treatment. Waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
6.5	2,858.5	0.000	0.000	6.5	2,858.5	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. This waste will not be incinerated at WERF due to the corrosive by-products of the fluorine. While the technology required to treat this waste is available, treatment facilities are not available. Planning for the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the Idaho Waste Processing Facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Raw material changes. This waste is no longer generated.

State: Idaho	**ID #: ID-EGG-261**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF BAGHOUSE BAGS (TEFLON)	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-262

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF BAGHOUSE BAGS (FIBERGLASS)

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

Waste is generated in controlling the emissions of WERF incinerator. Waste stream generated from treatment. This waste will be generated in the future.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	3.0	360.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration is a proven technology for waste treatment.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Raw material changes. A new type of bag is replacing the fiberglass bags.

State: Idaho	**ID #: ID-EGG-262**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF BAGHOUSE BAGS (FIBERGLASS)	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-EGG-263**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF HEPA FILTERS AND PREFILTERS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is HEPA filters and prefilters from WERF incinerator. Generated from treatment. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.9	766.1	0.000	0.000	2.9	766.1	10.5	2,700.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-EGG-263**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF HEPA FILTERS AND PREFILTERS	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-264

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF BAGHOUSE BAGS (BLUE MAX)

Matrix: Organic Debris | Waste Type: MLLW

Waste Stream Description and Source:

The waste is generated in controlling the emissions of WERF incinerator. Waste stream generated from treatment. This waste will be generated in the future.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	23.0	2,770.0

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. The technology recommended for this waste does not require further development. Blue max bags can be treated for disposal by incineration. They replace Teflon bags that could not be treated at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-264

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF BAGHOUSE BAGS (BLUE MAX)

Matrix: Organic Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-EGG-265**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF REFRACTORY BRICK	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Refractory brick from the lining of the WERF incinerator. Waste stream generated from maintenance. This is a one time waste generated in 1992. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.0	5,448.1	0.000	0.000	3.0	5,448.1	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Waste Engineering Development Facility. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operation Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-265**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF REFRACTORY BRICK	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-266

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF MONITOR DEBRIS

Matrix: Elemental Lead | Waste Type: MLLW

Waste Stream Description and Source:

This waste consists of hollow lead cylinders with or without a stainless steel jacket used to shield instruments. Waste stream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
5.4	3,739.0	0.000	0.000	5.4	3,739.0	0.000	0.000

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available.
Waste Engineering Development Facility (WEDF) stabilization; strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-266**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF MONITOR DEBRIS	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho | ID #: ID-EGG-267

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS FILTERS

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste consists of various types of filters that have been removed from different buildings, equipment, etc. Waste filters generated from various at the INEL. This waste is still generated. EPA code basis is both sampling and analysis and process knowledge.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.250	53.1	0.000	0.000	0.250	53.1	5.0	1,060.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-267
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: MISCELLANEOUS FILTERS
Matrix: Heterogeneous Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-268
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MISCELLANEOUS RESINS	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

This waste consists of spent ion exchange resins and various other zeolite media. Waste stream is generated through various laboratory and treatment processes at the INEL. Wastestream generated from treatment/laboratory. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.120	200.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-268
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: MISCELLANEOUS RESINS
Matrix: Heterogeneous Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-EGG-269

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ELECTRONIC BOARD & MISC. MACHINERY PARTS

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is electronic equipment (circuit board, capacitators, solder connections -- lead and silver). This stream will be generated by new construction upgrade, facility upgrade, and D&D operations conducted at TRA. Waste stream generated from maintenance. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	12.5	7,500.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Waste Engineering Development Facility. Strategy utilizes proven technologies.

This waste is expected to be treated under generator treatment plans pursuant to 40 CFR 262.34 and 40 CFR 268.7 as the waste is generated.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-269**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ELECTRONIC BOARD & MISC. MACHINERY PARTS

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009D	Tech.	Amalgamation
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-EGG-270**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL CONTAMINATED SOLIDS

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream consists of sludges, characterization samples, treatment test residues, and other miscellaneous solids contaminated with toxicity characteristic and radioactive constituents. Waste stream generated from R&D. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	6.5	3,870.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. WERF waste stabilization strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization

State: Idaho ID #: ID-EGG-270
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: HEAVY METAL CONTAMINATED SOLIDS
Matrix: Inorganic Sludges/particulates Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.

State: Idaho ID #: ID-EGG-270

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL CONTAMINATED SOLIDS

Matrix: Inorganic Sludges/particulates Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.

State: Idaho	ID #: ID-EGG-271
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BIOPROCESSING MIXED WASTE	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

This waste is aqueous solution containing heavy metals. The generation is from research on uranium mill tailings and microbial leaching of uranium and thorium from the soil. Waste stream generated from laboratory. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	229.5	0.000	0.000	0.320	229.5	0.400	40.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. WERF waste stabilization strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho | ID #: ID-EGG-271
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: BIOPROCESSING MIXED WASTE
Matrix: Aqueous Liquid | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-272
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: URANIUM SPIKES AND LEAD	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Surrogate waste was created to serve as uranium spikes for lead melt tests, but the tests were never performed. The waste consists of lead bricks with 1" drilled holes. The holes were filled with U308 powder and lead shot. Waste stream generated from R&D. This waste is no longer generated (one time generation only).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.030	18.1	0.000	0.000	0.030	18.1	0.000	0.000

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available. Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-272**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: URANIUM SPIKES AND LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	**ID #: ID-EGG-274**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF FLY ASH	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

Waste Stream Description and Source:

WERF fly contaminated with cadmium and lead from the incineration of LLW. Waste stream generated from treatment. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.690	311.6	0.000	0.000	0.690	311.6	12.6	2,300.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility. WERF waste stabilization technologies are well established for waste treatment.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-EGG-274**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF FLY ASH	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-275
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WERF BOTTOM ASH	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:
Bottom ash contaminated with chromium from the incineration of LLW. Waste stream generated from treatment. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.1	1,062.8	0.000	0.000	2.1	1,062.8	69.0	24,700.0

Treatability Group:
MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:
Plan to treat on-site at the existing WERF facility. WERF waste stabilization technologies are well established for waste treatment.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:
1) Unknown.

Waste Minimization Activities:
Not reported.

EPA CODES
Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho	ID #: ID-EGG-276
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WATER WITH TRICHLOROETHYLENE	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

This waste was created by the remediation of the TSF-05 injection well. This waste is the by-product of flushing the injection well with water. It has a very small amount of trichloroethylene contamination. Waste stream generated from R&D. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.7	1,719.1	0.000	0.000	1.7	1,719.1	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. There are no treatment standards for these characteristic organics.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-276**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: WATER WITH TRICHLOROETHYLENE	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-277

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WERF SIZING BAGHOUSE DUST

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Baghouse dust from metal cutting operations. Waste stream generated from treatment. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.500	125.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility. Stabilization does not require significant technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho | ID #: ID-EGG-278

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SOLIDIFIED LISTED WERF ASH

Matrix: Cemented Solids | Waste Type: MLLW

Waste Stream Description and Source:

Solidified listed incinerator ash from WERF incinerator. This waste was generated as a result of treating listed wastes through incineration and stabilization. Even though this waste will be treated it is still considered listed due to the derived from rule.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	15.0	27,250.0

Treatability Group:

MLLW CH, Cemented Solids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. This waste is the result of treating other wastes. The waste is considered listed due to the mixture and derived from rule, but no additional treatment is required under LDR. Currently, INEL does not have a facility for disposal of treated listed wastes.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Minimization of other wastes to be treated will reduce this waste.

State: Idaho **ID #: ID-EGG-278**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SOLIDIFIED LISTED WERF ASH

Matrix: Cemented Solids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F004	Conc.	Incineration
F005A	Conc.	Incineration

State: Idaho | ID #: ID-EGG-279

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: BORAX V D&D LIQUID

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

Aqueous liquid in Borax-V basement area that may possibly contain mercury from miscellaneous instrumentation. This waste is expected to be generated as a result of D&D operations in 1994.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	2.5	2,500.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing Portable Water Treatment System (PWTU) facility. The technologies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho | ID #: ID-EGG-280

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: BORAX D&D NONCOMPACTIBLE LEAD SHEETING

Matrix: Elemental Lead | Waste Type: MLLW

Waste Stream Description and Source:

Remaining lead sheeting around Borax-V reactor pit. This waste is expected to be generated as a result of D&D operations in 1994.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.500	6,000.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available. Chemical extraction, CO2 blasting, decon at CPP-659 decontamination facility.
Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho ID #: ID-EGG-280

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: BORAX D&D NONCOMPACTIBLE LEAD SHEETING

Matrix: Elemental Lead Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ID-EGG-281
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ETR NONCOMPACTIBLE LEAD	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Waste consists primarily of lead bricks generated by the maintenance of the engineering test reactor (ETR) facility. This waste is expected to be generated as a result of maintenance operations in 1997.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	17.2	195,000.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available. Chemical extraction, CO2 blasting, decon at CPP-659 decontamination facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-281**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: ETR NONCOMPACTIBLE LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ID-EGG-282
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MTR D&D NONCOMPACTIBLE METAL	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Waste consists primarily of lead bricks to be generated by the D&D of the materials testing reactor (MTR). The waste is expected to be generated as a result of D&D operations in 1997. D&D operations will extend beyond 1997.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	4.3	49,000.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
Chemical extraction, CO2 blasting, decon available at CPP-659 decontamination facility.
Waste Engineering Development Facility (WEDF) stabilization. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-282**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MTR D&D NONCOMPACTIBLE METAL

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

State: Idaho	ID #: ID-EGG-283
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SPERT IV D&D SLUDGE	
Matrix: Inorganic Sludges/particulates	Waste Type: MLLW

Waste Stream Description and Source:

Waste stream consists of residue sludge remaining in SPERT IV waste tank. This waste stream is generated from D&D activities. Completion of D&D of the SPERT IV waste tank planned for the second quarter of 1993.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.400	530.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing INEL facility. This waste is expected to be treated under generator treatment plans pursuant to 40 CFR 262.34 and 40 CFR 268.7 as the waste is generated.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-EGG-283**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SPERT IV D&D SLUDGE	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho | ID #: ID-EGG-284

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: WRRTF D&D LIQUID

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is generated from D&D. Characterization has not been completed. D&D activity generating this waste stream is projected to occur in 1995.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	3.0	3,000.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility. WERF waste stabilization. The technologies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho	ID #: ID-EGG-285
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METHYLENE CHLORIDE LAB DEBRIS	
Matrix: Heterogeneous Debris	Waste Type: MLLW

Waste Stream Description and Source:

Solid laboratory debris contaminated with methylene chloride during the preparation of radioactive samples for GC/MS. Debris includes paper towels, wipes, pipettes, etc. and sample vials containing small amounts of material. Waste stream generated from laboratory. This waste is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.050	23.6	0.050	23.6	0.189	68.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the planned Mixed Low-Level Waste Treatment Facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Mixed Low Level Waste Treatment Facility (MLLWTF) anticipates treatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho | ID #: ID-EGG-285
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: METHYLENE CHLORIDE LAB DEBRIS
Matrix: Heterogeneous Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-285

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: METHYLENE CHLORIDE LAB DEBRIS

Matrix: Heterogeneous Debris | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.
F002	Conc.	Incineration

State: Idaho	**ID #: ID-EGG-285**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METHYLENE CHLORIDE LAB DEBRIS	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-EGG-286
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UST CONTENTS	
Matrix: Organic Sludges/Particulates	Waste Type: MLLW

Waste Stream Description and Source:

Aqueous and organic contents of underground storage tanks, including sludge, suspected of characteristic metal contamination. Tanks are scheduled for D&D. Waste stream generated from maintenance. This waste stream is still generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	94.6	56,760.0

Treatability Group:

MLLW CH, Organic Sludges/Particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-EGG-286**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UST CONTENTS

Matrix: Organic Sludges/Particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-287
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNCATEGORIZED (A-LLW)	
Matrix: Other	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream was placed in storage prior to 1973. As container specific information was not entered into the database prior to 1973, these wastes are uncategorized as to specific contents, but the waste is expected to be similar to other ROCKY FLATS wastes received after 1973 which are reported as specific waste streams in this report. Waste stream generated from production. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2,105.0	1,479,179.8	0.000	0.000	2,105.0	1,479,179.8	0.000	0.000

Treatability Group:

MLLW CH/AL, Other. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. This waste requires characterization of individual containers at the Waste Characterization Facility (WCF) before treatment options can be identified. Treatment is expected to be available at either the WCF or the planned Idaho Waste Processing Facility when characterization data are available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-287**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNCATEGORIZED (A-LLW)	
Matrix: Other	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: Idaho | ID #: ID-EGG-288

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNKNOWN (A-LLW)

Matrix: To Be Determined | Waste Type: MLLW

Waste Stream Description and Source:

This waste has been determined to have insufficient RCRA characterization information available to assign EPA waste codes. It consists mainly of contaminated A-LLW trash and solidified liquids. Characterization activities are in progress. Waste stream generated from production. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
185.0	79,727.0	0.000	0.000	185.0	79,727.0	0.000	0.000

Treatability Group:

MLLW CH/AL, To Be Determined. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Waste Characterization Facility (WCF). The WCF will be used to characterize waste for treatment or disposal. As necessary, the WCF may pre-treat wastes during this process to facilitate treatment disposal.

While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the Idaho Waste Processing Facility (IWPF) anticipates treatment to be available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Alpha emitter, 10-100 nCi/g

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-288**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNKNOWN (A-LLW)	
Matrix: To Be Determined	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: Idaho | ID #: ID-EGG-289

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISC. LABORATORY WASTES

Matrix: Lab Packs with Metals | Waste Type: MLLW

Waste Stream Description and Source:

Lab wastes generated in small quantities during routine lab experiments. Waste stream generated from laboratory. This waste stream will be generated in the future.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	1.2	1,278.0

Treatability Group:

MLLW CH, Lab Packs with Metals, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available.
WERF incinerator. Treatment strategies recommended do not require development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho ID #: ID-EGG-289

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISC. LABORATORY WASTES

Matrix: Lab Packs with Metals Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D002A	Tech.	Deactivation
D003E	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-EGG-289

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISC. LABORATORY WASTES

Matrix: Lab Packs with Metals | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D020		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.

State: Idaho **ID #: ID-EGG-289**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISC. LABORATORY WASTES

Matrix: Lab Packs with Metals **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D042		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F004	Conc.	Incineration
F005A	Conc.	Incineration

The alternate LDR treatment standards for labpacks is incineration as a method of treatment and a requirement for the incinerator residues to meet the treatment standards for the TC toxic metals (i.e., D004-D008, and D010-D011).

State: Idaho	ID #: ID-EGG-290
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN LOFT SUMP WASTE WATER	
Matrix: Aqueous Liquid	Waste Type: MLLW

Waste Stream Description and Source:

Wastewater generated from past projects and experiments associated with the LOFT facility and the decommissioning of the HTRE engines. Waste stream generated from maintenance. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	5.8	6,000.0	5.8	6,000.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. TAN726A Treatment is under evaluation for treatment of this stream. Treatment strategies may be implemented without technology development.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

State: Idaho	**ID #: ID-EGG-290**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TAN LOFT SUMP WASTE WATER	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho | ID #: ID-EGG-291

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL CONTAMINATED SLUDGE

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

This waste is typically generated when D&D or other activities decontaminate old tank systems. Waste stream generated from D&D.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	1.1	1,200.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Strategy utilizes proven technologies.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho ID #: ID-EGG-291

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEAVY METAL CONTAMINATED SLUDGE

Matrix: Inorganic Sludges/particulates Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D011	Conc.	Stabilization

State: Idaho	ID #: ID-EGG-292
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: FREON SYSTEM WASTE - LIQUID	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:
The removal of freon cleaning system will produce 30 gallons of freon solvent. Removal is expected to occur in 1993.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.114	178.0

Treatability Group:
MLLW CH, Organic Liquids, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:
Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Not reported.

Waste Minimization Activities:
Not reported.

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

State: Idaho	ID #: ID-EGG-293
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: FREON SYSTEM WASTE - SOLIDS	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Freon contaminated rags, filters, etc. Generated during removal of freon cleaning system. Removal expected to occur in 1993. Waste will contain 1,1,2-trichloro-1,2,2-trifluoroethane.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.208	125.0*

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Plan to treat at the WERF incinerator, or at the proposed MLLWTF when it becomes available.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-SMC-133

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS LAB WASTES

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

This waste is generated as a result of operating an analytical laboratory. Waste consists of unused extracts, outdated standards and reagents. Waste stream generated from characterization, laboratory.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.570	573.0	0.000	0.000	0.570	573.0	1.000	1,000.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Treatment (incineration followed by stabilization) may be performed at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.
Raw Material Changes.

State: Idaho | ID #: ID-SMC-133
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: MISCELLANEOUS LAB WASTES
Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES
Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D002A	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
D012	Conc.	Incineration
D013	Conc.	Incineration
D014	Conc.	Incineration
D015	Conc.	Incineration
D016	Conc.	Incineration
D017	Conc.	Incineration
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D020		Not currently prohibited under the LDR Program.

State: Idaho ID #: ID-SMC-133

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS LAB WASTES

Matrix: Organic Liquids Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D023		Not currently prohibited under the LDR Program.
D024		Not currently prohibited under the LDR Program.
D025		Not currently prohibited under the LDR Program.
D026		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D030		Not currently prohibited under the LDR Program.
D031		Not currently prohibited under the LDR Program.
D032		Not currently prohibited under the LDR Program.
D033		Not currently prohibited under the LDR Program.
D034		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D036		Not currently prohibited under the LDR Program.
D037		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D040		Not currently prohibited under the LDR Program.
D041		Not currently prohibited under the LDR Program.
D042		Not currently prohibited under the LDR Program.

State: Idaho	**ID #: ID-SMC-133**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MISCELLANEOUS LAB WASTES	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D043		Not currently prohibited under the LDR Program.

State: Idaho | ID #: ID-SMC-135
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: NON-ACID WASTE LIQUID
Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

Various wastewater streams from the production line portion of the Phase 2 facility run into a central tank, that water is processed through an evaporator, reducing its volume. Waste stream generated from production. As of 12-01-92 this waste will no longer be generated. Modifications to system now produces a solid material which passess TCLP testing.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
26.5	33,000.0	4.0	5,000.0	30.5	38,000.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing TAN 681 facility. Being treated now, on-site.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-SMC-135**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NON-ACID WASTE LIQUID	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho | ID #: ID-SMC-301

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TCA STILL BOTTOMS

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

This waste stream consists of still bottoms produced as a result of the distillation of TCA for reuse. (Several TCA waste streams are recycled by distillation, including water with TCA, TCA waste, TCA waste with water, and spent 1,1,1-TCA degreaser solvent.)

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.2	1,500.0	0.000	0.000	1.2	1,500.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste contains depleted uranium 3.6 E-7 Ci/gram.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: ID-SMC-301**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TCA STILL BOTTOMS	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration

State: Idaho | ID #: ID-SMC-302

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MILL PIT SLUDGE

Matrix: Inorganic Sludges/particulates | Waste Type: MLLW

Waste Stream Description and Source:

Roller mill lubricants and washdown, eutectic salt, glycol, hydraulic oil, waste stream generated from production, maintenance. The roller mills (used for billets of DU) are routinely lubricated and washed down into a sump. In addition, the floor beneath the mill and mill feed conveyors are cleaned and the washdown placed in the sump. Contains some soils and organics.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.652	649.0	0.038	38.0	0.690	687.0	6.0	1,350.0

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho **ID #: ID-SMC-302**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MILL PIT SLUDGE

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho	**ID #: ID-SMC-303**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MISCELLANEOUS PAINT WASTES	
Matrix: Inorganic Sludges/particulates	**Waste Type: MLLW**

Waste Stream Description and Source:

The waste (liquids, paint chips) was generated as a result of painting & plant maintenance at SMC. Specific painting tasks are unknown as the solutions, thinners, and paints are not precisely known. The waste has been accumulated over several years. Waste stream generated from production, maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.4	2,349.0	0.000	0.000	2.4	2,349.0	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.
Raw Material Changes.
Future efforts may eliminate this waste.

State: Idaho **ID #: ID-SMC-303**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS PAINT WASTES

Matrix: Inorganic Sludges/particulates **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D011	Conc.	Stabilization
D018		Not currently prohibited under the LDR Program.
D019		Not currently prohibited under the LDR Program.
D021		Not currently prohibited under the LDR Program.
D022		Not currently prohibited under the LDR Program.
D027		Not currently prohibited under the LDR Program.
D028		Not currently prohibited under the LDR Program.
D029		Not currently prohibited under the LDR Program.
D035		Not currently prohibited under the LDR Program.
D038		Not currently prohibited under the LDR Program.
D039		Not currently prohibited under the LDR Program.
D043		Not currently prohibited under the LDR Program.

State: Idaho	ID #: ID-SMC-304
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CALCINED URANYL NITRATE	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Nitric acid used to remove oxidation from sheets of depleted uranium. The spent acid is processed through a fractionator and recycled back into the acid system for reuse. Waste stream generated from production. The acid etch system is being replaced by a high pressure water system. This waste stream will not be generated after the change over. UNH accumulates in a tank at the bottom of the fractionator (still bottoms). That material is then processed further to remove chemically bound water and nitric acid, leaving calcined depleted uranium oxide.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.020	20.0	0.020	20.0	1.2	1,200.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. A treatability study is in progress. Study is due to be completed 5/93. A generator treatment plan will be in place before the start of the calciner.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Product change. The acid etch system is being replaced by a high pressure water system. This waste stream will not be generated after change over.

State: Idaho	**ID #: ID-SMC-304**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CALCINED URANYL NITRATE	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-SMC-305**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HEAVY METAL CONTAMINATED WASTE OILS	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Stream Description and Source:

Oils and gases are used throughout the SMC facility. Some of those oils may become contaminated with depleted uranium oxides and heavy metals from the wearing of metal components. Waste stream generated from production, maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
7.3	6,970.0	4.3	4,260.0	11.6	11,230.0	12.0	13,500.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration followed by stabilization will be performed at the WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Oils are tested to determine condition of oil rather than routinely change out oils. A consolidated approved list of oils and greases has been developed. A procedure for management of waste oils is being written. Waste minimization reuse will affect generation rates.

State: Idaho	**ID #: ID-SMC-305**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HEAVY METAL CONTAMINATED WASTE OILS	
Matrix: Organic Liquids	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho	ID #: ID-SMC-400
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LEAD FINES	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

Lead fines from CO2 blast cleanup of radioactive contaminated lead debris. Waste stream generated from production, R&D

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.500	540.0

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time. A generator treatment plan for debris treatment will be prepared for this waste prior to generation.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.
Waste Avoidance Due to Recycling/Reuse

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho **ID #: ID-SMC-411**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MIXED WASTE DEBRIS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste will be generated as a result of modifications to acidic systems, routine maintenance, and D&D equipment. The EPA codes associated with this waste will vary and cannot be identified at this time.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	12.0	108.0

Treatability Group:

MLLW CH, Inorganic Debris. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Treatment options cannot be evaluated at this time. May be eligible for physical or chemical extraction of debris before micro/macroencapsulation.

Technology Status:

Technology assessment has not started.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Waste avoidance due to recycling/reuse.

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: Idaho	**ID #: ID-SMC-412**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: ETHYLENE GLYCOL HYDRAULIC FLUID	
Matrix: Organic Liquids	**Waste Type: MLLW**

Waste Stream Description and Source:

This material was used as hydraulic fluid in metal working equipment at SMC. The equipment originally contained hydraulic oils which were replaced with ethylene glycol.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.2	3,409.0	0.000	0.000	3.2	3,409.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration and stabilization will be performed at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status. This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization

State: Idaho | ID #: ID-SMC-413

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LEAD CONTAMINATED SCRAP METAL

Matrix: Inorganic Debris | Waste Type: MLLW

Waste Stream Description and Source:

This waste may be generated as a result of disassembly of casks for recycle of components. Some of the metal may have lead adhering to the surface.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	10.0	18,000.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. This waste may be eligible for CO2 blast decontamination followed by stabilization of cleanup residue at the ICPP Decontamination Facility or macroencapsulation at the WEDF.

Technology Status:

Assessing technologies to determine if the technology exists, and if so, whether it needs modification.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

Waste avoidance due to recycling/reuse.

State: Idaho **ID #: ID-SMC-413**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LEAD CONTAMINATED SCRAP METAL

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-WIN-111**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CADMIUM CONTAMINATED SOLIDS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Process repairs, replacements, and spill cleanups in CPP-666. The waste is primarily protective clothing and small metal objects. Waste stream generated from production. The volume is based upon the information provided in the mixed waste inventory dated 12/4/92.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.900	865.0	0.000	0.000	0.900	865.0	20.0	19,214.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration followed by grouting of the ash at WERF. Metals may be treated by CO2 decon in CPP-659.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

Good Operating Practices.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

State: Idaho	**ID #: ID-WIN-111**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CADMIUM CONTAMINATED SOLIDS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-WIN-131**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MERCURY CONTAMINATED SOLIDS

Matrix: Multiple **Waste Type: MLLW**

Waste Stream Description and Source:

Waste is mercury absorbent, rags, towels, manometers, anti-contamination clothing, some solids are shielded with lead to reduce radiation exposure. Waste stream generates from production, maintenance. Information is based upon the mixed waste inventory for CPP-1617 and CPP-1619 (11-20-92) and per 613 Inventory 12-04-92. This waste stream includes inorganic debris, and elemental lead.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.7	3,511.0	0.000	0.000	3.7	3,511.0	35.0	33,625.0

Treatability Group:

MLLW RH, Multiple, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration followed by grouting at WERF. Will be treated in accordance with the Debris Rule. Some of this waste may not be accepted at WERF for treatment due to high radioactivity.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

Good Operating Practices.

State: Idaho **ID #: ID-WIN-131**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MERCURY CONTAMINATED SOLIDS

Matrix: Multiple **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-WIN-154
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE CONTAMINATED LEAD	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is lead brick, sheet, blankets, scrap, etc. used as shielding. Waste stream generated from maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
40.8	75,000.0	0.000	0.000	40.8	75,000.0	126.0	194,165.0

Treatability Group:

MLLW RH, Elemental Lead, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. The recommended technologies can be implemented with little or no development effort. Planned CO2 decon at CPP-659 Decontamination Facility followed by recycle.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

Good Operating Practices.
Waste Avoidance Due to Recycling/Reuse.

State: Idaho **ID #: ID-WIN-154**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: RADIOACTIVE CONTAMINATED LEAD

Matrix: Elemental Lead **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho	**ID #: ID-WIN-172**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: HEPA FILTERS	
Matrix: Inorganic Debris	**Waste Type: HLW**

Waste Stream Description and Source:

Primarily from system HEPA filters for off-gas cleaning of ventillation from HLW and spent fuel processing. The filters are MTRU. HEPA filters may contain F, P, and U listed waste codes resulting from laboratory quantities of waste dumped to the ICPP waste systems filtered by these HEPA filters.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
20.4	19,588.0	0.000	0.000	20.4	19,588.0	34.0	32,664.0

Treatability Group:

HLW RH/AL, Inorganic Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Filters will be treated in accordance with the Debris Rule. Will use chemical extraction in the HEPA Filter Leach Facility CPP-659. The facility is currently awaiting further testing to determine if modifications are necessary. Facility will be available in FY94. The approximately 20 m3 of MTRU HEPA filters are stored at the INEL. These HEPA filters will remain in the HLW category since they will be treated in the HEPA filter leach system. The resulting leachate will be calcined and the calcine eventually will be vitrified.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

State: Idaho **ID #: ID-WIN-172**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: HLW**

Good Operating Practices. Change in Operations Status.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Tech.	High Level Vitrification
D005	Tech.	High Level Vitrification
D006B	Tech.	High Level Vitrification
D007	Tech.	High Level Vitrification
D008C	Tech.	High Level Vitrification
D009C	Tech.	High Level Vitrification
D010	Tech.	High Level Vitrification
D011	Tech.	High Level Vitrification
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration
U012	Conc.	Incineration

State: Idaho **ID #: ID-WIN-172**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: HLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration
U226	Conc.	Incineration

State: Idaho **ID #: ID-WIN-172**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: HLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U227	Conc.	Incineration
U228	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-WIN-173**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL LIQUID WASTE

Matrix: Aqueous Liquid **Waste Type: HLW**

Waste Stream Description and Source:

Acidic waste with very high levels of radioactivity, due to mission change the primary high level liquid waste will be from HEPA leach, LET&D bottoms, PEW bottoms, and D&D activities. Presence of listed wastes (P,U,F) from the introduction of small amounts of listed wastes from laboratory analysis to the PEW evaporation then on to the tank farm waste system. Waste stream generated from production and D&D liquid generation. This waste stream contains TRU.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	7,700.0	7,397,621.0	7,700.0	7,397,621.0	3,500.0	3,362,555.0

Treatability Group:

HLW RH/AL, Aqueous Liquid, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. This waste stream is currently being calcined at CPP-659. The resulting calcine is scheduled for vitrification in a glass ceramic process. Verification of the glass ceramic vitrification process is proceeding, actual treatment facility is scheduled for start-up in TBD. The volume in storage is based upon readings obtained from the DCS on 12-03-92 for tanks WM 180-190. The sodium part of this waste has not been classified as HLW or LLW.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

State: Idaho | ID #: ID-WIN-173
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: HIGH LEVEL LIQUID WASTE
Matrix: Aqueous Liquid | Waste Type: HLW

Change in operations status.

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	High Level Vitrification
D004	Tech.	High Level Vitrification
D005	Tech.	High Level Vitrification
D006B	Tech.	High Level Vitrification
D007	Tech.	High Level Vitrification
D008B	Tech.	High Level Vitrification
D009C	Tech.	High Level Vitrification
D010	Tech.	High Level Vitrification
D011	Tech.	High Level Vitrification
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration

State: Idaho **ID #: ID-WIN-173**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL LIQUID WASTE

Matrix: Aqueous Liquid **Waste Type: HLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U012	Conc.	Incineration
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration

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State: Idaho

ID #: ID-WIN-173

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL LIQUID WASTE

Matrix: Aqueous Liquid

Waste Type: HLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U226	Conc.	Incineration
U227	Conc.	Incineration
U228	Conc.	Incineration

State: Idaho | ID #: ID-WIN-174

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL WASTE CALCINE SOLIDS

Matrix: Calcine Solids | Waste Type: HLW

Waste Stream Description and Source:

Calcine, primarily salts and oxides of metals (heavy metals) and components of HLW. Process knowledge indicated the likely presence of listed wastes. Although waste is HLW, TRU constituents exist. Waste stream generated from production, treatment. Calculation of mass includes SpGr (bulk density) of 1.7 for calcine.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3,600.0	5,879,668.0	0.000	0.000	3,600.0	5,879,668.0	2,325.0	3,797,285.0

Treatability Group:

HLW RH/AL, Calcine Solids, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Glass ceramic vitrification process currently being verified, treatment facility on-line TBD. Sampling/Analysis performed on this waste. Volume in storage was obtained from WINCO-1054 and thermocouple readings. Calcination of sodium-based waste may not be considered high-level waste.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Remote handled
2) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Treatment could result in plating, precipitation, or some other form of concentration, which could cause workers to receive a significant radiation exposure. The potential for concentration of beta and gamma emitters will affect the design and operation of a treatment facility.
2) Radiation levels requiring remote handling will affect the design and operation of a treatment facility, i.e., need for robotics, additional shielding, etc.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho | ID #: ID-WIN-174

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL WASTE CALCINE SOLIDS

Matrix: Calcine Solids | Waste Type: HLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Tech.	High Level Vitrification
D005	Tech.	High Level Vitrification
D006B	Tech.	High Level Vitrification
D007	Tech.	High Level Vitrification
D008B	Tech.	High Level Vitrification
D009C	Tech.	High Level Vitrification
D010	Tech.	High Level Vitrification
D011	Tech.	High Level Vitrification
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration
U012	Conc.	Incineration

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State: Idaho | ID #: ID-WIN-174

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL WASTE CALCINE SOLIDS

Matrix: Calcine Solids | Waste Type: HLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration
U226	Conc.	Incineration

State: Idaho **ID #: ID-WIN-174**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: HIGH LEVEL WASTE CALCINE SOLIDS

Matrix: Calcine Solids **Waste Type: HLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U227	Conc.	Incineration
U228	Conc.	Incineration

State: Idaho	ID #: ID-WIN-201
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: F002 CONTAMINATED SOLIDS	
Matrix: Organic Debris	Waste Type: MLLW

Waste Stream Description and Source:

CPP-603 decon activity-debris associated with paint removal, paint chips, rags, anti-C blotter paper, paint brushes, pail. The volume in storage is based upon information provided in the mixed waste inventory for CPP-1617 and 1619 dated 11-20-92; and information provided by the EG&G Wastestream Inventory dated 12-4-92. Waste stream generated from maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.100	96.0	0.100	96.0	0.800	768.0

Treatability Group:

MLLW CH, Organic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Have not identified a planned facility for this waste stream at this time.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

Not reported.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical,

State: Idaho	ID #: ID-WIN-201
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: F002 CONTAMINATED SOLIDS	
Matrix: Organic Debris	Waste Type: MLLW

or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: ID-WIN-216

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: F,P&U LISTED RAD CONTAMINATED CONDENSATE

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

Condensate from PEW evaporator. Very small amounts of F, P,& U listed chemicals were poured into the system during and after routine analytical procedures up until late 1988. Current analysis is unable to confirm presence of contaminants above regulatory levels. Waste stream generated from production, characterization, maintenance, laboratory, D&D, R&D. Stream was never stored, only disposed in the ICPP perc ponds. Stream contributes 226.8 m3/yr to the CPP tank farm. Generation and storage of this 226.8 m3/yr is accounted for in WMIS Wastestream number 235 or ID-WIN-173 (High Level Liquid Waste).

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Stream is being fractionated in liquid effluent treatment & disposal facility (LET&D). The LET&D bottoms are being sent to tank farm for calcination (calciner is now in operation) then this waste will be stabilized with a glass ceramic process available TBD. Waste stream is diverted and treated in LET&D. The stream may enter the tank farm if not used in NWCF process. It is undefined if the waste entering the tank farm will be high level waste or low level waste. This stream will contribute 226.8 m3/yr to tank farm and is accounted for WMIS Wastestream #235 (ID-WIN-173).

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho ID #: ID-WIN-216

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: F,P&U LISTED RAD CONTAMINATED CONDENSATE

Matrix: Aqueous Liquid Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008C	Tech.	Macroencapsulation
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D011	Conc.	Stabilization
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration

State: Idaho | ID #: ID-WIN-216

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: F,P&U LISTED RAD CONTAMINATED CONDENSATE

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U012	Conc.	Incineration
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration

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State: Idaho ID #: ID-WIN-216

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: F,P&U LISTED RAD CONTAMINATED CONDENSATE

Matrix: Aqueous Liquid Waste Type: MLLW

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U226	Conc.	Incineration
U227	Conc.	Incineration
U228	Conc.	Incineration

State: Idaho | ID #: ID-WIN-217

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SCRUB PUMP RADIOACTIVE OIL

Matrix: Organic Liquids | Waste Type: MLLW

Waste Stream Description and Source:

30 weight motor oil with trace amounts of heavy metals and Cs-137. Waste stream generated from production. Amount in storage is based upon information provided by material management. There are currently six/55 gallon drums. The calculated volume is based on 0.21 cubic meters/55 gallon drum [55 gallon* (3.785 • 10E-3) = 0.21 cubic meters].

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1.3	1,200.0	0.000	0.000	1.3	1,200.0	0.740	711.0

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration followed by grouting at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

Good Operating Practices.

State: Idaho **ID #: ID-WIN-217**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SCRUB PUMP RADIOACTIVE OIL

Matrix: Organic Liquids **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho	ID #: ID-WIN-300
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: "A" CADMIUM RACKS	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

Stainless steel fuel racks with cadmium poison from CPP-603 fuel basin. Currently, only one has been disassembled and compaction of the cadmium sheet attempted. The racks were placed in storage prior to the May 8, 1992 deadline. This is a one time generation for this waste stream. Has not been sent to other INEL units at this time. Waste stream generated from production. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
41.3	39,582.0	0.000	0.000	41.3	39,582.0	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Planned CO2 decon facility at NWCF decon room.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

State: Idaho	**ID #: ID-WIN-300**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: "A" CADMIUM RACKS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-WIN-301**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LIQUID ACID/MERCURY MIXED WASTE	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

Waste Stream Description and Source:

Liquid Low-level acid/mercury mixed waste from analytical lab. Normally sent to CPP liq. waste stream. Until LDR concerns are met, waste is stored in Satellite Accumulation Areas and transferred to CPP-1617. Generated to support regulatory activities. Waste stream generated from laboratory activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.050	48.0	0.050	48.0	2.1	2,017.0

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. This waste stream will be evaporated in the Process Equipment Waste (PEW) Evaporator System. The evaporator condensate will go to the LET&D system for fractionation. The bottoms of the evaporator will then be calcined, followed by eventual vitrification commencing TBD at the Idaho Waste Immobilization Facility (IWIF). This waste stream is currently stored in Satellite Accumulation Areas pending LDR resolution. This liquid will be transfered to the ICPP waste system for calcination then vitrification.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Not reported.

State: Idaho	**ID #: ID-WIN-301**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LIQUID ACID/MERCURY MIXED WASTE	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration

State: Idaho | ID #: ID-WIN-302

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LIQUID HIGH CHLORIDE CORROSIVE MW

Matrix: Aqueous Liquid | Waste Type: MLLW

Waste Stream Description and Source:

Waste generated from analytical lab procedures at CPP-684 and CPP-602, liquid low-level, corrosive mixed waste w/high chloride, cannot be disposed of to the liquid waste stream at CPP, will corrode pipes. Waste stream generated from laboratory activities.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.340	327.0	0.000	0.000	0.340	327.0	2.1	2,017.0

Treatability Group:

MLLW CH, Aqueous Liquid, Ignitable, Corrosive, or Reactive Only. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. This is a bench-scale treatment. This waste will be neutralized when generator treatment plans are approved. This waste is in storage pending resolution and approval of generator treatment plans available to perform elementary neutralization. After treatment this waste will be low level only.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) None.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho	**ID #: ID-WIN-302**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LIQUID HIGH CHLORIDE CORROSIVE MW	
Matrix: Aqueous Liquid	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation

State: Idaho	**ID #: ID-WIN-303**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SOLID,SILVER CONTAMINATED MLLW	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Generated by laboratory activities. Solids filter/desiccant containing silver hazardous constituent. The volume reported is from the mixed inventory CPP-1617 and CPP-1619, 12-01-92. (Used the conversion of 55 gallons=0.21 cubic meters.)

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.210	200.0	0.000	0.000	0.210	200.0	1.1	1,008.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Waste will be incinerated at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical,

State: Idaho	**ID #: ID-WIN-303**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SOLID,SILVER CONTAMINATED MLLW	
Matrix: Inorganic Debris	**Waste Type: MLLW**

or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-WIN-304**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CONTAMINATED DEBRIS

Matrix: Heterogeneous Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Debris from construction, maintenance, routine operations, etc. paper, rubber, metal, bricks, concrete, plastics, HEPA filter, etc. can be categorized into combustible, non-porous and porous materials. Waste stream generated from maintenance and production construction. The volume reported for contaminated debris included the 230 cubic feet as miscellaneous material on the 12-01-92 mixed waste inventory for CPP-1617 and 1619, plus the other identified debris.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
8.9	8,435.0	0.000	0.000	8.9	8,435.0	2,000.0	1,719,706.0

Treatability Group:

MLLW RH, Heterogeneous Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Planned chemical extraction, CO2 blasting, decon available, at CPP-659 decontamination facility. Incineration at WERF.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho | ID #: ID-WIN-304

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CONTAMINATED DEBRIS

Matrix: Heterogeneous Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-WIN-305
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LLW APS HEPA FILTERS	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

2x2x1 foot HEPA filters used in the ICPP atmospheric protection system. Filters may contain Cd and mixture derived from rule RCRA codes. Waste stream generated from production. Filters may contain F, P, & U listed waste codes resulting from laboratory quantities of waste dumped to ICPP waste systems filtered by these HEPA filters.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.900	115.5	0.000	0.000	0.900	115.5	25.0	24,018.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Chemical extraction in the HEPA filter facility in CPP-659 followed by calcination. This facility is currently awaiting further testing to determine necessary modifications. Vitrification of calcined solids will be performed starting TBD.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Generation rates assume total change out of 104 HEPA filters. This, in turn, is divided by 5 to give a yearly generation projection over a 5 year period.

State: Idaho | ID #: ID-WIN-305

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LLW APS HEPA FILTERS

Matrix: Inorganic Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008C	Tech.	Macroencapsulation
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration

State: Idaho **ID #: ID-WIN-305**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LLW APS HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U012	Conc.	Incineration
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration

State: Idaho **ID #: ID-WIN-305**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LLW APS HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U226	Conc.	Incineration
U227	Conc.	Incineration
U228	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: ID-WIN-306**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: D006-D011 CONTAMINATED SOLIDS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Pilot plan operation and cleanup. Previously called "mercury & cadmium contaminated solids, "cadmium & chromium contaminated solids, "cadmium, mercury, & selenium contaminated "solids, and "chromium and lead contaminated solids." Waste stream generated from maintenance, laboratory operations and includes clothing, piping and small pumps. The volume in storage is based upon information provided in the mixed waste inventory for CPP-1617 and 1619 dated 11-2092; and information provided by the EG&G Wastestream Inventory dated 12-04-92.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.100	96.0	0.000	0.000	0.100	96.0	5.0	4,848.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Incineration at WERF followed by grouting of ash. Also, straight grouting of non-incinerable waste. Metal items to be treated by CO2 decon at CPP-659 Decontamination Facility.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good operating practices.
Change in operations status.

State: Idaho **ID #: ID-WIN-306**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: D006-D011 CONTAMINATED SOLIDS

Matrix: Inorganic Debris **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: ID-WIN-307**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONTAMINATED LABORATORY RESIDUE	
Matrix: Heterogeneous Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Waste stream generated from analysis of ICPP effluents. Physical form is filters, rags, and absorbed materials. Waste materials are generated in laboratory quantities and are being stored in satellite accumulation areas pending LDR resolution. This waste stream is the result of small quantity laboratory generation.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.200	200.0	0.000	0.000	0.200	200.0	2.5	2,401.0

Treatability Group:

MLLW CH, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Waste stream to be incinerated at WERF followed by stabilization.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.

State: Idaho ID #: ID-WIN-307

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CONTAMINATED LABORATORY RESIDUE

Matrix: Heterogeneous Debris Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D005	Conc.	Chemical Precipitation; or Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008C	Tech.	Macroencapsulation
D011	Conc.	Stabilization
D018		Not currently prohibited under the LDR Program.

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: ID-WIN-308
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LET&D HEPA FILTERS	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:

2x2x8" HEPA filters used in the LET&D. Filters will contain some characteristics and mixture/derived from rule RCRA codes. Filters may contain F, P, & U listed waste codes resulting from laboratory quantities of waste dumped to CPP waste system filtered by these HEPA filters.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	2.7	2,594.0

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at a planned facility. Filters will be treated in accordance with the Debris Rule. Will use chemical extraction in the HEPA Filter Leach Facility, CPP-659; facility is currently awaiting further testing to determine necessary modifications. Resulting leachate will be transferred to tank farm for calcination and vitrification.

Technology Status:

Technology exists. Needs modifications or verification for application to DOE waste streams.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Good Operating Practices.
8 filters per year is the projected generation rate.

State: Idaho | ID #: ID-WIN-308

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LET&D HEPA FILTERS

Matrix: Inorganic Debris | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D004	Conc.	Vitrification
D005	Conc.	Chemical Precipitation; or Stabilization
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
D010	Conc.	Stabilization
D011	Conc.	Stabilization
F002	Conc.	Incineration
F005A	Conc.	Incineration
P098	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P104	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation followed by Stabilization
P105	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
P106	Conc.	Chemical Oxidation followed by Alkaline Chlorination followed by Chemical Precipitation
P119	Tech.	Stabilization
P120	Tech.	Stabilization
U003	Tech.	Incineration

State: Idaho **ID #: ID-WIN-308**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LET&D HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U012	Conc.	Incineration
U019	Conc.	Incineration
U044	Conc.	Incineration
U080	Conc.	Incineration
U108	Conc.	Incineration
U122	Tech.	Fuel Substitution; or Incineration
U123	Tech.	Fuel Substitution; or Incineration
U133	Tech.	Fuel Substitution; Chemical Oxidation; Chemical Reduction; or Incineration
U134	Tech.	Adsorption followed by Neutralization; or Neutralization
U138	Conc.	Incineration
U140	Conc.	Incineration
U144	Conc.	Incineration followed by Stabilization
U151	Tech.	Amalgamation
U159	Conc.	Incineration
U188	Conc.	Incineration
U196	Conc.	Incineration
U204	Conc.	Stabilization
U210	Conc.	Incineration
U211	Conc.	Incineration
U219	Tech.	Incineration
U220	Conc.	Incineration

State: Idaho **ID #: ID-WIN-308**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: LET&D HEPA FILTERS

Matrix: Inorganic Debris **Waste Type: MLLW**

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
U226	Conc.	Incineration
U227	Conc.	Incineration
U228	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: IDEGG-102T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED INORGANIC SLUDGE (TRU)

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

Waste Stream Description and Source:

Miscellaneous inorganic setups. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
4,957.3	5,072,692.0	12.0	12,560.0	4,969.3	5,085,252.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho **ID #: IDEGG-102T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED INORGANIC SLUDGE (TRU)

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D006B	Conc.	Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Idaho	**ID #: IDEGG-109T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BENELEX, PLEXIGLASS (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

Waste consists of disassembled equipment of Benelex neutron shields and plexiglass glovebox windows. Waste may also include surgeon's gloves, metal hinges, pieces of angle iron, and rubber gaskets. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
38.7	23,164.8	0.000	0.000	38.7	23,164.8	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants
4) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-109T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: BENELEX, PLEXIGLASS (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: IDEGG-112T
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: CEMENTED SLUDGES (TRU)
Matrix: Organic Sludges/Particulates | Waste Type: MTRU

Waste Stream Description and Source:

Waste consists of cemented liquid from paint strippers, degreasers, cleaning solvents, sludge removed from processing tanks that collected liquid effluents from floor drains. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
663.0	667,840.0	129.0	151,059.9	792.0	818,899.9	0.000	0.000

Treatability Group:

MTRU CH/AL, Organic Sludges/Particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho **ID #: IDEGG-112T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CEMENTED SLUDGES (TRU)

Matrix: Organic Sludges/Particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

State: Idaho	**ID #: IDEGG-114T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: COMBUSTIBLES (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

Line/nonline generated combustible material, D&D of a plutonium laboratory, maintenance and cleanup operation. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
9,879.0	2,500,090.0	473.0	108,190.0	10,352.0	2,608,280.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-114T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: COMBUSTIBLES (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006A	Tech.	Thermal Recovery of Metals
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: IDEGG-115T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONCRETE - BRICK (TRU)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

Waste consists of whole and broken pieces of construction bricks, cinderblocks, firebrick, concrete, and asphalt. Waste may also contain small amounts of dirt and combustible waste. Waste stream generated from D&D. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
130.0	68,170.0	0.000	0.000	130.0	68,170.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Idaho	**ID #: IDEGG-115T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CONCRETE - BRICK (TRU)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

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State: Idaho	ID #: IDEGG-118T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: FILTERS-TRU	
Matrix: Heterogeneous Debris	Waste Type: MTRU

Waste Stream Description and Source:

Waste consists of filters (HEPA, absolute, glass, fiberglass and filter media) that have been removed from incineration processes, scrubbers, offgas systems and intake/exhaust systems. Pipe insulation, asbestos, gloves, fire blankets, etc. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3,548.0	1,013,167.1	83.0	19,265.9	3,631.0	1,032,433.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status. This waste stream is no longer generated.

State: Idaho | ID #: IDEGG-118T

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: FILTERS-TRU

Matrix: Heterogeneous Debris | Waste Type: MTRU

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D009A	Tech.	Incineration; or Mercury Roast/Retort
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho
ID #: IDEGG-119T
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: GLASS (TRU)
Matrix: Inorganic Debris
Waste Type: MTRU

Waste Stream Description and Source:

Discarded labware, windows, containers, and Raschig rings. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
619.0	269,857.1	0.000	0.000	619.0	269,857.1	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-119T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLASS (TRU)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

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State: Idaho	ID #: IDEGG-120T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLOVEBOX GLOVES (TRU)	
Matrix: Heterogeneous Debris	Waste Type: MTRU

Waste Stream Description and Source:

Waste consists of leaded glovebox gloves and aprons. The waste may contain limited amounts of unleaded gloves, lead bricks, and lead sheeting. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
260.0	160,579.9	0.000	0.000	260.0	160,579.9	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-120T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: GLOVEBOX GLOVES (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: IDEGG-132T
Site: IDAHO NATIONAL ENGINEERING LABORATORY
Waste Stream Name: METALS (TRU)
Matrix: Heterogeneous Debris | Waste Type: MTRU

Waste Stream Description and Source:

Waste consists of TRU scrap from line and nonline generated metal wastes, cutup gloveboxes, process equipment, machinery, motors, pumps, tools, tanks, and scrap from clean-up projects. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
7,339.9	3,398,710.2	283.0	111,323.8	7,622.9	3,510,034.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter
4) Activation Products

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-132T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: METALS (TRU)	
Matrix: Heterogeneous Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation
D009A	Tech.	Incineration; or Mercury Roast/Retort
D009B	Tech.	Mercury Roast/Retort
D028		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho **ID #: IDEGG-134T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS (PAPER, METAL, ETC.) (TRU)

Matrix: Heterogeneous Debris **Waste Type: MTRU**

Waste Stream Description and Source:

General plant waste, alpha-gamma hot cell facility waste, laboratory waste from ANL-W and ICPP, and americium process residue. Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
1,087.0	349,900.0	0.000	0.000	1,087.0	349,900.0	0.000	0.000

Treatability Group:

MTRU CH/AL, Heterogeneous Debris, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste stream is no longer generated.

State: Idaho **ID #: IDEGG-134T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: MISCELLANEOUS (PAPER, METAL, ETC.) (TRU)

Matrix: Heterogeneous Debris **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D006B	Conc.	Stabilization
D008C	Tech.	Macroencapsulation
F002	Conc.	Incineration
F003	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: IDEGG-137T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NONMETAL MOLDS AND CRUCIBLES (TRU)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

Waste Stream Description and Source:

Waste consists of graphite molds, graphite cores, Leco crucibles and caps, and graphite electrodes. Waste streams generated from production. Other waste category = TRU. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
395.0	360,299.8	0.000	0.000	395.0	360,299.8	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Debris, Toxic Organics and Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-137T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NONMETAL MOLDS AND CRUCIBLES (TRU)	
Matrix: Inorganic Debris	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009C	Conc.	Thermal Recovery of Metals; Acid Leaching; Stabilization; or Incineration
F001	Conc.	Incineration
F002	Conc.	Incineration

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho | ID #: IDEGG-141T

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: PARTICULATE WASTES (TRU)

Matrix: Inorganic Sludges/particulates | Waste Type: MTRU

Waste Stream Description and Source:

Dirt, soil, etc. from floor sweeping and cleanups, grit blasting operations and recovery from incinerator processing. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
82.0	110,003.9	0.000	0.000	82.0	110,003.9	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho **ID #: IDEGG-141T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: PARTICULATE WASTES (TRU)

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D002A	Tech.	Deactivation
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration
F003	Conc.	Incineration
F004	Conc.	Incineration

State: Idaho	ID #: IDEGG-142T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TRU CONTAMINATED LEAD DEBRIS	
Matrix: Heterogeneous Debris	Waste Type: MTRU

Waste Stream Description and Source:

This waste is lead contaminated debris from various sources. This debris includes lead pieces, galvanized sheet metal, stainless steel, copper/bronze wire, silicon impregnated fiberglass, paper, HEPA filters, duct, etc. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
5.5	1,800.0	0.000	0.000	5.5	1,800.0	0.000	0.000

Treatability Group:

MTRU RH/AL, Heterogeneous Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Transuranic contaminants
2) Remote handled

Waste-Specific Radiation Effects on Treatment:

Remote handled.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical,

State: Idaho	ID #: IDEGG-142T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TRU CONTAMINATED LEAD DEBRIS	
Matrix: Heterogeneous Debris	Waste Type: MTRU

or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: IDEGG-144T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE SOURCES (TRU)	
Matrix: Inorganic Debris	Waste Type: MTRU

Waste Stream Description and Source:

Sample fuel Pu & Am sources and hot cell waste. Waste stream generated from laboratory. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
100.0	56,717.2	0.000	0.000	100.0	56,717.2	0.000	0.000

Treatability Group:

MTRU RH/AL, Inorganic Debris, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Remote handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008C	Tech.	Macroencapsulation

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical,

State: Idaho	ID #: IDEGG-144T
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE SOURCES (TRU)	
Matrix: Inorganic Debris	Waste Type: MTRU

or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: IDEGG-145T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RESINS (TRU)	
Matrix: Inorganic Sludges/particulates	**Waste Type: MTRU**

Waste Stream Description and Source:

Leached and unleached ion column exchange resins used in the purification and recovery of plutonium and americium. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
57.0	34,622.7	0.000	0.000	57.0	34,622.7	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/particulates, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

State: Idaho **ID #: IDEGG-145T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: RESINS (TRU)

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D008B	Conc.	Stabilization
F001	Conc.	Incineration
F002	Conc.	Incineration

State: Idaho **ID #: IDEGG-146T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SALTS (TRU)

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

Waste Stream Description and Source:

Evaporator salts and pyrochemical salts. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
9.0	4,179.9	0.000	0.000	9.0	4,179.9	0.000	0.000

Treatability Group:

MTRU CH/AL, Inorganic Sludges/particulates, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Transuranic contaminants
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-146T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SALTS (TRU)	
Matrix: Inorganic Sludges/particulates	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001F	Tech.	Deactivation
D028		Not currently prohibited under the LDR Program.
F001	Conc.	Incineration

State: Idaho **ID #: IDEGG-158T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: UNCEMENTED ORGANIC SLUDGE (TRU)

Matrix: Organic Sludges/particulates **Waste Type: MTRU**

Waste Stream Description and Source:

Miscellaneous organic setups. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
579.7	643,237.7	0.000	0.000	579.7	643,237.7	0.000	0.000

Treatability Group:

MTRU CH/AL, Organic Sludges/particulates, Toxic Organics. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in operations status.
This waste stream is no longer generated.

State: Idaho	**ID #: IDEGG-158T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNCEMENTED ORGANIC SLUDGE (TRU)	
Matrix: Organic Sludges/particulates	**Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
F001	Conc.	Incineration
F002	Conc.	Incineration
F004	Conc.	Incineration

State: Idaho	**ID #: IDEGG-287T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNCATEGORIZED (TRU)	
Matrix: To Be Determined	**Waste Type: MTRU**

Waste Stream Description and Source:

This waste stream was placed into storage prior to 1973. As container specific information was not entered into the database prior to 1973, these wastes are uncategorized as to specific contents, but the wastes are expected to be similar to other Rocky Flats wastes received after 1973 which are reported as specific waste streams in this report. Waste stream generated from production at Rocky Flats. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
7,092.0	3,932,740.0	0.000	0.000	7,092.0	3,932,740.0	0.000	0.000

Treatability Group:

MTRU CH/AL, To Be Determined. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: Idaho	**ID #: IDEGG-288T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: UNKNOWN (TRU)	
Matrix: To Be Determined	**Waste Type: MTRU**

Waste Stream Description and Source:

This waste has been determined to have insufficient RCRA characterization information available to assign EPA waste codes. It consists mainly of contaminated A-LLW trash and solidified liquids. Characterization activities are in progress. Waste stream generated from production. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
378.0	160,828.9	0.000	0.000	378.0	160,828.9	0.000	0.000

Treatability Group:

MTRU CH/AL, To Be Determined. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Contact-handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

EPA CODES

Waste Characterization Basis: Process Knowledge

No applicable RCRA Codes have been identified.

State: Idaho	**ID #: IDEGG-291T**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: TRU HEAVY METAL SLUDGE	
Matrix: Inorganic Sludges/particulates	**Waste Type: MTRU**

Waste Stream Description and Source:

The waste stream was sludge generated from 4 catch tanks that were removed from service. The sludge was generated from activity in the TRA Hot Cell and the TRA Chemistry Laboratories. This was generated only "one time". This waste is generated when D & D activities clean out old tank systems. The original sludge material was generated from catch tanks at nuclear facilities. Wastestreams generated from maintenance. This waste is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.1	1,071.8	0.000	0.000	2.1	1,071.8	0.000	0.000

Treatability Group:

MTRU RH/AL, Inorganic Sludges/particulates, Toxic Metals w/ Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Technology Status:

Radiation Characteristics:

1) Remote handled
2) Beta/gamma emitter
3) Transuranic contaminants

Waste-Specific Radiation Effects on Treatment:

Not reported.

Waste Minimization Activities:

Change in Operations Status.
This waste is no longer generated.

State: Idaho **ID #: IDEGG-291T**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: TRU HEAVY METAL SLUDGE

Matrix: Inorganic Sludges/particulates **Waste Type: MTRU**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D009A	Tech.	Incineration; or Mercury Roast/Retort
D011	Conc.	Stabilization

State: Idaho	ID #: IDSMC-101D
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NON-ACID LIQUID MIXED WITH 1,1,1 TCA	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

The waste contains small amounts 1,1,1-tri-chloroethane with the rest being non-acidic liquid (sludges) that contains lead oxide, salts and water. Non-acid liquid waste was placed in a drum containing residues of 1,1,1 TCA. Waste stream generated from production. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.210	181.4	0.000	0.000	0.210	181.4	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Incineration and stabilization may be performed at WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Change in Operations Status.
This waste stream is no longer generated.

State: Idaho

ID #: IDSMC-101 4691

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: NON-ACID LIQUID MIXED WITH 1,1,1 TCA

Matrix: Organic Liquids

Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization
F001	Conc.	Incineration

State: Idaho	ID #: IDSMC-149A
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: SPENT GM 141 SAPC SOLVENT	
Matrix: Organic Liquids	Waste Type: MLLW

Waste Stream Description and Source:

Solvent was used in various degreasing tanks throughout the SMC facility for degreasing equipment parts. Waste stream generated from production, maintenance. The variability of this waste, inconsistent sampling results and detection limits indicate that more sampling is required. Each container will require sampling for the purpose of waste determination. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
2.7	2,654.0	0.000	0.000	2.7	2,654.0	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Organics and Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Treatment may be performed at the WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Product change.
This waste stream is no longer generated.

State: Idaho | ID #: IDSMC-149A

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SPENT GM 141 SAPC SOLVENT

Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization
D039		Not currently prohibited under the LDR Program.

State: Idaho **ID #: IDSMC-149B**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SPENT STODDARD SOLVENT

Matrix: Organic Liquids **Waste Type: MLLW**

Waste Stream Description and Source:

Solvent used in various degreasing tanks throughout the SMC facility for degreasing machine parts. Waste contains Stoddard solvent, oxidized depleted uranium, greases and oils. Waste stream generated from maintenance. This waste stream is no longer generated. Other products are being investigated to replace the solvents previously used. Variability of this waste and inconsistent sampling results indicate that sampling will be required of each individual container. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.150	152.8	0.000	0.000	0.150	152.8	0.000	0.000

Treatability Group:

MLLW CH, Organic Liquids, Toxic Metals w/o Mercury. The INEL has not completed an adequate evaluation of the described chemical and hazardous matrix to identify a specific treatability group.

Treatment Status:

Plan to treat at an existing facility. Treatment may be performed at the WERF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

1) Unknown.

Waste Minimization Activities:

Product change.
This waste stream is no longer generated.

State: Idaho | ID #: IDSMC-149B

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: SPENT STODDARD SOLVENT

Matrix: Organic Liquids | Waste Type: MLLW

EPA CODES

Waste Characterization Basis: Sampling/Analysis

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D001A	Tech.	Fuel Substitution; Organics Recovery; or Incineration
D006B	Conc.	Stabilization
D007	Conc.	Chemical Reduction followed by Stabilization
D008B	Conc.	Stabilization

State: Idaho **ID #: NR-NRF-113**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CHROMATE CONTAMINATED RAGS

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

Waste stream was generated from work with chromate solution. Waste stream generated from maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
3.7	223.6	0.000	0.000	3.7	223.6	0.000	0.000

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility. Incineration is a proven technology for waste treatment.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

1) Not Applicable.

This waste stream is no longer generated.

State: Idaho	**ID #: NR-NRF-113**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CHROMATE CONTAMINATED RAGS	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: NR-NRF-117
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CADMIUM SHEETS	
Matrix: Inorganic Debris	Waste Type: MLLW

Waste Stream Description and Source:
Scrapping equipment. Waste stream generated from maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.210	45.4	0.000	0.000	0.210	45.4	0.000	0.000

Treatability Group:
MLLW CH, Inorganic Debris, Toxic Metals w/o Mercury

Treatment Status:
Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the IWPF.

Technology Status:
Technology exists. No modifications are necessary.

Radiation Characteristics:
1) Contact-handled

Waste-Specific Radiation Effects on Treatment:
Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same chacteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:
1) Not Applicable.

This waste stream is no longer generated.

State: Idaho	**ID #: NR-NRF-117**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: CADMIUM SHEETS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D006B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	**ID #: NR-NRF-131**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MERCURY CONTAMINATED DEBRIS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

Waste Stream Description and Source:

Previous name: This waste stream was previously named "mercury contaminated cleanup debris." This waste stream is from removal of mercury contaminated materials. Waste stream generated from D&D.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.230	16.8	0.000	0.000	0.230	16.8	0.000	0.000

Treatability Group:

MLLW CH, Inorganic Debris, Toxic Metals w/ Mercury

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the IWPF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

1) Not Applicable.

This waste stream is no longer generated.

State: Idaho	**ID #: NR-NRF-131**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: MERCURY CONTAMINATED DEBRIS	
Matrix: Inorganic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D009B	Tech.	Mercury Roast/Retort

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

State: Idaho	ID #: NR-NRF-143
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE CONTAMINATED LEAD (NRF)	
Matrix: Elemental Lead	Waste Type: MLLW

Waste Stream Description and Source:

This waste stream is lead brick, sheet, blankets, scrap, etc., used as shielding. This waste generated from D&D.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
16.4	10,410.9	19.0	10,590.9	35.4	21,001.8	0.000	0.000

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the IWPF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled
2) Activation Products
3) Beta/gamma emitter

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

1) Not Applicable.

This waste is no longer generated.

State: Idaho	**ID #: NR-NRF-143**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: RADIOACTIVE CONTAMINATED LEAD (NRF)	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho **ID #: NR-NRF-189**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CHROMATE LIQUID

Matrix: Aqueous Liquid **Waste Type: MLLW**

Waste Stream Description and Source:

This is a LLW stream consisting of chromate liquid wastewater generated from maintenance activities. This waste stream is no longer generated.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.320	226.0	0.000	0.000	0.320	226.0	0.000	0.000

Treatability Group:

MLLW CH, Aqueous Liquid, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. Required treatment is chromium reduction followed by stabilization. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for the design and construction of the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the IWPF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

1) Not Applicable.

This waste stream is no longer generated.

State: Idaho **ID #: NR-NRF-189**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: CHROMATE LIQUID

Matrix: Aqueous Liquid **Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D007	Conc.	Chemical Reduction followed by Stabilization

State: Idaho	**ID #: NR-NRF-190**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LEAD FILINGS	
Matrix: Elemental Lead	**Waste Type: MLLW**

Waste Stream Description and Source:

This waste stream is drill cuttings contaminated with lead. Waste stream generated from maintenance.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.030	56.7	0.000	0.000	0.030	56.7	0.000	0.000

Treatability Group:

MLLW CH, Elemental Lead, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat at a planned facility. While the technology required to treat this waste stream is available, treatment facilities are not available. Planning for this design and construction of the MLLWTF anticipates treatment to be available. Treatment of this waste might also be accomplished at another facility now in the design phase, the IWPF.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation levels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same characteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

1) Not Applicable.

This waste stream is no longer being generated.

State: Idaho	**ID #: NR-NRF-190**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: LEAD FILINGS	
Matrix: Elemental Lead	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

State: Idaho **ID #: NR-NRF-481**

Site: IDAHO NATIONAL ENGINEERING LABORATORY

Waste Stream Name: NRF LEAD CONTAMNTAED DEBRIS

Matrix: Organic Debris **Waste Type: MLLW**

Waste Stream Description and Source:

This waste is expected to be generated at the Naval Reactor Facility located in Idaho. Waste will consist of rubber gloves, shoe covers, aprons, wet wipes, and plastic. The assignment of the D008 (lead) waste code is based on the analysis of similar nonradioactive wastes. The concentration of the lead that will be present in the waste is not specifically known. The volume and mass given for the five-year projection are estimated gross numbers which include packaging materials.

Current Inventory as of December 31, 1992						Projected Generation 1993 through 1997	
Not Subject To LDR Prohibition		Subject To LDR Prohibition		TOTAL			
m^3	kg	m^3	kg	m^3	kg	m^3	kg
0.000	0.000	0.000	0.000	0.000	0.000	0.210	68.0

Treatability Group:

MLLW CH, Organic Debris, Toxic Metals w/o Mercury

Treatment Status:

Plan to treat on-site at the existing WERF Incinerator facility.

Technology Status:

Technology exists. No modifications are necessary.

Radiation Characteristics:

1) Activation Products
2) Beta/gamma emitter
3) Contact-handled

Waste-Specific Radiation Effects on Treatment:

Radiation lavels are not expected to cause significant radiological problems during treatment; treatment would be similar to that done on non-radioactive hazardous waste having the same charecteristics. Concentration of radionuclides in treatment residues will be considered. Predominant radionuclide is CO-60.

Waste Minimization Activities:

Improved operating practices; material handling procedures; waste segregation.

State: Idaho	**ID #: NR-NRF-481**
Site: IDAHO NATIONAL ENGINEERING LABORATORY	
Waste Stream Name: NRF LEAD CONTAMNTAED DEBRIS	
Matrix: Organic Debris	**Waste Type: MLLW**

EPA CODES

Waste Characterization Basis: Process Knowledge

Waste Codes	LDR Basis	Best Demonstrated Available Technologies
D008B	Conc.	Stabilization

The alternate LDR treatment standard for debris is treatment prior to land disposal using any of the following technologies: extraction (physical, chemical or thermal), destruction (biological, chemical, or thermal), macro/microencapsulation or sealing.

4691

TECHNOLOGY

DEVELOPMENT

SUMMARIES

Idaho National Engineering Laboratory

INEL-TDS-1

April 1993

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Target Site: Idaho
Location site: Idaho

Programs/Facilities Supported:

WEDF

ID: 339

Program Title: Elemental mercury amalgamation

Summary Description:

Bench scale tests will provide parameters to develop a full-scale amalgamation process for treating radioactively contaminated mercury. Various parameters relating to the amalgamation process have been tested using commercial grade mercury. In second test actual waste was treated in order to confirm the utility of techniques developed in the first series of tests.

Summary Purpose/Need:

Amalgamation is the RCRA specified treatment for mercury. The processing parameters needed to be developed.

Summary Result/Endpoint/Deliverable:

Obtain DOE-ID approval to commence operations per the Non-Incinerable Mixed Waste Treatment Plan.

BDAT: AMLG

Functional Areas: chemical physical treatment
final form (mercury stabilization)

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

WEDF

ID: 340

Program Title: Treatment of mixed heavy metal waste

Summary Description:

A two step ion exchange (cation and anion) process has been demonstrated at the bench scale. A variety of process parameters such as ionic strength, relative ionic concentrations, temperatures, etc. will be assessed in the pilot scale demonstrations.

Summary Purpose/Need:

There is a need to remove heavy metals from a variety of aqueous streams.

Summary Result/Endpoint/Deliverable:

The ion exchange full scale pilot tests will be complete 7/93 and treatment operations are expected to begin in 8/93.

BDAT: RMETL

Functional Areas: chemical physical treatment
removal of problem constituents
ion exchange

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

WDEF

ID: 341

Program Title: Lead macroencapsulation (Support of the Radioactive Waste Management Complex (RWMC))

Summary Description:

The RCRA requirements for the disposal of lead specify macro-encapsulation in a contact encapsulant. This development effort is directed toward the demonstration of the effectiveness of a polymeric coating as the encapsulant.

Summary Purpose/Need:

The need is to provide a waste form that is consistent with the macro- encapsulation requirements for lead.

Summary Result/Endpoint/Deliverable:

Submit a report and recommendations based on completed tests to DOE, EPA, and DOR.

BDAT: MACRO

Functional Areas: final form
lead treatment/recycle
final form-grout or macroencapsulation

Target Site: Idaho
Location site: Idaho

Programs/Facilities Supported:

WEDF

ID: 342

Program Title: Sulfur polymer cement immobilization

Summary Description:

Sulfur polymer cement is a thermoplastic that, as a construction cement, has demonstrated its ability to survive for years in acids and salts that destroy or severely damage hydraulic cements. This effort has focused on the solidification and stabilization of radioactive wastes for treatment of incinerator ash which contains heavy metals that have been oxidized and readily combine with sulfur polymer cement to form metal sulfides and sulfates.

Summary Purpose/Need:

There will be a need to create an LDR compatible waste form for low level ash from the incinerator.

Summary Result/Endpoint/Deliverable:

Develop a sulfur polymer cement demonstration work plan (6/1/91)

BDAT: STABL

Functional Areas: final form
final form-grout or macroencapsulation

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

RWMC

ID: 343

Program Title: Iron enriched basalt (IEB) waste forms and processing

Summary Description:

The class of high temperature ferro-alumina-silicate glass/ceramic materials referred to as IEB is being investigated as a means of long term immobilization of alpha and toxic metal contaminated MLLW. The contaminated soils and wastes at INEL naturally yield a form of IEB when melted. Bench scale crucible and high temperature melter tests are being performed to provide additional data needed to determine and optimize final waste form performance and processing conditions and capability over the range of potential input waste conditions.

Summary Purpose/Need:

The alpha and toxic metal contaminated MLLW at INEL will require an immobilization waste form which will pass TCLP requirements.

Summary Result/Endpoint/Deliverable:

The results of these studies will be IEB material performance data, comparisons to other candidate waste forms, melter processing conditions/requirements, controlling parameters as well as recommendations for process selection and design.

BDAT: STABL

Functional Areas: final form final form glass

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

ICPP

ID: 344

Program Title: Immobilization of calcine HLW

Summary Description:

Processes are being evaluated in which the calcine is immobilized in a glass ceramic waste form. This waste form is more dense than borosilicate glass and is capable of higher waste loadings, reducing the volume produced for final disposal. The process parameters and formulations are being optimized in these studies.

Summary Purpose/Need:

The calcined HLW does not meet LDR criteria and must be immobilized for disposal in a licensed facility.

Summary Result/Endpoint/Deliverable:

The preliminary fluorinel-sodium glass-ceramic waste form will be complete. Preliminary reports concerning the phosphate additive for the fluorinel-sodium waste form and the waste form development for zirconia calcine will be complete.

BDAT: HLVIT

Functional Areas: final form
final form glass
final form ceramic

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

ICPP

ID: 345

Program Title: Treatment of sodium-bearing HLLW

Summary Description:

A number of methods are being examined for processing sodium-bearing radioactive liquid waste. Among these are calcination with additives, direct immobilization, freeze crystallization, solvent extraction, ion exchange, and others.

Summary Purpose/Need:

The sodium-bearing radioactive liquid waste does not meet LDR criteria and must be treated.

Summary Result/Endpoint/Deliverable:

At least 4 waste processing methods will be chosen for further investigation.

BDAT: STABL RMETL HLVIT

Functional Areas: final form removal of problem constituents treatment chemical physical treatment

4691

Target Site: Idaho

Location site: Idaho

Programs/Facilities Supported:

Efficient Separations ID

ID: 370

Program Title: Pyrochemical Process for ICPP HLW Calcine

Summary Description:

This work plan describes a 2-phase research and development program, estimated to require 3 years, to establish feasibility for a pyrochemical process for Idaho Chemical Processing Plant (ICPP) high-level waste (HLW) calcine. Pyrochemical treatment consists of high-temperature processing for removal of inert materials and separation of actinides and fission products in a molten metal/salt environment. This conceptual process has the potential to significantly reduce the amount of HLW which would require disposal in a federal repository by up to 30 fold. The 2 phases of this program are 1) Technical Feasibility Analysis and Initial Proof of Principle Experimental Development and 2) Non-Radioactive Small-Scale Process Feasibility Testing

Summary Purpose/Need:

Greater than 80 wt percent of the ICPP HLW calcine material is non-radioactive and non-hazardous. If the non-radioactive material is separated from the radioactive and hazardous components, cost avoidance to the DOE in disposal charges at a geologic repository would be very significant. The principal incentive for partitioning actinides from the fission products and the remaining bulk waste is the cost of disposal of the long-lived radioisotopes. By reducing the volume of this waste, potentially billions of dollars can be saved in disposal costs. Furthermore, concentrating the actinide and fission products as metal alloys opens numerous new opportunities for immobilizing, packaging, and storing and/or disposing the waste.

Summary Result/Endpoint/Deliverable:

If technology feasibility will be successfully demonstrated, a potential profound cost savings in reduced numbers of HLW canisters sent to a federal repository can be realized by the DOE.

BDAT: HLVIT

Functional areas: Chemical physical treatment

Removal of problem constituents
Waste destruction & Stabilization
Radionuclide removal

L54

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