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**RCRA PART B PERMIT APPLICATION MARCH
1993 SECTION C: WASTE CHARACTERIZATIONS**

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RCRA PART B PERMIT APPLICATION



March 1993

SECTION C: WASTE CHARACTERISTICS

Fernald Environmental Management Project

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SECTION C - WASTE CHARACTERISTICS
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SECTION C - WASTE CHARACTERISTICS

C-1.0 INTRODUCTION

This section of the RCRA Part B Permit Application describes the Waste Characteristics of the FEMP's wastes. This section has been prepared in accordance with the requirements of Ohio Administrative Code 3745-50-44 (A)(2) and (3) (40 CFR 270.14 (b)(2) and (3)).

C-1.1 ORGANIZATION

Section C is divided into five sections. Section C-1 provides an introduction to Section C, providing the section organization [this subsection], a site background discussion, and a regulatory compliance discussion. Section C-2 presents the Waste Determination Criteria, and Section C-3 provides the Waste Acceptance Criteria for wastes generated off-site. Section C-4 discusses how waste characteristics affect the storage and management of wastes, while Section C-5 addresses how waste characteristics affect procedures to ship wastes offsite.

Sections C-2 and C-3 are each divided into five subsections, as shown below.

- **Procedures** - Identify the operational procedures used to manage identification of wastes;
- **Waste Analysis** - Identify the analyses needed to determine how to manage the waste;
- **Land Disposal Restrictions** - Identify the applicable Land Disposal Restrictions, and any regulatory requirements;
- **Quality Assurance / Quality Control Criteria** - What Quality Assurance and Quality Control techniques are used; and
- **Records** - What records are required and where they will be maintained.

C-1.2 SITE BACKGROUND

The Fernald Environmental Management Project (FEMP), previously the Feed Materials Production Center, produced uranium metal used in the fabrication of fuel cores and target fuel elements for the U.S. Department of Energy (DOE). The FEMP ceased production in September 1989. The FEMP's primary function was changed in August 1990 from uranium metal production to environmental restoration and site clean-up activities.

A table of RCRA waste codes and basis for listing for wastes managed at the FEMP is shown in Table C-1. A table showing the correlation between the RCRA waste codes and the twenty-one DOE categories, which are used by DOE to manage the wastes is presented in Table C-2. Correlations are divided into three

categories: Typical codes (indicated by an "x" on the table); Possible codes (indicated by an "m" on the table); and Remotely possible codes (indicated by an "R" on the table). Table C-3 provides an in-depth description of each of the twenty-one DOE categories, including the category description, material requirements summary, waste codes, characterization requirements, and fingerprint analysis requirements (for waste acceptance from offsite).

C-1.3 REGULATORY COMPLIANCE

The FEMP currently stores wastes generated from inactive on-site production processes, restoration activities, ongoing site maintenance and construction, and off-site DOE facilities. Most hazardous waste stored at the FEMP is mixed waste. Mixed waste is defined as waste that contains both a hazardous waste component regulated under RCRA and a radioactive component consisting of source, special nuclear, or byproduct material regulated under the Atomic Energy Act. Any information included in this section on the radioactive portion of mixed wastes generated or stored at the FEMP is included for information purposes only, and is not intended to be part of the FEMP's RCRA Part B Permit Application. Because there are limited treatment/disposal facilities permitted for mixed wastes, the FEMP is required to store the mixed waste on-site until treatment/disposal facilities become available.

The FEMP is operating under a Consent Decree and its Stipulated Amendment. Under this legal agreement, the parties have agreed to a schedule for RCRA characterization of waste materials stored on site. Wastes have been divided into two groups, based on the following definitions:

- **Backlog Waste:** Any waste generated on or before June 30, 1990. Backlog hazardous wastes were generated when the FEMP was operating to produce uranium metal. These processes included metals production and fabrication, maintenance, and general degreasing operations. Hazardous wastes generated during this time were predominantly spent solvents. Hazardous wastes received from off-site DOE facilities that are part of the backlog inventory include spent solvents and barium chloride salts.
- **Newly Generated Waste:** Any waste generated after June 30, 1990.

[The June 30, 1990 date was set in the Consent Decree and its Stipulated Amendment. It is an arbitrary date that delineates how waste will be managed at FEMP. Waste generated before that date were characterized under the Consent Decree schedules (See Attachment C-2).]

RCRA characterizations were completed according to the schedule agreed upon in the Consent Decree and its Stipulated Amendment. A Consent Decree Progress Report is submitted quarterly to the Ohio Environmental Protection Agency (OEPA) and includes hazardous waste streams identified during routine RCRA determinations.

C-2.0 WASTE DETERMINATION

Hazardous wastes currently generated at the FEMP result from activities such as RCRA closures, CERCLA response actions, underground storage tank removals, construction and maintenance, and miscellaneous activities. The FEMP uses process knowledge and/or analytical data to characterize waste as described in this section and the FEMP Waste Determination Plan, as approved by OEPA (Attachment C-1). The purpose of this section is to identify the information needed during the process of waste determination, and to describe the process of waste determination.

C-2.1 PROCEDURES

Material Evaluation Form

A diagram of the material evaluation process is provided in Figure C-1. The first step of the waste determination process is completion of the Material Evaluation Form (MEF), the vehicle for documenting waste characterizations. The MEF is filled out by the process operator/project supervisor, who is responsible for the waste generation. An example of the Material Evaluation Form is provided in Figure C-2. This form is included as an example of the type of form used by the facility and is subject to change, based on changes in regulatory requirements or site procedures/requirements.

Once completed, the MEF is reviewed by FEMP personnel. FEMP specialists evaluate the adequacy of process knowledge and, if sufficient and conclusive, use this information to characterize the waste. Waste determinations based on process knowledge also rely on supplemental information/documentation. This information can include but is not limited to:

- Historical knowledge and/or data on similar FEMP processes;
- Conversations with personnel familiar with the process or location;
- Text books which describe the processes;
- Material Safety Data Sheets; and
- Vendor Specification information.

When process knowledge is used to determine that a waste is non-hazardous, supporting documentation is maintained in the facility's files. Additional actions such as a visual inspection, a request for additional process information, and/or a request for sampling and analysis of the waste are taken when process knowledge is inadequate to complete a characterization. After adequate information is gathered for the waste, results are evaluated and RCRA waste codes assigned as warranted.

If the waste requires sampling and analysis, the parameters needed to assess the hazardous constituents of the waste are identified and a sampling plan is prepared. Preliminary information supplied on the Material Evaluation Form is used to develop the sampling plan. The sampling and analysis program is initiated by the waste characterization group responsible for making the determination.

The sampling plans include but are not limited to the following information:

- the purpose of sampling;
- the identification of sampling procedures;
- number and location of samples;
- analytical parameters;
- sample volumes and containers;
- Quality Assurance/Quality Control requirements;
- equipment needed;
- decontamination of equipment; and
- health and safety concerns.

After the samples are analyzed and results are received by the FEMP, the results are reviewed by FEMP personnel. A determination is then made based on the results. Examples of waste categories and the analysis rationale are shown in Table C-3.

Soil and Debris

Management of debris is covered by existing ("standing") MEFs; to aid in the waste determination process, checklists have been developed to make an assessment of debris (See Figure C-3). This assessment will be performed prior to initiating work activities. This subsection addresses the approach that will be utilized to determine the appropriate management and segregation requirements.

Whenever possible, existing analytical information (Remedial Investigation characterization results, RCRA waste determination, and environmental monitoring results), historical facility information, and/or process knowledge will be utilized to complete the assessment. Physical sampling and analysis will be performed when information is not available, to obtain the information needed to complete the contamination assessment. If the waste to be generated is non-hazardous, no further documentation should be required to ship it to the waste disposal site or to store it onsite. If the waste to be generated is determined to be hazardous, the waste is stored at one of the RCRA storage units.

Compatibility

Compatibility of the hazardous waste with the container is verified prior to placing a hazardous waste in a container. The verification is completed by comparing analytical data or process knowledge for the hazardous waste to compatibility information for the container. After compatibility verification is completed, the appropriate container is obtained. Containers used at the FEMP include mild steel containers.

Chemical constituency or compatibility of each hazardous waste is evaluated to ensure that the hazardous wastes stored in a unit are compatible with each other and with the construction of the unit. A Reactivity Group Code is assigned to each hazardous waste stream to ensure that incompatible hazardous wastes are not stored together. The current Reactivity Group Codes in use at the FEMP is included as Figure C-4. These Reactivity Group Codes will be modified as additional hazardous wastes are identified at the FEMP.

Waste Determination

Following completion of the MEF, a waste determination is made. Table C-4 presents the waste determinations made to date. The table shows the FEMP waste identification numbers, along with the waste name, the waste code(s), and the basis of determination (e.g., process knowledge or analysis). Specific analyses used to make the determinations are coded to information at the bottom of the table. Routinely generated wastes are identified by an asterisk.

The FEMP waste identification numbers shown on correspond to the assigned MEF identification numbers. MEF/waste identification numbers 10,000 and larger have been assigned to wastes covered under the consent decree (the old production wastes). MEF/waste identification numbers less than 10,000 are assigned to newly-generated wastes.

Table C-5 presents Example Analytical Results for some various waste streams at the FEMP.

Container Labelling

The FEMP has developed and implemented a procedure to label hazardous waste containers. At a minimum, the container labels identify the material as "Hazardous Waste", the contents of the container and the dates on which accumulation or storage of the hazardous waste began. Container management activities are described in greater detail in Section D, Process Information.

C-2.2 ANALYSIS

This section presents the Waste Analysis Plan, including the parameters and rationale for parameter selection that apply to any individual waste stream generated or received by the FEMP. Waste streams generated by the FEMP may contain several constituents of concern. Waste is analyzed for specific

parameters, as necessary, in order to meet the objectives of the Waste Analysis Plan.

The Waste Analysis Plan describes the procedures used at the FEMP to characterize waste; the plan has three objectives:

- To accurately characterize the hazardous physical and chemical properties of each waste stream and assign appropriate hazardous waste codes;
- To provide sufficient information to select the safest hazardous waste storage containers, appropriate hazardous waste storage areas, and establish appropriate shipping and handling techniques, and;
- To determine applicable land disposal restriction information for each hazardous waste stream.

The Waste Analysis Plan may also be used to provide information for the initial screening of hazardous wastes for treatment as treatment facilities become available.

Each waste stream is analyzed for those parameters most likely to yield the maximum amount of chemical and physical information. In addition, specific analyses are selected based on historical knowledge, knowledge of the waste generation process, and the constituents suspected to be in the waste. The waste parameters selected by the FEMP represent those characteristics and constituents necessary to manage the waste in compliance with applicable permit conditions.

Test Methods

When process knowledge is insufficient to characterize a waste stream as non-hazardous, analytical methods are used to supplement the existing process knowledge. The test methods employed for the analytical parameters chosen to characterize and monitor the FEMP waste streams are listed in Table C-6. All methods reference the Sitewide CERCLA Quality Project Plan (SCQ), unless otherwise noted. When a waste stream has the potential to have several waste codes, the applicable analytical tests are conducted on the sample.

Atomic absorption, direct aspiration or ICP techniques are the methods of choice for metallic analytes. However, where analytical or sample matrix interferences prevent the collection of accurate and/or precise data, the atomic absorption, furnace technique analogs are employed. An alternative gas chromatographic/mass spectroscopic method (Method 8240) is substituted for the gas chromatography methods listed in Table C-6 if the methods listed do not provide definitive results for waste characterization or recertification.

For those constituent analyses not addressed in test methods presented in SCQ, American Society of Testing Materials (ASTM) Standards have been adopted as appropriate. The USEPA's SW-846 and "Standard Methods for the Examination of Water and Wastewater," latest edition, prepared and published jointly by American

Public Health Association, American Water Works Association, and the Water Environment Federation, may also be used.

For those waste streams that are generated in a solid matrix, sample preparation is needed prior to analysis. The extraction methods for solid matrix wastes are also provided in Table C-6.

The methods specified in the SCQ are also required for samples sent to off-site laboratories for analysis. Methods used to analyze wastes sent to off-site laboratories are specified in the FEMP's contract with the laboratory. Laboratory reports document the specific SCQ method or its analog used to analyze for each constituent. The laboratory of choice may vary because the FEMP must maintain the flexibility to select contract laboratories on a competitive basis.

TCLP Metals Analysis

Normally, trace metals will be measured using TCLP methods to complete the RCRA waste characterization relative to the Toxicity Characteristic (TC). However, in certain cases, total metals may be used in lieu of TCLP. These cases and justifications are outlined below:

- **Process Knowledge**-When particular constituents or constituent regimes are not suspected in the waste under evaluation, totals analyses may be used to confirm that the constituents are not present in the waste at levels that could cause the waste to fail the TC. If total metals concentrations do not exceed twenty times (20x) the TC, then the waste cannot possibly fail the TC. If the total metals concentrations exceed twenty times (20x) the TC criteria, then the material must be measured using the TCLP analysis. This exception is consistent with USEPA SW-846, Method 1311, item 1.2.
- **Oil and oily wastes**-The TCLP has been demonstrated not to perform well on oily wastes; reproducibility of results has been shown to vary widely. Until USEPA promulgates new standards, FEMP will use totals analyses for these wastes to make compliance decisions regarding the TC.
- **Aqueous wastes**-When there are less than 0.5% filterable solids, the TCLP simplifies to a total analysis, as described in the method.

Additional Requirements for Ignitable, Reactive and Incompatible Wastes

Liquid ignitable hazardous wastes are identified through process knowledge or by use of the Pensky-Martens Closed Cup test (USEPA Method Number 1010) to determine the flashpoint of the waste.

A small quantity of reactive hazardous wastes have been generated and stored at the FEMP. Reactive hazardous wastes are stored in areas that are compatible with

the material stored and are separated from incompatible hazardous wastes. Each hazardous waste stream is assigned a Reactivity Group Code based on the process knowledge and/or analytical data for each waste stream on the Material Evaluation Form. Only compatible hazardous wastes are stored within each storage unit or containment system.

Sampling Methods

The FEMP has developed site-specific sampling procedures, which incorporate the sampling methods in SCQ including Section C-3.1 and C-4.1, Sampling Considerations; Chapter 9, Sampling Plan; and Chapter 10, Sampling Methods and Samplers and Sampling Procedures for Hazardous Waste Streams (USEPA-600/2-80-018).

Due to the fact that wastes generated at the FEMP vary in types of matrices, the sampling methods and equipment used by the facility depend on the individual waste stream matrix. The types of equipment used to sample specific waste types are summarized in Table C-7.

All samples will be placed in containers and labeled with the following information: generator name, manifest number (if applicable), waste stream approval number and date sample was taken.

Number of Samples

Sampling procedures used for waste characterization at the FEMP are designed to ensure representative and random sampling. Two general procedures based on the use of random number tables have been developed to ensure representative and random sampling based on the type of container used to store the waste.

When a waste is stored in drums or containers of 55 gallons or less, the number of representative samples collected is based on the number of containers holding the waste from a generating source. Homogeneity of the waste being sampled is determined by evaluation of information on the Material Evaluation Form and the material type and source code. The following is provided as a general guideline for the number of representative samples required for a given waste stream container population:

<u>Number of Containers</u>	<u>Number of Samples for Analysis</u>
1	2
2	2
3 to 15	3
16 to 40	4
41 to 50	5
over 50	10 percent

In order to randomly select containers for sampling, the lot group of containers holding the same waste is sequentially numbered. After the containers are numbered, a random number table is used to select containers for sampling to minimize the possibility of introducing bias into the process.

Samples collected from containers with volumes of 20 cubic yards or larger are composited. A representative number of grab samples is based on the construction of the container. The following equation is used to develop the number of representative samples for each container:

$$n = A^2 / (GL)0.5$$

Where

n is the number of samples;
A is the area at the top of the container, and
GL is the greatest length of the container (Base units for A and GL must be identical, e.g., feet-feet, inches-inches, etc.).

In order to determine the sampling location within the container, the container is schematically divided into cubes with dimensions of one foot. Each cube is sequentially numbered. After the cubes are numbered, a random number table is used to select the cube designated for sampling. During actual sampling, if interference is encountered, such as a stone or piece of wood, another location is selected using the random number table and sampled.

Composite samples are also used for large populations (more than 20 drums) of containers with capacities of 55 gallons or less. Samples are collected from randomly selected containers and then composited. Sample compositing does not occur when there are physical anomalies between the wastes such as changes in color or the container holds co-mingled waste such as demolition debris.

The majority of waste generating activities at the FEMP has changed from continuous process sources to project and/or location-specific sources. Wastes generated by unique activities, such as closure/remedial wastes, are sampled and analyzed as they are generated. Wastes that are generated by continuous processes are sampled and analyzed annually, unless there is reason to believe that the waste has changed. If there is reason to believe the waste has changed, the waste is sampled and analyzed immediately.

For process wastes that are no longer generated, repeat analysis is not required for proper waste management. Because these wastes are stable and will not change, these wastes are not re-analyzed once they are characterized.

C-2.3 LAND DISPOSAL RESTRICTIONS

The FEMP is required to determine whether its hazardous waste is restricted from land disposal and to properly manage the hazardous waste in accordance with the Federal Facility Compliance Act. Section C-2.3 has been prepared in accordance with the requirements of OAC 3745-59 (40 CFR Part 268). With the exception of newly listed wastes such as D018-D043, all hazardous wastes generated and

received are subject to the Land Disposal Restriction (LDR) OAC 3745-59-01 to 3745-59-50 (40 CFR 268). Figure C-5 is an example of the type of form used to document the information used to complete the LDR waste characterization.

USEPA has recognized that treatment technologies are not currently available, but believes that technologies may become available in the future. The FFCA has provided relief to the U.S. DOE from the requirements of 40 CFR 268.7, which specifies that hazardous wastes will not be stored more than one year. The current USEPA enforcement policy is discussed in Section C-4.0.

The USEPA has interpreted the LDRs to apply prospectively to affected waste placed in storage after the effective date as of an applicable land disposal restriction (51 FR 26597; June 23, 1989).

Waste Characterization

As described in Section C-2.1, hazardous wastes are assessed to determine the applicability of all possible hazardous waste codes including both listed and characteristic codes. For hazardous wastes that carry more than one hazardous waste code, subcategories and treatability groups are determined for each hazardous waste code. The FEMP also determines whether the hazardous waste meets applicable treatment standards for each hazardous waste code identified.

Process knowledge may be used to determine the hazardous waste's subcategory such as D001, high Total Organic Carbon, and treatability group wastewater or non-wastewater. In addition, process knowledge may be used to determine whether hazardous wastes meet treatment standards.

When process knowledge is not adequate to determine a hazardous waste's subcategory and treatability group, the hazardous waste is analyzed according to the procedures and analytical methods discussed in Section C-2.2. In addition, restricted hazardous wastes may require analysis to confirm that they meet concentration based treatment standards for certification purposes.

Waste Characteristics: Solvent Wastes and Dioxin-Containing Wastes

The FEMP does not accept, generate or store any dioxin-containing wastes identified as F020-F023 or F026-F028. Therefore, the land disposal restrictions for dioxin-containing waste are not applicable to hazardous wastes generated at the FEMP.

Hazardous wastes containing spent solvents may meet treatment standards in some instances. In these cases, the FEMP uses existing analytical data and process knowledge, or conducts additional analyses to certify compliance with the treatment standards.

USEPA has revised treatment standards for both non-wastewater and wastewater forms of F001-F005 waste involving conversion from TCLP standards to standards based on total concentrations. When analyses are required, spent solvent waste is analyzed to determine if the hazardous waste meets concentration based

treatment standards by the total concentrations for F001-F005 waste. The revision does not include nonwastewater forms of carbon disulfide, cyclohexanone, or methanol (57 FR 37204; August 16, 1992).

Upon receipt of the analytical results, the FEMP compares the results to the treatment standards in OAC 3745-59-41 and -59-43 (40 CFR 268.41 and 268.43). If the results show that the treatment standards have been met, the FEMP certifies that the hazardous waste meets treatment standards.

Waste Characteristics: California List Wastes

With the promulgation of the Third-third rule, most of the treatment standards or statutory prohibition levels associated with the California list were superseded by more stringent, waste-specific treatment standards. California list restrictions still apply, however, for hazardous wastes subject to a National Capacity Variance.

Acid Wastes

Treatment standards have been promulgated for acidic hazardous wastes under the Third-third rule, therefore the California list restrictions for acidic hazardous wastes have been superseded, except as they apply to Third-third mixed waste under National Capacity Variance. Acidic hazardous wastes are tested in accordance with the procedures and methods discussed in Section C-2.2.

Halogenated Organic Compounds (HOCs)

California list restrictions apply to hazardous wastes which contain over 1,000 milligrams per liter (mg/l) of Halogenated Organic Compounds (HOCs) as defined in OAC 3745-59 Appendix III (40 CFR 268 Appendix III). Many of the compounds identified in the HOC list are also listed hazardous wastes and therefore the treatment standard for the listed waste may take precedence. Solid and liquid hazardous wastes suspected of containing HOCs are tested in accordance with the procedures and methods discussed in Section C-2.2.

Aqueous wastes with less than 10,000 mg/l of HOCs must be treated to a concentration of less than 1,000 mg/l HOCs prior to land disposal. No treatment method is specified. The following wastes must be destroyed in a RCRA-regulated incinerator or treated by an alternate approved method:

- Aqueous wastes with 10,000 mg/l or more of HOCs;
- Non-aqueous liquid wastes with 1,000 mg/l or more HOCs;
- Sludges or solids with 1,000 mg/kg or more HOCs.

PCBs

Liquid PCB wastes may become subject to the land disposal restrictions if they are mixed with listed hazardous waste, or if they exhibit a hazardous waste characteristic (except for Toxicity Characteristic wastes D018-D043 which are excluded from regulation under OAC 3745-51-08 (40 CFR 261.8)). Hazardous wastes suspected of containing PCBs are tested in accordance with the procedures and methods discussed in Section C-2.2.

PCBs that are subject to the California list restrictions are treated by the following specific methods:

- Liquids with 50 parts per million (ppm) or more PCBs but less than 500 ppm must be incinerated or burned in high efficiency boilers;
- Liquids with 500 ppm or more PCBs must be incinerated.

Liquid PCB wastes (concentrations greater than 50 ppm) on site are stored in indoor hazardous waste storage areas. These storage areas are designed and constructed to meet the facility standards established in 40 CFR 761.65(b). As discussed in Section C-4.0, the FEMP may be required to store the mixed TSCA/RCRA/radioactive waste on site for greater than one year because of the lack of treatment or disposal facilities for mixed waste.

Cyanide Wastes

Specific standards have been issued for cyanide wastes (D003, K-, F-, P-, and U-list wastes). Therefore, the California list standards for liquid hazardous waste containing cyanide have been generally superseded. Hazardous wastes suspected of containing cyanide are tested in accordance with the procedures and methods discussed in Section C-2.2.

Heavy Metals

The California list restrictions applicable to liquid hazardous wastes that contain specified concentrations of the eight heavy metals that are toxicity characteristic waste have been superseded by the Third-third rule, except as they apply to Third-third mixed waste under a National Capacity Variance. California list standards for nickel and thallium are still applicable to all liquid hazardous waste. Liquid hazardous wastes suspected to contain California list heavy metals are tested in accordance with the procedures and methods discussed in Section C-2.2.

Waste Characteristics: First-Third Waste With Treatment Standards

The FEMP uses process knowledge and/or supplemental analytical data to determine whether First-third hazardous wastes meet applicable treatment standards. Where analysis is required, representative samples are collected and analyzed using the procedures described in Section C-2.2.

In most cases, process knowledge is used to determine that hazardous wastes do not meet treatment standards and to determine treatability groups and subcategories. However, when process knowledge is not adequate or when the FEMP believes that the hazardous waste does meet treatment standards, the hazardous waste is analyzed to determine LDR treatability groups and subcategories, and to confirm whether the hazardous waste meets treatment standards.

Waste Characteristics: Second-Third Wastes With Treatment Standards

The FEMP uses process knowledge and/or analytical data to determine whether Second-third hazardous wastes meet applicable treatment standards. Where analysis is required, representative samples are collected and analyzed using the procedures described in Section C-2.2.

In most cases, process knowledge is used to determine that hazardous wastes do not meet treatment standards and to determine treatability groups and subcategories. However, when process knowledge is not adequate or when the FEMP believes that the hazardous waste does meet treatment standards, the hazardous waste is analyzed to determine treatability groups and subcategories, and to determine if the hazardous waste meets treatment standards.

Waste Characteristics: Third-Third Wastes

Treatment standards for all Third-third hazardous wastes, including any First- and Second-Third hazardous wastes rescheduled to the Third-third, were promulgated on May 8, 1990. The FEMP uses process knowledge and/or analytical data to determine whether Third-third hazardous wastes meet applicable treatment standards. Where analysis is required, representative samples are collected and analyzed using the procedures described in Section C-2.2.

In most cases, process knowledge is used to determine that hazardous wastes do not meet treatment standards and to determine treatability groups and subcategories. However, when process knowledge is not adequate or when the FEMP believes that the hazardous waste does meet treatment standards, the hazardous waste is analyzed to determine treatability groups and subcategories, and to determine if the hazardous waste meets treatment standards.

C-2.4 QUALITY ASSURANCE/QUALITY CONTROL

The quality assurance and quality control provisions for the waste determination shall be in compliance with applicable provisions of the latest edition of the Sitewide CERCLA Quality Assurance Project Plan. Additionally, the Quality Assurance Program Description shall be applicable.

Laboratory analysis will be in accordance USEPA SCQ, including applicable quality assurance and quality control provisions. Prior to the selection of a contract laboratory, the laboratory submits Quality Assurance and Quality Control (QA/QC) information to the FEMP. The laboratory is required to meet the QA/QC goals

established in SCQ for analytical procedures. Failure to demonstrate the ability to achieve the QA/QC goals disqualifies the use of that laboratory.

Laboratory QA/QC

Quality control and assurance blanks, such as duplicates, equipment blanks, and/or trip blanks, will be collected. Duplicate samples are collected for waste streams with more than one drum at the rate of at least 10 percent of samples taken. For example, one duplicate sample is collected if three drums of waste are sampled; two duplicate samples are collected if 11 drums of waste are sampled. Equipment blanks are collected immediately following equipment decontamination. Trip blanks accompany sample shipments every third week. Trip blanks are analyzed for volatile organics each time they are submitted.

Other samples may be collected as specified by the contract laboratory QA/QC procedures. These samples may include laboratory blanks and spiked blanks, split samples, and standards.

In addition to the quality control samples described above, the FEMP uses several established procedures to preserve the integrity of the samples during collection and shipment. These procedures include:

- field logs,
- sampling equipment decontamination,
- chain-of-custody documents, and
- shipping seals.

Field Log

A field log is maintained by sampling personnel. The type of information that is recorded in the field log includes, but is not limited to:

- sampling date and location;
- time of sampling;
- sampling plan number, if applicable;
- material type and source code, if available;
- sampling personnel;
- lot and drum number, if available;
- sampling equipment used;
- number of phases or matrix;
- phase specific identifying number, if applicable;
- physical description;
- sampling anomalies and resolutions to sampling problems;
- customer number for laboratory use;
- requested analysis;
- quantity and type of bottles;
- type of sample (i.e., grab, composite, etc.); and
- identification of containers storing decontamination rinseate and personnel protective clothing.

The field log describes sampling conditions that might prejudice the analytical results.

Sample Containers

The sample containers selected for a particular waste stream are based on the sample matrix and the types of analysis that may be required for that particular waste stream. Where various sample matrices are encountered or more than one analysis is required, the appropriate sample containers are used. The types of containers, preservatives, holding times, and minimum volumes required are presented in Table C-8.

Frequency of Analysis

The majority of waste generating activities at the FEMP has changed from continuous process sources to project and/or location-specific sources. Wastes generated by unique activities, such as closure/remedial wastes, are sampled and analyzed as they are generated. Wastes that are generated by continuous processes are sampled and analyzed annually, unless there is reason to believe that the waste has changed. If there is reason to believe the waste has changed, the waste is sampled and analyzed immediately.

Equipment Decontamination

All sampling equipment is decontaminated prior to sampling. The frequency of decontamination is based on the type of sampling. For those waste streams undergoing composite sampling, equipment is not decontaminated between individually collected samples making the composite. For waste undergoing grab sampling, equipment is decontaminated after each collected sample. In every case, equipment is decontaminated between different waste streams. Periodically, an equipment blank is collected after the equipment undergoes final decontamination to ensure that the equipment is decontaminated.

The equipment decontamination procedure is described below:

- 1) The sampling equipment is placed over a collection drum and washed using a warm detergent solution and bottle brush.
- 2) The sampler is rinsed several times with tap water to remove detergent residues.
- 3) The sampler is then rinsed with distilled water and the excess water is drained into the drum.
- 4) The sampler is then air dried or rinsed with isopropanol and allowed to dry.
- 5) The clean sampler is placed in a plastic bag or wrapped in aluminum foil.

Chain-of-Custody and Shipping Seals

Sample containers are placed in appropriate shipping containers after sample collection. The containers are cooled, as required, to meet preservative

requirements. Sample transport documentation such as analytical requests and chain-of-custody forms (See Figure C-7) are affixed to or placed in the shipping container. The FEMP maintains a strict chain-of-custody procedure for all samples collected for RCRA determination. A chain-of-custody tape or other tamper guard seals are affixed to the shipping container in order to indicate potential container tampering. The shipping container is then sent to the appropriate laboratory for analysis.

Laboratory Audits

A detailed description of laboratory audit procedures for offsite laboratories is found in Section 12.0 of the SCQ. As described in the SCQ, ". . . audits shall consist of evaluation of the QA program and procedures, effectiveness of their implementation, and review of associated project documentation. . . . Auditing shall be performed in accordance with DOE Guidelines [and] the SCQ . . .

"As a minimum, surveillance shall consist of monitoring/observing ongoing project activity and work areas to verify item and activity conformance to specified requirements. Surveillance shall be scheduled, planned, and documented.

"Potential subcontractor laboratories shall be audited by the designated FEMP QA organization (Section 3 and Appendix E [of the SCQ]). Contracted laboratories shall be audited annually at a minimum and will only perform services for FEMP in the areas audited at the facility. Before a laboratory handles samples from FEMP, audit team documentation is required specifying that performance in areas related to analysis of FEMP samples is within pre-established specifications."

C-2.5 RECORDS

This section discusses records that are maintained in conjunction with this process. In addition to the records discussed here, several other records have been described earlier in the text.

The MEF and any corresponding hazardous waste manifests are maintained at FEMP as part of the RCRA Operating Record.

Prior to shipment of any hazardous waste from the FEMP to an off-site facility, the FEMP completes a notification/certification form in accordance with the requirements for generators in OAC 3745-59-07 (40 CFR 268.7) as discussed in Section C-2.3. The completed notification/certification form is retained for a minimum of five years. This period is extended indefinitely in the case of unresolved enforcement actions. A copy of any exemptions from land disposal restrictions must be attached to the MEF file, when appropriate. A copy of all analysis performed on a waste stream will be maintained on file at FEMP for a minimum of five years. Chain of custody forms and other documentation are maintained on site for five years.

C-3.0 WASTE ACCEPTANCE CRITERIA

This section identifies the steps that the facility would follow when accepting material from an off-site source. No hazardous waste from off-site facilities is accepted and/or stored at the FEMP unless the conditions of the Consent Decree and its stipulated amendment are met. Under terms of the Consent Decree, "No hazardous or mixed waste from an off-site source not already listed in the [FEMP] Part B Permit Application, or a revision as of the date of entry of this Consent Decree, shall be stored, disposed or treated at the [FEMP] without the prior approval of the State of Ohio."

The State of Ohio has been notified that the FEMP accepts mixed wastes (with a radionuclide content that originated from the FEMP) from laboratories that are performing chemical and geotechnical analysis of samples collected from the FEMP. This notice includes waste samples sent to laboratories for treatability studies.

A decision diagram of the pre-acceptance phase for wastes shipped from off-site is shown in Figure C-8. A copy of the Waste Characterization Process for off-site Receipts is shown in Figure C-11. A copy of the Hazardous Waste Receipt Procedure is shown in Attachment C-3.

C-3.1 OPERATIONS

Generators will provide the FEMP with waste characterization data for each waste stream shipped to the FEMP from an off-site facility as detailed in the Offsite Material Evaluation Form in Figure C-9. Off-site generators will provide the same types of data and level of detail that is required to characterize waste generated at the FEMP. Additional data required by the FEMP that is not included on the Material Evaluation Form is submitted to the FEMP as an attachment to the form, including a Waste Analysis Certification/Request for Transfer Form (See Figure C-10). This data precedes actual shipment of the waste so that FEMP personnel can review the data and confirm that the waste can be stored at the FEMP. The generator will furnish information for each waste stream such as:

- Physical parameters such as pH, color, physical state, flashpoint, particle size, specific gravity, density, viscosity, liquid content, compatibility;
- TCLP analytical results for toxicity characteristic constituents;
- RCRA waste code(s) with analytical data if the codes have been determined on the basis of analytical information;
- Land disposal restriction information such as total organic carbon, total suspended solids, constituent specific organic scans as necessary; and
- Generator certifications that the information for each waste stream is complete and accurate.

Waste characterization data is reviewed by the Waste Characterization Section at the FEMP. If it is determined that the waste can be stored at the FEMP, the generator is notified to schedule shipment of the waste. The following types of waste cannot be accepted at FEMP:

- RCRA Hazardous Waste as defined by OAC 3745-51-03 (40 CFR 261.3) that are not also defined as Low Level Radioactive Waste (LLRW).
- RCRA Hazardous Waste as defined by OAC 3745-51-31 (40 CFR 261.31) for the following hazardous waste numbers, regardless of mixed waste status: Dioxin wastes (F020 through F023 and F026 through F028) and cyanide bearing wastes (F006 through F011).
- RCRA Hazardous Waste, D003 regardless of mixed waste status. This waste is defined in OAC 3745-51-23 (40 CFR 261.23) as waste that exhibits one of more of the following properties:
 - it is normally unstable and readily undergoes violent change without detonating;
 - it reacts violently with water;
 - it forms potentially explosive mixtures with water;
 - when mixed with water, it generates toxic gases, vapors, or fumes in quantities sufficient to present a danger to human health or the environment;
 - it is readily capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement;
 - it is capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or
 - it is forbidden explosive as defined in 49 CFR 173.51 or a "Class A" explosive as defined in 49 CFR 173.53 or a "Class B" explosive as defined in 49 CFR 173.88.
- TSCA PCB Waste (Not fulfilling definition of LLRW) - TSCA waste that is not considered a LLRW will not be accepted.
- Regulated Infectious Waste - Waste as defined in OAC 3745-27-01, regardless of mixed waste status.
- Greater than Class C Waste - Greater than Class C waste is defined as waste with long-lived radionuclide concentrations greater than those specified in 10 CFR 61.55.

- Compressed Gas Cylinders - A compressed gas is described as : any material or mixture having in the container, an absolute pressure exceeding 40 pounds per square inch (psi) at 70°F; or regardless of the pressure at 70°F, having an absolute pressure exceeding 104 psi at 130°F; or any liquid flammable material having a vapor pressure exceeding 40 psi absolute at 100°F, as determined by test method ASTM Test D-323. Expended (empty) compressed gas cylinders will not be accepted either.
- Refrigerant Gas or Dispersant Gas - Applies to all flammable or non-flammable, nonpoisonous refrigerant gases, dispersant gases (fluorocarbons), or any other compressed gas listed in the regulations which meet the following criteria:
 - has a vapor pressure not exceeding 260 psi at 130°F, and
 - is a flammable mixture and contains 50% or greater fluorocarbon content, less than 40% by weight or a flammable component, and has a vapor pressure not exceeding 260 psi, at 130°F.
- Aerosol Cans - All cans that have not been punctured such that the puncture disfigurement is not readily recognizable by Real-Time Radiography (RTR).
- High Vapor Pressure Liquid - Liquid waste with high vapor pressure requiring special handling to prevent significant evaporation loss (e.g., CFCs like Freon 12).

When hazardous waste arrives at the FEMP, acceptance verification is initiated by facility personnel. The following areas are examined prior to acceptance of the waste:

- Documentation;
- Manifest and land disposal notification/certification;
- Verification of manifest information; container count, weight, waste codes, etc.;
- Container condition and labelling; and
- Fingerprint analysis of the waste.

Designated personnel examine the hazardous waste manifest and land disposal restriction notification and certifications. Absent or incomplete receiving/shipping documentation such as an incomplete hazardous waste manifest or incomplete or missing land disposal restriction information are corrected or completed prior to acceptance of the hazardous waste shipment.

After verification of container condition and proper labeling, contents of the containers are examined to verify the physical state of the waste. Wastes are sampled and analyzed according to the procedures described in Section C-2.2. The sample undergoes a fingerprint analysis which includes pH, physical state, flashpoint, specific gravity, and reactivity.

Between receipt of the hazardous waste and verification, the hazardous waste is segregated from other hazardous waste stored at the FEMP or other hazardous waste undergoing acceptance verification. The FEMP does not sign the manifest and formally accept the hazardous waste until fingerprint analysis of the hazardous waste is complete and verified to be within the acceptance criteria described in Table C-9.

The generator is contacted immediately by phone if any discrepancies or other problems are discovered in documentation, condition of containers, or identification of the hazardous waste. If discrepancies cannot be resolved, the generator is informed that the hazardous waste shipment has been rejected. The FEMP will send a letter describing the discrepancy and the attempts to resolve the discrepancy to OEPA and USEPA if the discrepancy is not resolved within 15 days of hazardous waste receipt.

Compatibility

Each drum is assigned a storage location based on the physical state, compatibility and flammability of the waste. Any subsequent movement of the hazardous waste at the FEMP is recorded in the hazardous waste tracking system. Procedures are outlined in Section C-2.2.

C-3.2 ANALYSIS

Analytical procedures described in Section C-2.2 will also be applicable for wastes accepted from offsite. Analysis will be performed and repeated for wastes to be received from off-site generators under any of these conditions:

- Before the first shipment, and at least annually thereafter;
- Whenever the process generating the waste changes; or
- Fingerprinting results do not match the manifested waste preacceptance ranges and the discrepancy cannot be resolved with the generator.

C-3.3 LAND DISPOSAL RESTRICTIONS

Land Disposal Restrictions applicable for FEMP wastes shall be applicable for other wastes. FEMP waste procedures are outlined in Section C-2.

C-3.4 QUALITY ASSURANCE/QUALITY CONTROL

The quality assurance and quality control provisions for the waste acceptance shall be in compliance with applicable provisions of the latest edition of the Sitewide CERCLA Quality Assurance Project Plan. Additionally, the Quality Assurance Program Description shall be applicable. Additional QA/QC provisions are discussed in Section C-2.4.

C-3.5 RECORDS

As discussed in Section 3.1, submission of a completed offsite MEF (Figure C-9) and WAC Certification/Request for Transfer form (Figure C-10) is required prior to acceptance of any hazardous waste from off-site sources. If visual inspection of the hazardous waste and fingerprint analyses lead the FEMP to suspect that the notification/certification form is incorrect, issues are resolved prior to acceptance of the hazardous waste.

A Land Disposal Restrictions Notification must accompany each shipment of land disposal-restricted waste received by FEMP. The Notification must be signed and dated by the generator. Completed LDR notification/certification forms from off-site generators are filed upon receipt as part of the FEMP RCRA Operating Record.

A copy of all hazardous waste manifests will be maintained on file for at least three years. A copy of all analysis performed on a waste stream will be maintained on file at FEMP for a minimum of five years. A copy of the Ohio Consent-to-Service notices required will be maintained on file at the FEMP. All LDR forms will be maintained for the life of the facility, per OAC 3745-54-73 (40 CFR 264.73 (g)(15) and (16)).

C-4.0 STORAGE AND MANAGEMENT OF WASTES

This section presents several items pertaining to how waste characteristics affect the management of hazardous wastes at the FEMP.

Consolidation of Wastes

When two or more wastes are consolidated, a review shall be conducted to ensure that the all wastes to be consolidated are compatible. This review will be waived when the same waste from two containers is consolidated.

Compatibility of Waste with Overpacks

Compatibility of wastes will be monitored in accordance with provisions described earlier. In situations where containers are leaking and require overpacking, the overpack containers will be compatible with the leaking waste.

Wastewater Exclusion

Under provisions of OAC 3745-51-03 (40 CFR 261.3 (a)), certain wastewaters are excluded from the regulatory definition of hazardous waste, and consequently not covered by this RCRA Part B Permit Application. A one-time notification/certification to OEPA must be on file in the operating record for waste sent to a waste-water treatment system.

Additional Requirements Pertaining to Storage of Restricted Wastes

The FEMP stores hazardous waste and mixed waste. Under the Land Disposal Restrictions, storage of hazardous waste is allowed "solely for the purpose of accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal (OAC 3745-59-50 (40 CFR 268.50))." As discussed previously, however, currently there are very few permitted facilities for the treatment or disposal of mixed wastes.

Mixed wastes were granted a National Capacity Variance to the effective date of the land disposal restrictions which expired May 8, 1992. This means that the storage prohibition became effective on that date. The USEPA provided the following guidance in the preamble to the Third-third rule (55 FR 22673):

"No firm time limit is established pursuant to Section 268.50. Generators and owners and operators can store as long as necessary. The legislative history makes it clear that the intent of . . . Section 268.50 is to prohibit the use of long-term storage to circumvent the treatment requirements imposed by the Land Disposal Restrictions. However, if prohibited wastes are stored beyond one year, the owner/operator has the burden of proving (in the event of an enforcement action) that such storage is for the allowable reason; prior to one year, USEPA maintains the burden of proving that storage has occurred for the wrong reason."

The DOE is exploring options and methods for treatment/disposal of mixed waste. Until additional facilities are permitted to receive mixed waste, however, there are very limited options for removal of the waste to off-site facilities. See section C-2.3 for additional discussion.

Notification and Certification Requirements

Figure C-6 presents examples of the notification and certification that may accompany each off-site hazardous waste shipment. The specific notification/certification forms that are used by the FEMP are discussed below.

Waste Meeting Applicable Treatment Standards

If the hazardous waste meets applicable treatment standards, each off-site shipment of hazardous waste is accompanied by the appropriate notification/certification shown in Figure C-6. The notification includes the Manifest Number, Hazardous Waste No., the Subcategory if applicable, the Treatability Group, the regulatory reference for the treatment standard, and the five-letter code where the treatment standard is a specified technology. In addition, for F001-F005 spent solvents and F039 multi-source leachate the concentration based treatment standards are provided for each hazardous constituent identified. The certification is signed by an authorized facility representative.

Waste Not Meeting the Applicable Treatment Standard

If the hazardous waste does not meet applicable treatment standards, a notification accompanies each off-site shipment (see sample form in Figure C-5). The notification includes the Manifest Number, Hazardous Waste No., the Subcategory if applicable, the Treatability Group, the regulatory reference for the treatment standard, and the five-letter code where the treatment standard is a specified technology. For F001-F005 spent solvents and F039 multi-source leachate the concentration based treatment standards are provided for each hazardous constituent identified. All applicable California list restrictions under RCRA Section 3004(d) are also identified. The sample notification form for hazardous wastes not meeting the applicable treatment standards is provided in Figure C-5.

Waste with Applicable Extensions

If a hazardous waste is subject to a case-by-case extension or a national capacity variance, the notification identified as "Restricted Wastes Exempt from Land Disposal Prohibitions" in Figure C-5 is completed prior to shipment of the hazardous waste. The notification includes the Manifest Number, Hazardous Waste No., the Subcategory if applicable, the Treatability Group, the regulatory reference for the treatment standard, and the five-letter code where the treatment standard is a specified technology. For F001-F005 spent solvents and F039 multi-source leachate the concentration based treatment standards are provided for each hazardous constituent identified. In addition, all applicable California list restrictions under RCRA Section 3004(d) are identified. The

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notification also identifies the specific exemption that applies to the hazardous waste.

C-5.0 OFFSITE SHIPMENT OF WASTES

Hazardous wastes shipped offsite shall be manifested under the appropriate hazardous waste manifest. This form will vary, based on the ultimate disposition of the waste (Some states require use of their own form; for this reason, a copy of the manifest has not been included.) In addition to the manifest, receiving facility's LDR notification/certification form shall be included with the shipment.

Lab Packs

The FEMP completes specific notification/certification forms when shipping hazardous waste organo-metallic or organic lab packs to off-site facilities. The notification includes the Manifest Number, Hazardous Waste No., the Subcategory if applicable, the Treatability Group, the regulatory citation for the treatment standard, and the five-letter code where the treatment standard is a specified technology. In addition, for F001-F005 spent solvent s and F039 multi-source leachate the concentration based treatment standards are provided for each hazardous constituent identified. The certification is signed by an authorized facility representative.

Notification and Certification for Wastes to be Further Managed

Prior to shipment of any hazardous waste stored at the FEMP to an off-site facility, the FEMP completes a notification/certification form in accordance with the requirements for generators in OAC 3745-59-07 (40 CFR 268.7) as discussed in Section C-3. The completed notification/certification form is retained for a minimum of five years (extended indefinitely in the case of unresolved enforcement actions).

Table C-1 RCRA Waste Codes and Basis for Listing

**TABLE C-1
HAZARDOUS WASTE CODES BASIS OF LISTING**

- 4456

Waste Code	Basis of Listing
D001	Ignitable - It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F).
	Ignitable - It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited burns so vigorously and persistently that it creates a hazard.
	Ignitable - It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent methods approved.
	Ignitable - It is an oxidizer as defined in 49 CFR 173.151.
D002	Corrosivity - It is aqueous and has a Ph less than or equal to 2 or greater than or equal to 12.5.
	Corrosivity - It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified.
D003	Reactivity - It is normally unstable and readily undergoes violent change without detonating.
	Reactivity - It reacts violently with water.
	Reactivity - It forms potentially explosive mixtures with water.
	Reactivity - When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
	Reactivity - It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapor or fumes in a quantity sufficient to present a danger to human health or the environment.
	Reactivity - It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement

**TABLE C-1
HAZARDOUS WASTE CODES BASIS OF LISTING**

- 4456 -

Waste Code	Basis of Listing
D004	Arsenic (TCLP extract 5.0 mg/l)
D005	Barium (TCLP extract 100.0 mg/l)
D006	Cadmium (TCLP extract 1.0 mg/l)
D007	Chromium (TCLP extract 5.0 mg/l)
D008	Lead (TCLP extract 5.0 mg/l)
D009	Mercury (TCLP extract 0.2 mg/l)
D010	Selenium (TCLP extract 1.0 mg/l)
D011	Silver (TCLP extract 5.0 mg/l)
D018	Benzene (TCLP extract 0.5 mg/l)
D019	Carbon Tetrachloride (TCLP extract 1.0 mg/l)
D021	Chlorobenzene (TCLP extract 100.0 mg/l)
D022	Chloroform (TCLP extract 6.0 mg/l)
D026	Cresol (TCLP extract 200.0 mg/l)
D028	1,2-Dichloroethane (TCLP extract 0.5 mg/l)
D029	1,1-Dichloroethylene (TCLP extract 0.7 mg/l)
D035	Methyl ethyl ketone (TCLP extract 200.0 mg/l)
D037	Pentachlorophenol (TCLP extract 100.0 mg/l)
D039	Tetrachloroethylene (TCLP extract 0.7 mg/l)
D040	Trichloroethylene (TCLP extract 0.5 mg/l)
D043	Vinyl chloride (TCLP extract 0.2 mg/l)

**TABLE C-1
HAZARDOUS WASTE CODES BASIS OF LISTING**

- 4456 -

Waste Code	Basis of Listing
F001	Spent Solvents - The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvents mixtures/blends used in degreasing containing before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	Spent Solvents - The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane and 1,1,2-trichloroethane; all spent solvents mixtures/blends containing before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	Spent Solvents - The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and all spent solvents mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of the those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	Spent Solvents - The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

**TABLE C-1
HAZARDOUS WASTE CODES BASIS OF LISTING**

-4456-

Waste Code	Basis of Listing
P098	Potassium cyanide
U019	Benzene
U044	Chloroform
U075	Dichlorodifluoromethane
U080	Dichloromethane
U107	Di-n-octyl Phthalate
U108	1,4-Dioxane
U117	Ethyl Ether
U121	Trichloroflouromethane
U134	Hydrogen Fluoride
U151	Mercury
U159	Methyl ethyl ketone
U161	Methyl isobutyl ketone
U210	Tetrachloroethylene
U211	Carbon Tetrachloride
U213	Tetrahydrofuran
U220	Toluene
U226	1,1,1-Trichloroethane
U228	Trichloroethylene
U359	Ethylene Glycol Monoethyl ether
U239	Xylene

Table C-2 RCRA Waste Codes versus DOE Waste Categories

TABLE C-2
EPA WASTE CODES VS. WASTE CATEGORY

EPA WASTE CODES VS. DOE WASTE CATEGORY		1 Organic Liquids	2 Aqueous Liquids	3 Organic Sludges/Particulates	4 Inorganic Sludges/Particulates	5 Cemented Solids	6 Organic Debris	7 Inorganic Debris
D001	Ignitable - Liquid Flash Point	X	M					
D001	Ignitable - Solid burns vigorously				X			
D001	Ignitable - Compressed Gas							
D001	Ignitable - Oxidizer		M		X			
D002	Corrosivity - Liquid pH ≤2 or ≥12.5	M	M					
D002	Corrosivity - Liquid Corrodes Steel							
D003	Reactivity - Unstable, violent change							
D003	Reactivity - Explosive mixtures with water							
D003	Reactivity - Harmful vapors with water							
D003	Reactivity - Cyanide or Sulfide @pH	M	M	M				
D003	Reactivity - Capable of Detonation with Initiating							
D004	Arsenic	M	X	M	X	X	M	X
D005	Barium	M	X	M	X	X	M	X
D006	Cadmium	M	X	M	X	X	M	X
D007	Chromium	M	X	M	X	X	M	X
D008	Lead	M	X	M	X	X	M	X
D009	Mercury	M	X	M	X	X	M	X
D010	Selenium	M	X	M	X	M	M	X
D011	Silver	M	X	M	X	M	M	X
D018	Benzene	X	X	X		M	X	M
D019	Carbon Tetrachloride	X	X	X		M	X	M
D021	Chlorobenzene	X	X	X		M	X	M
D022	Chloroform	X	X	X		M	X	M
D026	Cresol	X	X	X		M	X	M
D028	1,2-Dichloroethane	X	X	X		M	X	M
D029	1,1-Dichloroethylene	X	X	X		M	X	M
D035	Methyl ethyl ketone	X	X	X		M	X	M
D037	Pentachlorophenol			X			M	M
D039	Tetrachloroethylene	X	X	X		M	X	M
D040	Trichloroethylene	X	X	X		M	X	M
D043	Vinyl chloride	X	X	X		M	X	M
F001	Spent Solvents	X	M	X		R	M	M
F002	Spent Solvents	X	M	X		R	M	M
F003	Spent Solvents	X	M	X		R	M	M
F005	Spent Solvents	X	M	X		R	M	M
P038	Potassium cyanide							
U019	Benzene	R	R	R				
U044	Chloroform	R	R	R				
U075	Dichlorodifluoromethane	R	R	R				
U080	Dichloromethane	R	R	R				
U107	Di-n-octyl Phthalate	R	R	R				
U108	1,4-Dioxane	R	R	R				
U117	Ethyl Ether	R	R	R				
U121	Trichlorofluoromethane	R	R	R				
U134	Hydrogen Fluoride	R	R	R				
U151	Mercury	R	R	R				
U159	Methyl ethyl ketone	R	R	R				
U161	Methyl isobutyl ketone	R	R	R				
U210	Tetrachloroethylene	R	R	R		R	M	M
U211	Carbon Tetrachloride	R	R	R				
U213	Tetrahydrofuran	R	R	R				
U220	Toluene	R	R	R				
U226	1,1,1-Trichloroethane	R	R	R				
U228	Trichloroethylene	R	R	R				
U339	Xylene	R	R	R				
U359	Ethylene Glycol Monoethyl ether	R	R	R				

X = Typical Waste Code M = Other Possible Waste Code R = Remotely Possible Waste Code

**TABLE C-2
EPA WASTE CODES VS. WASTE CATEGORY**

EPA WASTE CODES VS. DOE WASTE CATEGORY		8 Hetero- geneous Debris	9 Soils with Organics	10 Soils with Inorganics	11 Soils with Organics & Inorganics	12 Lab Packs with Organics	13 Lab Packs without Organics	14 Reactive Metals
D001	Ignitable - Liquid Flash Point					X		
D001	Ignitable - Solid burns vigorously						R	M
D001	Ignitable - Compressed Gas					M		
D001	Ignitable - Oxidizer						M	
D002	Corrosivity - Liquid pH ≤ 2 or ≥ 12.5					X	X	
D002	Corrosivity - Liquid Corrodes Steel					M	M	
D003	Reactivity - Unstable, violent change					X	X	
D003	Reactivity - Explosive mixtures with water							X
D003	Reactivity - Harmful vapors with water							
D003	Reactivity - Cyanide or Sulfide @pH					M	M	
D003	Reactivity - Capable of Detonation with Initiating							
D004	Arsenic	X	M	X	X	M	X	M
D005	Barium	X	M	X	X	M	X	M
D006	Cadmium	X	M	X	X	M	X	M
D007	Chromium	X	M	X	X	M	X	M
D008	Lead	X	M	X	X	M	X	M
D009	Mercury	X	M	X	X	M	X	M
D010	Selenium	X	M	X	X	M	X	M
D011	Silver	X	M	X	X	M	X	M
D018	Benzene	X	X		X	X		
D019	Carbon Tetrachloride	X	X		X	X		
D021	Chlorobenzene	X	X		X	X		
D022	Chloroform	X	X		X	X		
D026	Cresol	X	X		X	X		
D028	1,2-Dichloroethane	X	X		X	X		
D029	1,1-Dichloroethylene	X	X		X	X		
D035	Methyl ethyl ketone	X	X		X	X		
D037	Pentachlorophenol	M	X		X	X		
D039	Tetrachloroethylene	X	X		X	X		
D040	Trichloroethylene	X	X		X	X		
D043	Vinyl chloride	X	X		X	X		
F001	Spent Solvents	M	M		M			
F002	Spent Solvents	M	M		M			
F003	Spent Solvents	M	M		M			
F005	Spent Solvents	M	M		M			
P098	Potassium cyanide			R			X	
U019	Benzene		R			X		
U044	Chloroform		R			X		
U075	Dichlorodifluoromethane		R			X		
U080	Dichloromethane		R			X		
U107	Di-n-octyl Phthalate		R			X		
U108	1,4-Dioxane		R			X		
U117	Ethyl Ether		R			X		
U121	Trichlorofluoromethane		R			X		
U134	Hydrogen Fluoride		R		M	X		
U151	Mercury		R				X	
U159	Methyl ethyl ketone		R			X		
U161	Methyl isobutyl ketone		R			X		
U210	Tetrachloroethylene	M	R		M	X		
U211	Carbon Tetrachloride		R			X		
U213	Tetrahydrofuran		R			X		
U220	Toluene		R			X		
U226	1,1,1-Trichloroethane		R		M	X		
U228	Trichloroethylene		R		M	X		
U239	Xylene		R			X		
U359	Ethylene Glycol Monoethyl ether		R			X		

X = Typical Waste Code M = Other Possible Waste Code R = Remotely Possible Waste Code

TABLE C-2
EPA WASTE CODES VS. WASTE CATEGORY

EPA WASTE CODES VS. DOE WASTE CATEGORY		15 Explosives	16 Compressed Gases	17 Liquid Mercury	18 Elemental Lead (Activated & Inactivated)	19 Batteries (Lead Acid, Cadmium)	99 Other
D001	Ignitable - Liquid Flash Point		X				M
D001	Ignitable - Solid burns vigorously						
D001	Ignitable - Compressed Gas		X				
D001	Ignitable - Oxidizer						M
D002	Corrosivity - Liquid pH ≤ 2 or ≥ 12.5		M			X	M
D002	Corrosivity - Liquid Corrodes Steel						
D003	Reactivity - Unstable, violent change						
D003	Reactivity - Explosive mixtures with water						
D003	Reactivity - Harmful vapors with water						
D003	Reactivity - Cyanide or Sulfide @pH					M	M
D003	Reactivity - Capable of Detonation with Initiating	X					
D004	Arsenic	M	M			X	X
D005	Barium	M	M				X
D006	Cadmium	M	M			X	X
D007	Chromium	M	M				X
D008	Lead	M	M		X	X	X
D009	Mercury	M	M	X		X	X
D010	Selenium	M	M			X	X
D011	Silver	M	M			X	X
D018	Benzene						X
D019	Carbon Tetrachloride		M				X
D021	Chlorobenzene						X
D022	Chloroform						X
D026	Cresol						X
D028	1,2-Dichloroethane						X
D029	1,1-Dichloroethylene						X
D035	Methyl ethyl ketone		M				X
D037	Pentachlorophenol						
D039	Tetrachloroethylene		M				X
D040	Trichloroethylene		M				X
D043	Vinyl chloride						X
F001	Spent Solvents				M		M
F002	Spent Solvents				M		M
F003	Spent Solvents				M		M
F005	Spent Solvents				M		M
P098	Potassium cyanide						
U019	Benzene						R
U044	Chloroform						R
U075	Dichlorodifluoromethane						R
U080	Dichloromethane						R
U107	Di-n-octyl Phthalate						R
U108	1,4-Dioxane						R
U117	Ethyl Ether						R
U121	Trichlorofluoromethane						R
U134	Hydrogen Fluoride						R
U151	Mercury			X			R
U159	Methyl ethyl ketone						R
U161	Methyl isobutyl ketone						R
U210	Tetrachloroethylene						R
U211	Carbon Tetrachloride						R
U213	Tetrahydrofuran						R
U220	Toluene						R
U226	1,1,1-Trichloroethane						R
U228	Trichloroethylene						R
U239	Xylene						R
U359	Ethylene Glycol Monoethyl ether						R

X = Typical Waste Code M = Other Possible Waste Code R = Remotely Possible Waste Code

Table C-3 DOE Waste Categories Descriptions and Analysis Rationale

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**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

ORGANIC LIQUIDS

Description

This category includes liquids/slurries with a total organic carbon (TOC) greater than, or equal to 1%. Slurries must be pumpable (e.g., suspended/settled solids can be up to approximately 35-40%). Only liquids/slurries packaged/stored in bulk form (i.e., tank stored, drummed bulk free liquids) are included in this category. Liquids packed in lab pack-type configuration are categorized as labpacks.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Having a total organic carbon (TOC) greater than or equal to 1%.
- Must be a pumpable liquid.
- Free of large objects or items.

Typical Waste Codes

D001 (ignitable liquids)
D018, D019, D021, D022, D026, D028, D029, D035, D039, D040, D043
(materials which contain these chemicals)
F001, F002, F003, F005 (spent solvents)

Other Possible Waste Codes

D002 (corrosive liquids)
D003 (reactive cyanides/sulfides)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Remotely Possible Waste Codes

U019, U044, U075, U080, U107, U108, U117, U121, U134, U151, U159, U161, U210, U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Specific Gravity, Color, Metals and Organic Analysis, % Ash (optional)

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Specific Gravity, Color

ORGANIC LIQUIDS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

Flash Point

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

% Ash

Optional. Information may be used to determine the amount of ash that is generated during treatment involving incineration and will require additional treatment/disposal.

Not Required.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

AQUEOUS LIQUIDS

Description

This category includes liquids/slurries with a total organic carbon (TOC) less than 1%. Slurries must be pumpable (e.g., suspended/settled solids can be up to approximately 35-40%). Only liquids/slurries packaged/stored in bulk form (i.e. tank stored, drummed bulk free liquids) are included in this category. Liquids packed in lab pack-type configuration are categorized as lab packs.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Having a total organic carbon (TOC) less than 1%.
- Must be a pumpable liquid.
- Free of large objects or items.

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D018, D019, D021, D022, D026, D028, D029, D035, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

D001 (ignitable liquids)
D001 (oxidizer)
D002 (corrosive liquids)
D003 (reactive cyanides/sulfides)
F001, F002, F003, F005 (spent solvents)

Remotely Possible Waste Codes

U019, U044, U075, U080, U107, U108, U117, U121, U134, U151, U159, U161,
U210, U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill
residue or off-spec commercial product not suitable for recovery)

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Specific Gravity, Color, Metals and
Organic Analysis, TOC

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Specific Gravity, Color

ANALYTICAL TEST

Flash Point

pH

Physical State, Specific Gravity, Color

Metals and Organic Analysis

AQUEOUS LIQUIDS

PREACCEPTANCE RATIONAL

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

To validate information provided on MEF. This information is used to determine disposal options.

Information required to see if material meets parameters for ultimate disposal facility.

FINGERPRINT ACCEPTANCE/REJECTION

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Not Required.

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**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

ORGANIC SLUDGES/PARTICULATES

Description

This category includes solid process residues with an organic matrix. Solid process residues are solids that do not fit the definition of debris. Typically, these solids are sludge or particulate materials. Waste in this category may also contain some debris materials provided the amount of debris is less than 50% (Note: Based on LDR debris rule). As opposed to Inorganic Sludges/Particulates, wastes in this category would not leave a large residue when thermally treated.

Example waste materials in this category are:

- organic sludges (e.g., sewage sludges), activated carbon, organic resins, absorbed liquids (organic particulate absorbents)

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of less than 50% debris based on LDR debris rule.

Typical Waste Codes

D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D039, D040, D043 (materials which contain these chemicals)
F001, F002, F003, F005 (spent solvents)

Other Possible Waste Codes

D003 (reactive cyanides/sulfides)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Remotely Possible Waste Codes

U019, U044, U075, U080, U107, U108, U117, U121, U134, U151, U159, U161, U210, U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Specific Gravity, Color, Metals and Organic Analysis, Visual verification for size/percentage of debris

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Specific Gravity, Color, Visual verification for size/percentage of debris

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ORGANIC SLUDGES/PARTICULATES

FINGERPRINT ACCEPTANCE/REJECTION

PREACCEPTANCE RATIONAL

ANALYTICAL TEST

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

Flash Point

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

pH

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

To validate information provided on MEF. This information is used to determine disposal options.

Physical State, Specific Gravity, Color

Not Required.

Information required to see if material meets parameters for ultimate disposal facility.

Metals and Organic Analysis

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Debris Verification

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

INORGANIC SLUDGES/PARTICULATES

Description

This category includes solid process residues with a predominantly inorganic matrix. Solid process residues are solids that do not fit the definition of debris. Typically these solids are sludge or particulate materials. Waste in this category may also contain some debris materials provided the amount of debris is less than 50% (Note: Based on LDR debris rule).

The solids in this category may be contaminated with, or contain organics, such that thermal treatment is required. However, the matrices are predominantly inorganic such that thermal treatment would result in a high residue. Example waste materials in this category are:

- sludges, ashes, sand blasting media, absorbed aqueous or organic liquids (on inorganic particulate absorbents), ion exchange resins, and paint chips/residues

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of less than 50% debris based on LDR debris rule.

Typical Waste Codes

D001 (ignitable solid)
D001 (oxidizer)

Other Possible Waste Codes

None Expected

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Specific Gravity, Color, Metals and Organic Analysis.

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Specific Gravity, Color, Visual verification for size/percentage of debris

INORGANIC SLUDGES/PARTICULATES

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

Flash Point

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Oxidizer Screen

To validate information provided on MEF. This information is important for storage compatibility determination. Oxidizers should be classified as D001.

Verify Oxidizer results determined in Preacceptance. A difference indicates a process change. Resolve difference with generator and provide a new MEF.

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive or not. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (Batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

CEMENTED SOLIDS

Description

This category includes sludges or solids (e.g., particulates, etc.) that have been solidified/stabilized with cement or other solidifying agents but do not meet LDR treatment standards. These wastes may require pretreatment (e.g., crushing/grinding) prior to subsequent LDR treatment.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of less than 50% debris based on LDR debris rule.

Typical Waste Codes

D004, D005, D006, D007, D008, D009 (metal containing waste)

Other Possible Waste Codes

D010, D011 (metal containing waste)
D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D040, D043
(materials which contain these chemicals)

Remotely Possible Waste Codes

F001, F002, F003, F005 (spent solvents)
U210 (contaminated organic spill residue or off-spec commercial product)

Characterization (Analysis) Requirements

Off-site Acceptance (Fingerprint) Analysis

CEMENTED SOLIDS

ANALYTICAL TEST

Flash Point

PREACCEPTANCE RATIONAL

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

FINGERPRINT ACCEPTANCE/REJECTION

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

ORGANIC DEBRIS

This category includes wastes with matrices meeting the definition of debris per the 8/19/92 LDR debris rulemaking (57 FR 37194, 8/18/92). More specifically this category is defined for wastes that contain >90% organic debris.

Example organic debris materials are:

- rags (including "solvent rags"), plastic/rubber, paper, wood, and glovebox gloves (including lead-lined), animal carcasses.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of greater than or equal to 50% debris based on LDR debris rule.
- Composed of greater than 90% organic debris.

Typical Waste Codes

D018, D019, D021, D022, D026, D028, D029, D035, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D037 (materials which contains this chemical)
F001, F002, F003, F005 (spent solvents)
U210 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Metals and Organic Analysis, Color

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Color

ORGANIC DEBRIS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

INORGANIC DEBRIS

Description

This category includes wastes with matrices meeting the definition of debris per the 8/19/92 LDR debris rulemaking (57 FR 37194, 8/18/92). More specifically this category is defined for wastes that contain >90% inorganic debris.

Example inorganic debris materials are:

- metal shapes (e.g. equipment, scrap), metal turnings, glass (e.g., light tubes, leaded glass, etc.), ceramic materials, concrete, rocks

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of greater than or equal to 50% debris based on LDR debris rule.
- Composed of greater than 90% inorganic debris.

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Other Possible Waste Codes

D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D040, D043
 (materials which contain these chemicals)
 F001, F002, F003, F005 (spent solvents)
 U210 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, ~~Metals and Organic Analysis, Color~~

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Color

INORGANIC DEBRIS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

HETEROGENEOUS DEBRIS

Description

This category includes wastes with matrices meeting the definition of debris per the 8/18/92 LDR debris rulemaking (57 FR 37194 8/18/92). This category includes debris that do not meet the criteria for categorization as either Organic Debris or Inorganic Debris. This category also includes mixtures of debris and solid process residues or soil, provided debris comprises more than 50% of the waste.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of greater than or equal to 50% debris based on LDR debris rule.
- Composed of a mixture of inorganic and organic debris.

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

D037 (materials which contain this chemical)
F001, F002, F003, F005 (spent solvents)
U210 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Metals and Organic Analysis, Color

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Color

ANALYTICAL TEST

pH

HETEROGENEOUS DEBRIS

PREACCEPTANCE RATIONAL

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

FINGERPRINT ACCEPTANCE/REJECTION

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Not Required.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

- 4456 -

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

SOILS WITH ORGANICS

Description

Soils contaminated with hazardous constituents that are stored in waste containers. Includes soils contaminated primarily with organics, but may include inorganics.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Free of large objects or items.
- Composed of less than 50% debris based on LDR Debris rule.
- Contaminated primarily with organics.

Typical Waste Codes

D018, D019, D021, D022, D026, D028, D029, D035, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
F001, F002, F003, F005 (spent solvents)

Remotely Possible Waste Codes

U019, U044, U075, U080, U107, U108, U117, U121, U134, U151, U159, U161,
U210, U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill
residue or off-spec commercial product not suitable for recovery)

Other Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage
of debris, Metals and Organic Analysis, Color

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage
of debris, Color

SOILS WITH ORGANICS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

- 4456 -

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

SOILS WITH INORGANICS

Description

Soils contaminated with hazardous constituents that are stored in waste containers. Includes soils contaminated primarily with inorganics, but may include organics.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Free of large objects or items.
- Composed of less than 50% debris based on LDR Debris rule.
- Contaminated primarily with inorganics.

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Other Possible Waste Codes

None Expected

Remotely Possible Waste Codes

P098

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Metals and Organic Analysis, Color

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Color

SOILS WITH INORGANICS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

pH	To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.	Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.
Physical State, Specific Gravity, Color	To validate information provided on MEF. This information is used to determine disposal options.	Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.
Metals and Organic Analysis	Information required to see if material meets parameters for ultimate disposal facility.	Not Required.
Debris Verification	Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.	Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

SOIL WITH ORGANICS AND INORGANICS

Description

Soils contaminated with hazardous constituents that are stored in waste containers. Includes soils contaminated with organics and inorganics. Wastes in this category may include debris, provided it is less than 50% of the waste.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Composed of less than 50% debris based on LDR debris rule.
- Free of large objects or items.

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

F001, F002, F003, F005 (spent solvents)
U134, U210, U226, U228 (contaminated organic spill residue or off-spec commercial product not suitable for recovery)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Metals and Organic Analysis, Color

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Visual verification for size/percentage of debris, Color

SOILS WITH ORGANICS AND INORGANICS

ANALYTICAL TEST

PREACCEPTANCE RATIONAL

FINGERPRINT ACCEPTANCE/REJECTION

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (Batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

LAB PACKS WITH ORGANICS

Description

This category include wastes with one or more small containers of free liquids or solids surrounded by solid materials (virgin or waste materials) within a larger container. These categories include scintillation fluids that are packaged with vials.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Name of Product or Material must be known.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.
- Maximum individual package size of 5 gallons.
- Must be shipped with a detailed Inventory List signed and certified by the person or persons who prepared the shipment.

Typical Waste Codes

D001 (ignitable; flash point)
D002 (corrosivity; pH)
D003 (reactivity; unstable, violent change)
D018, D019, D021, D022, D026, D028, D029, D035, D037, D039, D040, D043
(materials which contain these chemicals)
U019, U044, U075, U080, U107, U108, U117, U121, U134, U159, U161, U210,
U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill
residue or off-spec commercial product not suitable for recovery)

Other Possible Waste Codes

D001 (compressed gas)
D002 (corrosivity; liquid corrodes steel)
D003 (reactivity; cyanide or sulfide @ pH)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Remotely Possible Waste Codes

~~None-Expected~~

Characterization (Analysis) Requirements

Physical Description, Copy of Material Safety Data Sheet (MSDS) and additional chemical information as available.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

LAB PACKS WITH ORGANICS

ANALYTICAL TEST

Inventory Control

PREACCEPTANCE RATIONAL

Use all information on these small quantities of chemicals to determine disposal method. No other testing is practical or suitable for small quantities of KNOWN waste.

FINGERPRINT ACCEPTANCE/REJECTION

Verify inventory against package contents. Resolve any discrepancies with generator. If shipment contains additional material the MEF will be amended as necessary except when the materials are not compatible. In this case a new MEF is required.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

LAB PACKS WITHOUT ORGANICS (METALS/WITHOUT METALS)

Description

The matrices of wastes within these two categories are the same. Both categories include wastes with one or more small containers of free liquids or solids surrounded by solid materials (virgin or waste materials) within a larger container. These categories include scintillation fluids that are packaged with vials.

The difference between wastes within these categories is contaminants. Lab packed wastes contaminated with TC metals are categorized as "Lab packs - With Metals". Lab packs wastes that are not contaminated with TC metals are categorized as "Lab packs - Without Metals".

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Name of Product or Material must be known.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.
- Maximum individual package size of 5 gallons.
- Must be shipped with a detailed Inventory List signed and certified by the person or persons who prepared the shipment.

Typical Waste Codes

- D002 (corrosivity; pH)
- D003 (reactivity; unstable, violent change)
- D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
- P098, U151 (unused or off-spec commercial product)

Other Possible Waste Codes

- D001 (oxidizer)
- D002 (corrosivity; liquid corrodes steel)
- D003 (reactivity; cyanide or sulfide @ pH)

Remotely Possible Waste Codes

- D001 (ignitable; solid burns vigorously)

Characterization (Analysis) Requirements

Physical Description, Copy of Material Safety Data Sheet (MSDSs) and additional chemical data as available.

Off-site Acceptance (Fingerprint) Analysis

Physical verification of container contents.

LAB PACKS WITHOUT ORGANICS (METALS/WITHOUT METALS)

ANALYTICAL TEST

Inventory Control

PREACCEPTANCE RATIONAL

Use all information on these small quantities of chemicals to determine disposal method. No other testing is practical or suitable for small quantities of KNOWN waste.

FINGERPRINT ACCEPTANCE/REJECTION

Verify inventory against package contents. Resolve any discrepancies with generator. If shipment contains additional material the MEF will be amended as necessary except when the materials are not compatible. In this case a new MEF is required.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

REACTIVE METALS

Description

This category includes bulk reactive metals and equipment contaminated with reactive metals. Bulk reactive metals include sodium, alkali metal alloys, aluminum fines, zirconium fines, or pyrophoric materials. Contaminated equipment includes piping, pumps, and other materials with a residue of reactive metals that cannot be separated from the equipment medium.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Name of Product or Material must be known.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.

Typical Waste Codes

D003 (water reactive)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Other Possible Waste Codes

D001 (ignitable solid)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Flash Point, Physical State, Color, Material Safety Data Sheet (MSDS) and additional chemical data as available.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

ANALYTICAL TEST

Inventory Control

REACTIVE METALS

PREACCEPTANCE RATIONAL

Use information on these metals to determine disposal method. No other testing is practical or suitable for KNOWN reactive metal waste.

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

EXPLOSIVES

Description

This category includes waste materials that may explode during normal or extreme handling. This includes devices such as explosive switches and activators used in fire/explosion suppression systems. This category may remotely include rags that have been soaked in nitric acid and subsequently stored in containers.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Name of Product or Material must be known.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.
- Terminals if present must be protected from making electrical contact.

Typical Waste Codes

D003 (capable of detonation with initiating source)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)

Other Possible Waste Codes

None Expected

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Physical Description, Material Safety Data Sheet (MSDS) and additional chemical data as available.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

EXPLOSIVES

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required.

PREACCEPTANCE RATIONAL

Use information on these explosives to determine proper disposal and handling methods. No other testing is practical or suitable for KNOWN explosive waste.

ANALYTICAL TEST

Inventory Control

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

COMPRESSED GASES

Description

This category includes pressurized aerosol cans and gas cylinders of any gas composition. Non-pressurized aerosol cans and gas cylinders would be classified as debris.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Name of Product or Material must be known.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.
- Valves must be secure and protected to ensure contents are not released.

Typical Waste Codes

D001 (ignitable liquid; flash point)
D001 (ignitable; compressed gas)

Other Possible Waste Codes

D002 (Corrosivity)
D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D019, D035, D039, D040 (Material which contain these)

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Physical Description, Material Safety Data Sheet (MSDS) and additional chemical data as available

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

COMPRESSED GASES

ANALYTICAL TEST

Inventory Control

PREACCEPTANCE RATIONAL

Use information on these compressed gases to determine proper disposal and handling methods. No other testing is practical or suitable for KNOWN compressed gases.

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required.

- 4456 -

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

LIQUID MERCURY

Description

This category includes any wastes containing bulk volumes of elemental liquid mercury. The category includes labpacks of strictly liquid mercury or other containers containing bulk mercury.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.

Typical Waste Codes

D009 (spent mercury)
U151 (mercury; unused or off-spec commercial product)

Other Possible Waste Codes

None Expected

Remotely Possible Waste Codes

None Expected

Characterization (Analysis) Requirements

Physical Description, Material Safety Data Sheet (MSDS) and additional chemical data as available.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

ANALYTICAL TEST:

Inventory Control.

LIQUID MERCURY

PREACCEPTANCE RATIONAL

Use information to determine the proper disposal and handling method for bulk Mercury. No other testing is practical or suitable for KNOWN containers of bulk free Mercury.

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

- 4456 -

ELEMENTAL LEAD (ACTIVATED AND NON-ACTIVATED)

Description

This category includes both surface contaminated and activated elemental lead. Surface contaminated lead materials include bricks, counterweights, shipping casks, and other shielding materials. Remotely possible for activated lead which includes lead from accelerators or other neutronsources that may result in irradiation.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- A Material Safety Data Sheet (MSDS) must be provided for all commercial products for which chemical composition is not readily known.

Typical Waste Codes

D008 (lead; TCLP waste)

Other Possible Waste Codes

F001, F002, F003, F005 (spent solvents via mixture rule)

Remotely Possible Waste Codes

D009 (metal contamination)

Characterization (Analysis) Requirements

Physical Description, Material Safety Data Sheet (MSDS) or metal analysis.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

ELEMENTAL LEAD (ACTIVATED AND NON-ACTIVATED)

ANALYTICAL TEST

Inventory Control

PREACCEPTANCE RATIONAL

Use information to determine the proper disposal method for elemental lead waste. No other testing is practical or suitable for KNOWN containers of elemental lead.

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required.

- 4456 -

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

BATTERIES (LEAD ACID, CADMIUM)

Description

This category includes lead acid, cadmium, and miscellaneous batteries.

Material Requirements

- Must be packaged and shipped in accordance with Department of Transportation requirements.
- Terminals must be protected from making electrical contact (e.g., taped).

Typical Waste Codes

D002 corrosivity (liquid electrolyte only)
D006 TCLP Cadmium
D008 TCLP Lead
D009 TCLP Mercury

Other Possible Waste Codes

D003 (reactive sulfide found in lithium sulfide batteries)
D011 (metal constituent)

Remotely Possible Waste Codes

D004, D010 (Metal Constituents)

Characterization (Analysis) Requirements

Physical Description, Material Safety Data Sheet (MSDS) if available.

Off-site Acceptance (Fingerprint) Analysis

Physical inspection of container contents.

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BATTERIES (LEAD ACID, CADMIUM)

ANALYTICAL TEST

Inventory Control

PREACCEPTANCE RATIONAL

Use information to determine the proper disposal and handling methods for the batteries. No other testing is practical or suitable for KNOWN containers of batteries.

FINGERPRINT ACCEPTANCE/REJECTION

Verify MEF against package contents. Resolve any discrepancies with generator. If shipment contains material other than specified in the MEF a new MEF will be required. Battery terminals are required to be protected to ensure electrical contact does not occur. If contacts are not protected the generator will be contacted to resolve present and future problems. Battery terminals are taped prior to further handling.

**TABLE C-3
DOE WASTE CATEGORIES DESCRIPTIONS
AND ANALYSIS RATIONAL**

4456

OTHER

Description

EXPLAIN

Material Requirements

Typical Waste Codes

D004, D005, D006, D007, D008, D009, D010, D011 (metal containing waste)
D018, D019, D021, D022, D026, D028, D029, D035, D039, D040, D043
(materials which contain these chemicals)

Other Possible Waste Codes

D001 (ignitable liquids)
D001 (oxidizer)
D002 (corrosive liquids)
D003 (reactive cyanides/sulfides)
F001, F002, F003, F005 (spent solvents)

Remotely Possible Waste Codes

U019, U044, U075, U080, U107, U108, U117, U121, U134, U151, U159, U161,
U210, U211, U213, U220, U226, U228, U239, U359 (contaminated organic spill
residue or off-spec commercial product not suitable for recovery)

Characterization (Analysis) Requirements

Flash Point, pH, Physical State, Specific Gravity, Color, Metals and
Organic Analysis, % Ash (optional)

Off-site Acceptance (Fingerprint) Analysis

Flash Point, pH, Physical State, Specific Gravity, Color

ANALYTICAL TEST

Flash Point

PREACCEPTANCE RATIONAL

To validate information provided on MEF and determine if material is ignitable and should be classified as D001.

FINGERPRINT ACCEPTANCE/REJECTION

Verify Flash Point Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

pH

To validate information provided on MEF. Used to determine if the waste should be D002 Corrosive. This information is important for storage compatibility determination.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Physical State, Specific Gravity, Color

To validate information provided on MEF. This information is used to determine disposal options.

Verify Range determined in Preacceptance. A difference in range may be an indication of process change. Resolve differences with generator and amend MEF as necessary. If the difference involves a classification change a new MEF is required.

Metals and Organic Analysis

Information required to see if material meets parameters for ultimate disposal facility.

Not Required.

Debris Verification

Information is required to determine treatment standards for disposal. Material with greater than 50% debris is required to be managed as a debris. Debris: particle size over 60mm excluding materials which have treatment standards (batteries) or containers capable of holding 75% of their original capacity.

Verify if material should be managed as a debris. A difference compared with preacceptance information may indicate a process change. Resolve any discrepancies with generator. Amend MEF as needed or require a new MEF if a process change has occurred.

OTHER

Table C-4 RCRA Regulated Hazardous Waste

TABLE C - 4

REVISED: 07-Jan-03

RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
12	AEROSOL PAINT CANS	D001	PK
24	SPENT CHLOROFORM	D022	PK
46	BARIUM CHLORIDE LIQUID HEAT 980	D005	PK
47	BARIUM CHLORIDE (LIQUID HEAT 800)	D005	PK
91	MERCURY SPILL CLEANUP RESIDUE	U151	PK
119	BARIUM CHLORIDE SOLUTION	D005	PK
157	WD-40 SPRAY CAN	D001	MSDS
160	SPEED E NAMEL SPRAY PAINT	D001	MSDS
162	KRYLON CAR COLOR SPRAY PAINT	D001	MSDS
183	AEROSOL PAINT	D001	MSDS
177	RAGS, GLOVES, PROTECTIVE COVERALLS, DOP, FORMULA 401	U107	MSDS
183	WATER/GAS MIXTURE TANK #8	D001 D006 D018	PK
194	COOLING TOWER SLUDGE	D037	PK
201	CRANKCASE OIL	D018	MSDS, PK
203	RAINWATER AND DIESEL FUEL	D018	PK
207	SUPER 77 SPRAY ADHESIVE	D001	MSDS
209	BARBASOL REGULAR SHAVING CREAM	D001	MSDS
220	MED. GREEN INDUSTRIAL SPRAY PAINT	D001	MSDS
222	AM SPRY STENCIL INK, BLACK	D001	MSDS
223	5311/5315 ENGINE STARTING FLUID	D001	MSDS
267	RAM PIT (UF4, MG, MGF2, OIL, OIL DR)	D003 D018	PK
344	ITEK DEVELOPER (LIQUID)	D011	MSDS
378	OILY RAGS	D008 D018 F002	1,3,9
379	SPENT 1,1,1-TRICHLOROETHANE	D008 D018 F001 F002	MSDS, PK
380	RAGS WITH 1,1,1-TRICHLOROETHANE	D008 D018 F001 F002	1,3,7,8,9,11,12
381	AEROSOL PAINT CANS	D001	MSDS
382	DRY CELL BATTERIES	D002 D009	PK
383	X-RAY FIXER/DEVELOPER, CLEAR LIQUID MODERATE ACIDIC SOLUTION	D011	MSDS
385	SPENT SOLVENTS	D018 F001 F002	MSDS, 7,9
386*	FLOOR SUMP CLEANOUT SLUDGE	D019 D034 F001 F002	1,2,4,7,8
387*	OIL SOAKED RAGS	D010 D018 F002	MSDS, PK
388*	USED OIL	D010 D018 F002	MSDS, PK
389*	OILY RAGS	D008 D009 D010	1,3,8,9
390*	OILY SEMI-SOLID	D018 F002	1,4,8,9
391	WASTE AEROSOL PAINT CANS	D001	MSDS
392	DRY CELL ELECTRONIC STORAGE BATTERIES	D002 D006 D009	PK
393*	LUBRICATING OIL	D008	1,3,8,9
395	PAINT THINNERS AND PAINT RESIDUES	D001 F002 F003 F005	PK
396*	PAINT THINNER RAGS	F002 F003 F005	PK
397*	1,1,1-TRICHLOROETHANE (CLEANING SOLVENT)	D018 F001 F002	MSDS, PK
398*	SOLVENT RAGS	D018 F001 F002	1,3,7,8,9,11,12
399*	OILY RAGS	D008 D009 F001	1,3,9
400*	USED OIL FROM MAINTENANCE	D001 D008 F001	MSDS, 1,4,7,9
401	SPENT 1,1,1-TRICHLOROETHANE	D018 F001 F002	PK
402*	USED OIL	D008 D018 F001 F002	PK
403	1,1,1-TRICHLOROETHANE RAGS	D018 F001 F002	PK
404*	OILY RAGS	D008 D018 F002	PK
405*	DRY CELL BATTERIES	D002 D009	PK
406	AEROSOL CANS	D001	MSDS
406*	USED OIL	D005 D006 D008 F001	1,3,7,8,9
409	1,1,1-TRICHLOROETHANE SOLVENT/OIL	D018 F001 F002	PK
410*	OILY RAGS	D008 D018 F002	1,3,9
411	1,1,1-TRICHLOROETHANE SOLVENT RAGS	D018 F001 F002	PK
412	1,1,1-TRICHLOROETHANE	D001 D006 F001 F002	MSDS, 1,3,8,9
413	1,1,1-TRICHLOROETHANE RAGS	D008 D009 D039 F002	1,4,9
414*	USED OIL	D001 D006 D008 D009 D039 F001 F002	1,4,7,8,9
415*	OILY RAGS AND ABSORBENTS WD-40 AND VARIOUS OILS	D008 D018 F002	MSDS, PK
417	WIPES, RESINS, SOLIDS	D004 D005 D008 D022 F002 F003	PK
418*	SPENT ACETONE	D001 F003	MSDS

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RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
419*	XYLENE	D001 F003	MSDS, PK
420	SOLIDS - WIPES, RESINS, ETC.	D004 D005 D008 D022 F002 F003	PK
421	METHANOL	D001 F003	MSDS
422	SPENT METHYLENE CHLORIDE	F002	MSDS
423*	ELEMENTAL MERCURY	D009	MSDS
425*	LABORATORY ACIDS (NITRIC AND CYCLOHEXANE)	D001 D002	PK
426*	METHANOL AND CYCLOHEXANE MIXTURE	D001 F003	MSDS
427	NICKEL-CADMIUM BATTERIES	D002 D006	PK
428	ACETONITRILE IN WATER	D001	MSDS
429	HG BATTERIES	D002 D009	PK
430	TRASH, CONTAMINATED	D005 D006 D007 D008 F003	PK
432*	ELEMENTAL MERCURY (SPILL CLEAN-UP MATERIALS)	U151	PK
433	AEROSOL SPRAY CANS PROPELLANT	D001	MSDS
434*	SOLIDS CONTAMINATED BY LAB SAMPLES & MATERIALS	D004 D005 D006 D007 D008 D022 F002 F003	PK
435	PAINT HYPALON COATING	D001	MSDS,PK
436	SEALANT POLYCHLOROPENE SOLUTION	D001	MSDS,PK
438	HYDRAULIC OIL FROM BALER IN DRUM RECONDITIONING	D018	1,3,4,5,7,8,9
444	SCRAP U308 & CHLORIDE SALT FROM TRENCH AROUND SALT BATH	D005	PK
447	LIQUID HYDRAULIC FLUID FROM FREIGHT ELEV. @ LAB BASEMENT	D018	PK
448	SLUDGE, HYDRAULIC OIL FROM FREIGHT ELEVATOR	D018	MSDS,PK
449	OIL SOAKED ABSORBENT PADS	D018	MSDS,PK
456	SLUDGE-LIKE, VERY STRONG SOLVENT ODOR	D018	PK
457	OIL	D018	PK
459	PAINT	D001 F001 F002 F003 F005	1,4,7,8,9
460	LIQUID & SOLID WASTE SAMPLES	D004 D005 D006 D007 D008 D010 D018 F002	1,3,7,8,9
468	OIL AND SOLVENTS W/ ANALYSIS	D001 D007 D008 D010 D018 F002	1,3,7,8,9
471	PRESSURE TREATED WOOD IN 8 DRUMS	D008	PK
473	ANTI-C PAPER COVERALLS & BOOTIES W/ LIME SLURRY	F001 F005	PK
476	LAB PACKED WATER AND RESIDUE SAMPLES	D007	2,4
478	CONTAMINATED OIL, SOLUBLE, FROM LATHE ON PLANT 64 PAD	D018	MSDS, PK
479*	USED PAINT THINNER	D001 D006 D007 D008 D009 D011 D035 F003 F005	1,3,5,9
485	KEROSENE	D018	MSDS, PK
486	TETRACHLOROETHYLENE SPILL CLEANUP	U210	MSDS
487	RAIN WATER FROM UST #8 FORMERLY STORING GASOLINE	D008 D018	PK
493	STENCILED GASOLINE	D001 D018	1,3,7,8,9
507	GASOLINE	D001 D018	MSDS, PK
508	PAINT THINNER	D001	PK
514	BAD PAINT FROM PAINT BOOTH	D001 D007 D008 F001 F002 F003 F004	1,4,7,8,9
517	OIL DRY CONTAMINATED WITH OIL FROM BALER	D018	PK
520	PETROLEUM PRODUCT WITH RAIN WATER	D018	MSDS, PK
524	WATER	D001	1,4,5,7,8,9
527	OILY RAGS, CLEAN UP MATERIAL, GLASS JAR	D018 F002	PK
533	PAINT (POSSIBLY GRAY EPOXY PAINT)	D001	1,3,7,8,9
534	MEK MARKED ON DRUM BLUEDRUM FLAMMABLE	U159	MSDS, PK
538	BORING # 1508	D006 D007 D008	2,6,10,11,12
539	BORING # 1509	D004 D006 D007 D008	2,6,10,11,12
540	BORING # 1512	D004 D005 D006 D007 D008 D011	2,6,10,11,12
541	BORING # 1513	D005 D006 D007 D008	2,6,10,11,12
542	BORING # 1514	D004 D005 D006 D007 D008	2,6,10,11,12
543	BORING #1515, FROM THE FIRE TRAINING GROUNDS	D004 D005 D006 D007 D008	2,6,10,11,12
545	BORING # 1511	D004 D005 D006 D007	2,6,10,11,12
547	MISCELLANEOUS LEAD TOOLS PIPING, ETC...	D008	PK
548	LEAD - COUNTERWEIGHTS, BEARINGS	D008	PK
549	CUTTING FLUID, ABSORBANT	D018	MSDS, PK
580	SOIL CONTAMINATED WITH OIL AND WATER	D018	MSDS, PK
584	KEROSENE (DIESEL FUEL)/SLUDGE/WATER FROM PUMP UST #3	D018	PK
585	ZINC COMPOUND (AEROSOL)	D001	MSDS
587	GREASE AND WATER	D001	1,3,7,8,9
594	SODIUM HYPOSULFIDE - DEVELOPING SOLUTION (CONTAMINATED)	D011	MSDS, PK

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RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
027	5-GAL CAN W/ SPILL CLEANOUT MATERIAL	F001	PK
028	SPILL CLEAN-UP MATERIALS	F001	PK
032	HYDRAULIC FLUID FROM BALER	D018	PK
033	OIL UNKNOWN GENERATION	D018	PK
034	BUFFERED KCN SOLUTION (ABOUT 2 LITERS @ 30 G PER LITER)	P098	PK
035	MERCURY SPILL CLEAN-UP AND SPENT MERCURY BATTERIES	D009	PK
038	USED OIL	D018	PK
039	OIL	D018	MSDS, PK
044	NON-RECOVERABLE TRASH, PADS, RAGS, WATER	D018	PK
058	CODED AS OIL - STRONG SOLVENT ODOR	D018	PK
059	LEAD AND WOOD SHAVINGS - UNKNOWN ORIGIN	D008	PK
061	BORING # 1594 - FROM NORTHWEST CORNER BLDG. 12	F001	2,4,9,12
068	OIL DRY CONTAMINATED WITH OIL AND WATER FROM BALER	D018	PK
074	DRY CELL BATTERIES, BUILDING 11	D002 D006 D009	PK
075	NON-EMPTY AEROSOL CANS, BUILDING 11	D001	MSDS
076*	DRY CELL BATTERIES, BUILDING 12	D002 D006 D009	PK
077	NON-EMPTY AEROSOL CANS, BUILDING 12	D001	MSDS
098	KODAK ROYALPRINT ACTIVATOR	D002	MSDS,PK
097	ROYALPRINT STOP BATH	D002	MSDS,PK
700	MAGNESIUM FLAKE AND OILY RAGS	D003	PK
716*	WASTE OILS	D008 D018	MSDS, PK
720	BORING # 1261	F001	2,4,9,12
743	CONTAINER OF PUMP OIL AND RAGS	F001	PK
768	DAAP/SOLVLESSO MIXTURE	D001	PK,1,4,8
769	PAINT	D001	MSDS
772	RESPIRATOR CANISTER	D007 D011	MSDS
776	BORING # 1074, LOCATED INSIDE PILOT PLT ON NORTHWEST SIDE OF	F001	2,4,9,12
777*	AGITENE	D001 D008 F001 F002	MSDS
778	CONTAMINATED OIL	D018	PK
817	PAINT CHIPS FROM SAND FILTERS AT WATER PLANT	D008	MSDS,4,9
819	BORING # 1251	F001	2,4,9,11,12
820	LEAD ACID BATTERIES	D002 D004 D008	MSDS
826	METHYL ISOBUTYL KETONE, LABPACKED	D001 U181	PK
827	SODIUM AMIDE, STABILIZED AND LABPACKED	D003	PK
828	1,4-DIOXANE, STABILIZED, LABPACKED	D001 U108	PK
841	MERCURY SPILL CLEAN UP AND MERCURY BATTERIES	D002 D009 U151	PK
844	URANYL NITRATE SOLUTION IN TANKS	D002 D005 D007	PK
854	Ni Cd BATTERIES	D006	MSDS
855	MERCURY BATTERY	D009	MSDS
870*	VARNISH - UNUSED	D001	MSDS
873*	SPENT FIXER	D011	MSDS
874	LEAD BRICKS, LEAD WINDOW SASHINGS, BABBIT HAMMER	D008	PK
1080	CADMIUM SPRINGS	D008	4
1081	CADMIUM SPRINGS	D008	PK
1178	GROUNDWATER FROM WELL # 2649	F002	2,4,7,9
1180	GROUNDWATER FROM WELL # 1031	F002	PK,1,3,7
1182*	CLEAR DISPERSANT, TYPE H PREMIX-BLACK,CYAN,YELLOW & MAGENTA	D001	MSDS
1183	CLEAR DISPERSANT, TYPE H PREMIX, TYPE H CONCENTRATE	D001	MSDS
1184	CLEAR DISPERSANT, TYPE H PREMIX, TYPE H CONCENTRATE	D001	MSDS
1185*	TYPE 028 FX; CD-5 DEVELOPER	D011	MSDS
1199*	MERCURY CONTAMINATED FLOOR TILE & PIPE INSULATION	D009	MSDS
1229*	CONTAMINATED SUMP WATER	D001 D008 D018 D019 D036 D040 F002 F003	2,4,7,8,9,11
1251	FREON 11	U121	MSDS
1271*	LEAD SOLDER JOINTS	D008	PK
1279	PLUTONIUM 239 SOLUTION	D002	PK,9
1281	LEAD BRICKS	D008	PK
1297*	PC 49806 ITEK UNIVERSAL DEVELOPER	D011	MSDS,4
1298	ITEK PC 49907 ITEK INSTACOLOR ACTIVATOR	D002 D011	MSDS
1337*	CONTAMINATED WATER NON CHLORIDE	D001	1,3,5,6,7,8,9

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RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
1412	CONTAMINATED ORGANIC CHEMICAL OR SOLVENT	D001 D006 D008 F001 F002	1,3,7,8,9
1415	CONTAMINATED INSOLUBLE OIL	D001 F001 F002	1,3,5,6,7,8,9
1429	CONTAMINATED ORGANIC CHEMICAL SOLVENT	D001 D008 D018 D028 D035	1,3,5,6,7,8,9
1432*	NON CHLORIDE CONTAMINATED WATER OR SUMP LIQUOR	D001	1,3,5,6,7,8,9
1447	NON CHLORIDE CONTAMINATED WATER OR SUMP LIQUOR	D001 D008 F003 F006	1,3,7,8,9
1501*	SPILL CLEANUPS OF OIL AND GAS FROM GASOLINE ENGINES	D018	MSDS
1504	FLAMMABLE PAINTS AND PAINT RELATED PRODUCTS	D001	MSDS
1532	BIODENITRIFICATION SURGE LAGOON SLUDGE	D018 D039 F001 F002	2,4,7,8,11
1536*	RAINWATER FROM WASTE PIT AREA	F001 F002	PK
1537*	FILTER MATERIAL - SAND, GRAVEL, FLYASH	F001 F002	PK
1544	MAGNESIUM	D001 D003	PK
1550	URANIUM HEXAFLUORIDE AND URANIUM TETRAFLUORIDE	D003	MSDS
1560	BLACK OXIDE FROM CRUCIBLE BURNOUT	D004	MSDS
1575	URANYL NITRATE (UNH)	D001	PK
1585	LEAD ACID BATTERY (BROKEN)	D002 D008	MSDS
1589	RAFFINATES - NON-NEUTRALIZED	D001 D002	MSDS
1613	123 PROCESSOR CLEANER	D002	MSDS
1620	VEGETATION FROM THE ETF CLOSURE	F001 F002	PK
1665	ELECTROSTATIC MASTER LIQUID DEVELOPER	D001	MSDS
1667	ISOPROPYL ALCOHOL	D001	MSDS
1691	HYDROFLUORIC ACID	D002 U134	MSDS
1692	NITRIC ACID	D002	PK
1694	OC WATER BLANKS	D006 D009 D010 D011 D018 D039 D040	1,4,9
1705	LAB GENERATED WASTE, OIL FROM TCLP EXTRACTS	D001 D004 D006 D008 D010	1,3,7,8,9
1706	LAB WASTE, TCLP EXTRACT	F002 F006	1,4,7,8,9
1707	LAB GENERATED WASTE, ACID DIGESTS	D002 D007 D008 D019 D028 D039 F001 F002	2,4,7,8,9,11,12
1708	LAB GENERATED WASTE, METHYLENE CHLORIDE EXTRACTS	F002	2,4,7,8,9
1709	LAB GENERATED WASTE FLAMMABLE ORGANIC EXTRACTS	D001 D002 F003 F006	2,4,7,8,9
1710	ORGANIC LIQUID WASTE	D001 D010 F002	1,3,7,8,11,12
1711	METALS EXTRACTS AND DIGESTS	D002 D008 D009 D010 F001 F002 F005	1,3,7,8,11,12
1712	DIGEST FROM MERCURY LAB WASTE	D002 D008 D010	1,3,7,8,11,12
1713	OIL FROM TCLP EXTRACTS	D040 F001 F002 F005	1,3,8,11,12
1714	VOLATILE SOLID WASTE	D010	2,4,11,12
1715	CONTACT WASTE (LAB GENERATED WASTE)	D004 D008 D010	2,4,11,12
1716	LAB GENERATED WASTE, CONTACT WASTE SOLID	F001 F002 F005	1,4,11,12
1725*	LUBRICATING OILS	D018	MSDS
1728	CRANKCASE OIL	D018	MSDS
1729	GASOLINE	D001 D008 D018	1,3,5-8
1731	LEAD	D008	PK
1737	HARDENER	D002	MSDS
1740	(DOP) DI OCTYL PHTHALATE	U107	PK
1751*	SPENT FIXER	D011	MSDS
1764	MULTILITH BLANKROLA SOLVENT	D039	MSDS
1773	CONCENTRATE FIXER	D011	PK
1775	DEGLAZING SOLVENT	F002	MSDS
1789	UNH	D004 D006 D007 D008 D010	4,7,9,13
1799	USED MINERAL SPIRITS	D001 D018	MSDS
1815	SPENT FUELS	D001 D018	MSDS
1819	WHATMAN RAD-CON	D001	MSDS
1822	SPRAY ADHESIVE	D001	MSDS
1829	AEROSOL PAINT	D001	MSDS
1841*	SOIL	F001 F002	PK 1,2,11
1842*	GRASS ON THE SOIL	F001 F002	PK 1,2,11
1849	BUFFER SOLUTIONS PH 1 & 2	D002	MSDS
1856	UNKNOWN MATERIAL	F001 F002	1,4,8
1895	PAINT BRUSHES V/DRIED PAINT	D007 D008	PK
1904	CENOLLO E100 OVERNIGHT SPRAY	D001	MSDS
1922	LEAD SHIELDING FROM X-RAY SYSTEM	D008	PK
1927	METALS EXTRACTS AND DIGESTS (IGNITABLE) (LAB GENERATED WASTE)	D001 D002 D008 D009 D010 F001 F002 F003 F005	1,3,7,8,11,12

NOTE: SEE FINAL PAGE FOR KEY TO DETERMINATION BASIS CODES

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REVISED: 07-Jan-85

RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
1928	COMPUBLEND CLEANING LIQUID (IGNITIBLE)		MSDS
1937	COMPUBLEND CLEANING LIQUID (CORROSIVE)		MSDS
1938	NON-CHLORIDE, CONTAM. WATER OR SUMP LIQUOR	D008 D007 D008 D010 F005	1,3,7,8,9
1940	SOIL CUTTINGS FROM OUTDOOR FIRING RANGE	D008	1,4,8,11
1969	FLAMMABLE AEROSOLS	D001	MSDS
1973	ETHOXYETHANOL, MIBK, METHOXYETHANOL, 1,4 DIOXANE, ETHYL ETHER	D001 U108 U117 U161 U213 U359	PK
1974	ANHYDROUS ETHER, STABILIZED	D001 U117	PK
1975	PVC PIPING FROM PLT 6 PERCHED WATER EXTRACTION PROJECT	F001	2,4,9,10,11,12
1987	LEAD/LEAD SEALS	D008	PK
1998	METHANOL AND CHCLOHEXANE	D001 F003	MSDS,PK
1999	NESSLER, REAGENT, COD DIGESTION SOLUTION ROCHELLE SALT	D002 D007 D009 D011	MSDS,PK
2006	CURING COMPOUND	D001	MSDS
2014	EPOXY - PRIME COAT LDC-1000	D001 D035	MSDS
2016	PAINT BITUMASTIC 300 M A & B COLD TAR COATING	D001 D018 D028	MSDS
2021	BARIIUM CARBONATE	D005	MSDS
2024	PAINT	D005	MSDS
10002	SCRAP SALTS	D005 D008	1,4,9
10003	OILY OXIDATION SLUDGES WITH HIGH FREE METAL	D001 D039 F001	MSDS,1,4,7,8,9
10004	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D007 D018 D019 D021 D029 D039 D040 F001	1,4,7,8,9
10005	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D008	1,4,7,8,9
10006	CONTAMINATED OIL - INSOLUBLE	D008 D009 D039 F001	1,4,7,8,9
10007	OILY SLUDGES	D007 F001	1,4,7,8,9
10009	SLUDGES - SOLVENT (TRICHLOR, PERCHLOR, ETC.)	D001 D008 D035 F005	1,4,7,8,9
10010	SLUDGES, OILY	D029 D039 D040 F001	1,7,8,9
10011	CONTAMINATED BURNABLES	D005	1,4,9
10012	CONTAMINATED BURNABLES	D029 D039 D040 F001	1,4,9
10013	SUMP CAKE	D005 D007	1,4,7,9
10014	U-CONTAMINATED WATER	D039	1,4,7,8,9
10015	U-CONTAMINATED WATER FROM PILOT PLANT EXTRACTION AREA	D039	1,4,7,9
10016	OILY SLUDGE	D010 D035 F001	1,4,7,8,9
10017	LINERS/GLOVES CONTAM. WITH ROOFING CPD AND DIESEL FUEL	D007 D010	MSDS 1,4,9
10018	CONTAMINATED SOIL AND ROCKS	D005 D006 D007 D008 D009	1,4,9
10021	SLUDGES, OILY	D008 D039 D040 F001	1,4,7,8,9
10022	GRIT BLAST	D008	3,4,9
10023	NON-RECOVERABLE TRASH	D008 F001	1,3,10
10024	TRASH CONT. TO SOLVENT	D018 F001	1,4,9
10025	CONTAMINATED SOIL AND ROCKS	D005	4,9
10028	1,1,1-TRICHLOROETHANE STILL BOTTOMS	D001 F001	2,4,7,8,9
10027	CONTAMINATED OIL, INSOLUBLE	D039 D040 F001	1,4,7,8,9
10029	SLUDGES, OILY	D008 F001	2,4
10029	CONTAMINATED INSOLUBLE OIL	D006 D007 D008 D019 D029 D040 F001	1,4,7,8,9
10030	CONTAMINATED SOLVENTS (METHANOL)	D001 F003	PK
10031	FLOOR SUMP CLEANOUT SLUDGE	D029 D039 F001	1,4,7,8,9
10032	CONTAMINATED OIL, INSOLUBLE	F001	2,4
10034	BENZENE (LABPACKED)	D001 D018 U019	PK
10035	CARBON TETRACHLORIDE (LABPACKED)	D019 U211	PK
10036	ETHYL ETHER (LABPACKED)	D001 U117	PK
20009	DEGREASING SOLVENT	D001 D019 D022 D028 D029 D035 D039 D040 F001 F003 F005	1,2,4,9,11
20008	OIL CONTAMINATED WET SUMP OR FILTER CAKE	F002	1,4,7,8,9
20007	OIL CONTAMINATED WET SUMP OR FILTER CAKE	D011	1,4,7,9
20015	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	D007	1,4,9
20021	CONTAMINATED INSOLUBLE OIL	D019 D029 D039 D040 F001	1,2,4,7,8,9
20024	SCRAP SALTS AND FLOOR SWEEPINGS - HIGH FLUORIDE	D007 D008	1,4,9
20027	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D004 D011	2,4,9,11
20028	CONTAMINATED OIL - INSOLUBLE	D039 D040 F001	1,2,4,7,8,9,11
20031	CONTAMINATED OIL, INSOLUBLE GEAR OIL, LUBRICATING OIL	F002	1,2,4,7,8,9
20033	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D008	1,4,9,11
20035	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D007	4,9
20036	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	F001	2,4,9,11

NOTE: SEE FINAL PAGE FOR KEY TO DETERMINATION BASIS CODES

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RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
20037	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D029	2,4,8,11
20038	CONTAMINATED OIL - INSOLUBLE	D006 D008 D018 D019 D028 D029 D039 D040 F002 F005	1,2,4,7,8,9,11
20045	CONTAMINATED TBP AND/OR KEROSENE MIXTURES AND SLUDGES	D019 D022 D039 F002	1,2,4,7,8,9,11
20046	NON-METALLIC MISCELLANEOUS SAMPLES	D007	1,4,9
20047	SCRAP SALTS AND FLOOR SWEEPINGS - LOW FLUORIDE	D004 D008	2,4,8,11
20048	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	F005	1,4,9
20053	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D007 D011	1,4,9
20054	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D019 D022 D028 D029 D039 F001 F005	1,2,4,7,8,9
20055	CONTAMINATED OIL - INSOLUBLE	D029 D039 F002	1,2,4,7,8,9,11
20058	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D006 D008	1,4,9
20092	CONTAMINATED BURNABLES	F001 F005	1,4,9
20094	CONTAMINATED BURNABLES, RAGS, FILTER, CLOTH	D008 D011 F001	1,4,7,8,9
20095*	CONTAMINATED BURNABLES - RAGS, PAPER, POLYETHYLENE	D011 F001 F005	1,4,9
20107	CONTAMINATED NON-BURNABLES	D008	1,4,9
20109	DUST COLLECTOR BAGS	D004 D006 D008	1,4,9
20114	CONTAMINATED BURNABLES	F001	1,4,7,8,9
20120	DUST COLLECTOR BAGS	D007	1,4,7,8,9
20139	SAMPLES, NON-METALLIC	D005	1,4,7,8,9
20142	CONTAMINATED TBP - KEROSENE	D001 D019 D022 D039 F002 F005	1,2,4,7,8,9,11
20143	NON-RECOVERABLE TRASH	D011	1,4,7,8,9
20145	WET SUMP OR FILTER CAKE, OIL CONTAMINATED	D002 D007	1,4,7,8,9
20151	CONTAMINATED BRICKS, SOIL, ROCKS, SAND, ETC.	D004 D008 D011	1,4,9
30004	INCINERATOR CINDERS	F001	1,4,9
30005	OILY SLUDGES	D001 D019 D039 D040 F001 F003 F005	1,4,7,8,9
30009	SCRAP SALTS AND FLOOR SWEEPINGS - HIGH FLUORIDE	D008	4,9
30010	WET SUMP OR FILTER CAKE - OIL CONTAMINATED	D039 D040 F002	1,7,8,9
30018	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D039 F002	1,4,7,9
30026	NON-OILY CLEANOUT SLUDGES FOR ROASTING	D039 F002	1,4,7,8,9
30027	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D004 D005 D007 D008 D010 D011	1,2,4,7,8,9
30033	CONTAMINATED SOLVENT - TRICHLOR, PERCHLOR	D001 D039 F003 F005	1,4,7,8,9
30034	OIL CONTAMINATED WITH SOLVENTS (TANK 5)	D018 F001	2,4,7,8,9
30038	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D006 D008	1,4,9
30037	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D039 F002	1,4,9
30039	CONTAMINATED ROCKS, SOIL, ETC., WITH NO FREE LIQUIDS	D011	1,2,4,7,8,9
30042	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D039 F002	1,4,9
30045	OILY SLUDGES, HIGH FREE METAL	D001	1,4,7,8,9
30046	NON-OILY CLEANOUT SLUDGES FOR ROASTING	D019 F001	1,4,7,8,9
30047	SOLVENT SLEDGE, TRICHLOR, PERCHLOR, ETC...	D007 D011	1,4,9
30051	NON-METALLIC MISCELLANEOUS SAMPLES	D001 D003	4
30053	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D006 D007 D008 D018 D040 F002 F005	1,4,9
30060	WET SUMP OR FILTER CAKE - NON-OILY, NON-HALIDE	D005	1,4,9
30066	CONTAMINATED NON-BURNABLES	D008	4,9
30074	CONTAMINATED NON-BURNABLES	F002	1,4,5,6,7,8,9
30075	CONTAMINATED NON-BURNABLES	F002	1,4,9
30080	CONTAMINATED SOIL, ROCKS, DEBRIS, W/ FREE LIQUIDS	D002 D004 D007 D008 D011	1,2,4,7,8,9
30081	DISCARD PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D002	1,4,9
30174	CONTAMINATED NON-BURNABLES	D004 D008 D011 F005	1,4,5,6,7,8,9
40122*	THORIUM TRAILER CAKES; WASTE SLURRIES	D002 D005 D009	1,2,9
40137	UNFIRED REDUCTION CHARGES PLUS CaF2	D001	MSDS, PK
40152*	SCRAP THO2 - HIGH F	D005	4,5
40181*	THORIUM NITRATE SOLUTION	D001 D002 D007 D008	PK
40182	THORIUM NITRATE SOLUTION	D001 D002 D007 D008	PK
40185*	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40186*	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40187	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40188	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
40189	IMPURE THORIUM NITRATE (SOLID)	D001 D007 D008	PK
50002	NON-RECOVERABLE TRASH	D001 F003 F005	1,4,7,8,9
50008	SUMP CAKE - COPPER CONTAMINATED	D001	1,4,9

-4456

TABLE C - 4

REVISED: 07-Jan-93

RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
50010	NON-RECOVERABLE TRASH	F002 F005	1,4,7,8,9
50014	NON-RECOVERABLE TRASH	D019 F002	1,4,7,8,9
50022	CONTAMINATED WATER	D001 F003	1,4,7,8,9
50025	CONTAMINATED GRAPHITE	F001 F002	9
50031	CONTAMINATED METALLIC FILTER ELEMENTS	D008 D010	1,4,8,9
50036	CONTAMINATED BURNABLE	D007 F002	1,4,9
50058	DUST COLLECTOR BAGS	D007	1,4,9
50061	DUST COLLECTOR BAGS	D008	1,4,9
50063	ROASTED MG F2/OTHER MATERIAL	D004 D008	1,4,9
50068	NON-OILY SLUDGE FOR ROASTING	D001	1,4,7,8,9
50070	NON-OILY SLUDGE FOR ROASTING	D008 F001 F002	1,4,7,8,9
50071	SOLVENT SLUDGE	D001 D007	1,4,8,9
50072	CONTAMINATED SUMP WATER AND HYDRAULIC OIL	D001 D008 D019 D039 D040 F001 F003 F005	1,4,7,8,9
50079	INCINERATOR CINDERS	F002	4,9
50085	WET CAKE, NON-OILY/HALIDE	D001 F002 F003 F005	1,4,7,8,9
50089	CONTAMINATED MAGNESIUM	D001 D003	9
50090	CONTAMINATED MAGNESIUM	D001 D003	9
50091	DUST COLLECTOR RES. -PYROPHORIC	D004 D008	4,9
50095	CONTAMINATED INSOLUBLE OIL	D007	1,4,7,8,9
50098	NONRECOVERABLE TRASH	D001 D007 F003	1,4,7,8,9
50098	CONTAMINATED SOIL, ROCKS, BRICKS AND CERAMICS	D008	1,4,9
50100	COPPER CONTAMINATED SUMP CAKE - LOW U	F001	1,4,9
50101	DISCARD PROCESS RESIDUES	D039 D040 D043 F002	2,4,9,11,12
50102	PROCESS RESIDUES, TRAILER CAKES, SLURRIES, RAFFINATES	D006 D008	1,4,9
50113	ROASTED CALCIUM-PRECIPIATED SUMP AND FILTER CAKES	F001	1,4,9
50129	SCRAP U308 - LOW F	F001	4,9
50131	SCRAP U308 - LOW F	F002	9
50139	U308, +8MESH, LOW F	D039	1,4,9
50148*	SCRAP U308 HIGH F	D004	1,4,7,8,9
50152	SCRAP U308 OR THO2, HIGH FLUORIDE	F002	9
50154	ROASTED CALCIUM-PRECIPIATED SUMP OR FILTER CAKES	F001	1,4,9
50165	ROASTED OFF-SITE SUMP CAKE	D007	4,9
50169*	NON-OILY SLUDGE FOR ROASTING	D007	1,4,9
50170	SALT SLUDGE FOR PLANT 8	D004 D019 D039 F002	1,4,9
50173	SALT SLUDGE, CHLORIDE	D007	1,4,7,8,9
50174	SALT SLUDGE, CHLORIDE	D007	4,6,7,8,9
50175	SALT SLUDGE, CHLORIDE	F002	1,4,7,8,9
50177	FURNACE SALT, NON-CHLORIDE	D004 D008	4,7,8,9
50178	FURNACE SALT, NON-CHLORIDE	D001	4,7,8,9
50180	FURNACE SALT, NON-CHLORIDE	D007 D008 D010	1,4,9
50183	SCRAP SALTS, LOW F	F001	1,4,9
50185	SCRAP SALT, HIGH F	D009	4,9
50186	SCRAP SALTS, HIGH F	D004 D007 D008 D010	1,4,9
50187	SLUDGES FOR BLENDING	D007	1,2,6,7,8,9
50200	OILY SLUDGE FOR OXIDATION	D001 F001	1,4,7,8,9
50202*	OILY SLUDGE FOR OXIDATION	D001 D010	1,4,7,8,9
50203	OILY SLUDGE FOR OXIDATION	D008	1,4,7,8,9
50204	OILY SLUDGE FOR OXIDATION	D001 D010	1,4,7,8,9
50293	U308 FOR REOXIDATION	D004	4,9
50314	SCRAP SALTS AND FLOOR SWEEPINGS - HIGH FLUORIDE	D010	1,4,9
50323	SOLIDIFIED FURNACE SALTS - NON-CHLORIDE	D004	4,7,8,9
50330	SLUDGES, OILY, FOR OXIDATION, HIGH FREE METAL	F002	1,4,7,8,9
50346	OILY SLUDGE FOR OXIDATION	D001	1,4,7,8,9
50347	DISCARD PROCESS RESIDUE	D001	1,4,7,8,9
50349*	DUST COLLECTOR RES. - HIGH I	D008	1,4,9
50351	DUST COLLECTOR RESIDUES - HIGH FLUORIDE	D004 D008	4,7,8,9
50355	DISCARD PROCESS RESIDUE	D001	1,4,7,8,9
50356	CONTAMINATED NON-BURNABLE	D001	1,4,7,8,9
50359	NON-RECOVERABLE TRASH	F002	1,4,8,9

NOTE: SEE FINAL PAGE FOR KEY TO DETERMINATION BASIS CODES

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TABLE C - 4

REVISED: 07-Jan-93

RCRA REGULATED HAZARDOUS WASTE

WASTE ID #	WASTE NAME	U.S. EPA HAZARDOUS WASTE #	DETERMINATION BASIS
50361	NON-RECOVERABLE TRASH	D009	5
50364	U308, +8MESH, LOWF	D007 F001 F002	4,5,9
50367	NON-RECOVERABLE TRASH	D008	9
50387	SLT SLUDGE, CHLORIDE	D005	4,9
50406	NON-RECOVERABLE TRASH	D006 D007	4,5,6,7,8,9
50406	FURNACE SALT, CHLORIDE	D004 D011	4,5,9
50407	NON-RECOVERABLE TRASH	D001	1,3,5,6,8,9
50408	FURNACE SALT NON-CHLORIDE	D008 D010	4,7,8,9
60011	NONRECOVERABLE TRASH	D007	MSDS,PK,1,5,9
60068	CONTAMINATED INSOLUBLE OIL	D008 F001	1,4,7,8,9
60069	CONTAMINATED INSOLUBLE OIL	D008 F001	1,4,7,8,9
60119	SLUDGES, OILY, FOR OXIDATION HIGH FREE METAL	D001 F001 F002	1,2,4,5,6,7,8,9
60123	SOLVENT SEMISOLID	D039 F002	1,2,4,5,6,7,8,9
60149	U308 FROM BOX FURNACE	F001 F002	1,4,9
60152	U308 ROTEXED PLANT & FURNACE PRODUCT	F001 F002	1,4,9
60331	WATER/GAS MIXTURE TANK #9	D001 D018	1,4,7,8,9
60332	WATER/GAS MIXTURE TANK #10	D008 D018	PK

Key to "Determination Basis Codes" :

- Currently Generated
- PK Process Knowledge
- MSDS Material Safety Data Sheet

ANALYSES:

- | | |
|------------------------------------|-------------------------------|
| 1 Total Volatile Organic | 8 Flash Point |
| 2 TCLP Volatile Organic | 9 U-Total, % U235 |
| 3 Total (TC) Metals | 10 PCBs |
| 4 TCLP Metals | 11 Total Semivolatile Organic |
| 5 Visual Inspection of Waste | 12 Total Pesticides |
| 6 Paint Filter Liquids Test (PFLT) | 13 Total Thorium |
| 7 pH | |

MEF RANGES

- < 10,000 MEF's are Newly Generated Wastes.
- > 10,000 are waste covered under Consent Decree or old production wastes.

Table C-5 Example Analytical Results

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

4456

ORGANIC LIQUIDS

Sampling Plan: 860

Mat. Type: Contaminated Insoluble Oil
 Revised: 7-22-92

Review of Analyses

ATTACHMENT B
 Part I

Rev. *CHW*
Deen

Lab No. Cust. No. Matrix Lot/Drum No.	Total Organic Constituent(s):	TCLP Metal Constituent(s):	Radiological Constituent(s):	Other Analyses:	Pal #/ Lab	Date Met ?
--	----------------------------------	-------------------------------	---------------------------------	--------------------	---------------	---------------

820226-072 R800-1 1ph (Dark Brown Oil, Liquid) R020-603-P016-03319/1	1,1,1-Trichloroethane 6.150	Barium 0.85 Chromium <4.3 Lead 4235.0	Total U (ppm) U-235 (wt %) 20 0.64	pH Void Flash Point(F) >200	1235 TCT	Y VOA Y HG
---	--------------------------------	--	---	--------------------------------------	-------------	---------------

820226-034 R800-2 1ph (Dark Brown Oil, Liquid) R020-603-P016-03344/1	1,1,1-Trichloroethane 10,400	Barium <9.38 Chromium 5.11 Lead <3.52	Total U (ppm) U-235 (wt %) 12 0.29	pH Void Flash Point(F) 179	1245 TCT	Y VOA Y HG
---	---------------------------------	--	---	-------------------------------------	-------------	---------------

820226-035 R800-3(20) 1ph (Dark Brown Oil, Liquid) R020-603-P016-03344/1	1,1,1-Trichloroethane 9,270	Barium <9.88 Chromium <2.22 Lead <3.71	Total U (ppm) U-235 (wt %) 19 0.29	pH Void Flash Point(F) 153	1245 TCT	Y VOA Y HG
---	--------------------------------	---	---	-------------------------------------	-------------	---------------

Sampling Plan: 860
 Mat. Type: Contaminated Insoluble Oil
 Revised: 7-22-92

Statistical Calculations

Attachment B
 Part II

Rev. *CMW*

4456

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Analyte	(TCCLP Reg. Level)	Statistical Mean	Standard Deviation	Confidence Interval (ppm)	C.V.
Total Organic Constituent(s): (ppm)	1,1,1-Trichloroethane	5400	4902.30255	0 - 10,700	<1.25
TCCLP Metal Constituent(s): (ppm)	Barium	20.7	30.99069	0 - 54.4	1.50
	Chromium	2.11	1.01804	0 - 3.22	<1.25
	Lead	1829	2175.16774	0 - 4197	<1.25
Radiochemical Constituent(s):	Total U (ppm) U-235 (wt %)	16 0.46	3.54730 0.17502	12 - 20 0.27 - 0.65	<1.25 <1.25

Other Analytes:

See Part I

Discussion:

Sample R860-3(2D) is a duplicate of sample R860-2. The data were arithmetically averaged to produce one statistically significant result.

There was a total of three (3) statistically significant results for this waste stream: R860-1; R860-4; and R860-2 & 3(2D).

Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte, with the following exceptions:

Analyte	Coef. of Var.
Barium	1.50

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456 -

AQUEOUS LIQUIDS

RCRA CHARACTERIZATION

No. 696

-4456

1 COMPLETED BY GENERATOR: ROYAL PRINT ACTIVATOR (KODAK)

Waste Stream Description:

FMPC CODE ID R020730 P003

Reason for RCRA Determination:

MAN 11 1091

Ignitable _____	Flashpoint _____					
Corrosive _____	PH<2 _____		PH>12 _____			
EP Toxic _____	Aq _____	As _____	Ag _____	Se _____	Ba _____	
Reactive _____	Cd _____	Cr _____	Pb _____			

Physical Characteristics: SEE ATTACHED MSDA

Accumulation Area: _____

Other Area: _____

W E P... 0509 - 1-8-91
Signature/Extension Number/Date

2 TO BE COMPLETED BY SOLID WASTE COMPLIANCE:

PSN: _____ SWC# _____

EPA Waste No.: 0002

Land Ban: Yes No Third-Third

Hazard Class: Corrosive

UN/NA Number: _____

Comments: This determination is for the spent solution

Signature/Extension Number/Date

3 TO BE COMPLETED BY WASTE TECHNOLOGY:

Sampling Plan Available: Yes No

Recommended Container: _____

Color Code: _____

RCG: _____

Signature/Extension Number/Date

4 TO BE COMPLETED BY MATERIALS CONTROL AND ACCOUNTABILITY:

Date Received: _____

Storage Location: Building: _____ Bay: _____

Inventory No.: _____

Comments: _____

Signature/Extension Number/Date

5 TO BE COMPLETED BY WASTE MANAGEMENT:

Date Placed in Storage: _____

Storage Location: Building: _____ Bay: _____

Inventory No.: _____

Comments: _____

Signature/Extension Number/Date

Instructions: Items 1, 2, and 3 to be completed before drum is moved. After all five sections are completed distribute one completed copy to each group. **093**

-4456-

MATERIAL SAFETY DATA SHEET
EASTMAN KODAK COMPANY

Date of Revision: 06/21/90

Accession Number: 365981

PRODUCT INFORMATION

Product Name: KODAK ROYALPRINT Activator

Formula: Aqueous Mixture

Kodak Catalog Number(s): CAT 183 2351 - 5 Gallons; CAT 121 0194 - 1/2 Gallon Ready-to-Use

Solution No.: 3770

Kodak's Internal Hazard Rating Codes: R: 1 S: 2 F: 0 C: 0

Manufacturer/Supplier:

Eastman Kodak Company
343 State Street
Rochester, New York 14650
USA

For Emergency Information: (716) 722-5151

For other purposes, call the Marketing and Distribution Center in your area.

COMPONENT INFORMATION

	Weight Percent	CAS Number	Accession Number
Water	85-90	7732-18-5	035290
*Potassium hydroxide	5-10	1310-58-3	901383
Potassium sulfite	1-5	10117-38-1	907064

*Principal Hazardous Component(s)

PHYSICAL DATA

Appearance and Odor: Clear solution; odorless

Boiling Point: GT 100 C (ca. 212 F)

Vapor Pressure: ca. 18 mmHg @ 20 C

Evaporation Rate (n-butyl acetate = 1): ca. 0.4

Vapor Density (Air = 1): ca. 0.6

Volatile Fraction by Weight: ca. 90 %

Specific Gravity (Water = 1): 1.09

pH: ca. 13.0

Solubility in Water (by Weight): Complete

GT = Greater than; LT = Less than

A-0021.000E

84-0169

4456

2

=====
FIRE AND EXPLOSION HAZARD
=====

FLASH POINT: None, noncombustible
EXTINGUISHING MEDIA: Use appropriate agent for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus
and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

=====
REACTIVITY DATA
=====

STABILITY: Stable
INCOMPATIBILITY: Strong acids
HAZARDOUS DECOMPOSITION PRODUCTS: None
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Will not occur.

=====
TOXICOLOGICAL PROPERTIES
=====

EXPOSURE LIMITS:
Component: Potassium hydroxide
ACGIH TLV: 2mg/m3, ceiling (ACGIH 1989-1990)
OSHA PEL: 2mg/m3, ceiling

EXPOSURE EFFECTS:
Inhalation: Low hazard for recommended handling.

Eyes: Causes burns.

Skin: Causes burns.

Ingestion: May be harmful if swallowed.

=====
PROTECTION AND PREVENTIVE MEASURES
=====

VENTILATION: Good ventilation* should be sufficient. Supplementary
ventilation or respiratory protection may be needed in special circumstances.

*Typically, 10 room volumes per hour is considered good general ventilation:
ventilation rates should be matched to conditions of use.

SKIN AND EYE PROTECTION: Goggles or face shield are recommended. Impervious
gloves should be worn.

A-0021.000E
84-0169

=====
STORAGE AND DISPOSAL
=====

SPECIAL STORAGE AND HANDLING PRECAUTIONS: Keep container tightly closed and away from acids.

SPILL, LEAK, AND DISPOSAL PROCEDURES: Small spills: Neutralize with sodium bisulfate. Flush material to the sewer with large amounts of water. Large spills and transportation incidents: Absorb spill with inert material and place in a container for chemical waste. Prevent runoff from entering drains, sewers, and streams. Contract with a licensed chemical disposal agency. Flush residual spill and area with water. Discharge, treatment, or disposal may be subject to federal, state, or local law.

=====
FIRST AID
=====

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get prompt medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes and get medical attention if burns are present after washing. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: If swallowed, do NOT induce vomiting. Immediately give victim a glass of water. Never give anything by mouth to an unconscious person.

=====
ENVIRONMENTAL EFFECTS DATA
=====

This environmental effects summary is written to assist in addressing emergencies created by an accidental spill, which might occur during the shipment of this product, and in general, it is not meant to address discharges to sanitary sewers or publically owned treatment works.

Some laboratory test data and published data are available for the major components of this formulation. Although this product, as such, has not been tested for environmental effects, the data, mentioned above, have been used to provide the following estimates of potential environmental impact, in the event of an accidental spill: (1-4)

This chemical formulation is a strongly alkaline aqueous solution, and this property is the only one expected to cause adverse environmental effects if discharged directly to the environment without treatment. It is expected to have a low biological oxygen demand, and it is expected to cause little oxygen depletion in aquatic systems. If unneutralized and spilled on the ground, this formulation is expected to have a high potential to affect the germination and early growth of some plants. If neutralized, it is expected to have a low potential to affect aquatic organisms, secondary waste treatment microorganisms, and the germination and growth of plants. The components of this chemical formulation are not likely to bioconcentrate.

096

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456

ORGANIC LIQUIDS

097

Sa Plan: 860
 Mat. Type: Contaminated Insoluble Oil
 Revised: 7-22-92

Review of **ses**

ATTACHMENT B
Part I

Ref: 

Lab No.
 Cust. No.
 Matrix
 Lot/Drum No.

Total Organic
Constituent(s):

1,1,1-Trichloroethane 124

TCLP Metal
Constituent(s):

Barium 56.4
 Chromium <2.15
 Lead 1250

Radiological
Constituent(s):

Total U (ppm) 13
 U-235 (wt %) 0.46

Other
Analyses:

pH
 Void
 (Matrix)
 Flash Point(F) 165

Rel #/
Lab

1245
TCT

Date
Met ?

Y VOA
Y HG

4456

Site Plan: 860
 Material: Contaminated Insoluble Oil
 Revised: 7-22-92

Statistical Calculations

Attachment B
 Part II

Rev. CMW

Total Organic Constituent(s): (ppm)	Analyte	(TCLP Reg. Level)	Statistical Mean	Standard Deviation	Confidence Interval (ppm)	C.V.
	1,1,1-Trichloroethane		5400	4902.30255	0 - 10,700	<1.25
TCLP Metal Constituent(s): (ppm)	Barium	(100.0)	20.7	30.99069	0 - 54.4	1.50
	Chromium	(5.0)	2.11	1.01804	0 - 3.22	<1.25
	Lead	(5.0)	1829	2175.16774	0 - 4197	<1.25
Radiological Constituent(s):	Total U (ppm)		16	3.54730	12 - 20	<1.25
	U-235 (wt %)		0.46	0.17502	0.27 - 0.65	<1.25

Other Analyses:

See Part I

Discussion:

Sample R860-3(2D) is a duplicate of sample R860-2. The data were arithmetically averaged to produce one statistically significant result. There was a total of three (3) statistically significant results for this waste stream: R860-1; R860-4; and R860-2 & 3(2D). Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte, with the following exceptions:

Analyte	Coef. of Var.
Barium	1.50

4456

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

AQUEOUS LIQUIDS

1 COMPLETED BY GENERATOR: ROYAL PRINT ACTIVATOR (KODAK)

-4456

Waste Stream Description:

FMPC CODE ID 2020730 P003

Reason for RCRA Determination:

MAN 11 1991

Ignitable	_____	Flashpoint	_____				
Corrosive	_____	PH<2	_____	PH>12	_____		
EP Toxic	_____	Aq	_____	As	_____	Ag	_____
Reactive	_____	Cd	_____	Cr	_____	Pb	_____
				Se	_____	Ba	_____

Physical Characteristics: SEE ATTACHED MSDA

Accumulation Area: _____

Other Area: _____

WEP 0509-1-8-91
Signature/Extension Number/Date

2 TO BE COMPLETED BY SOLID WASTE COMPLIANCE:

PSN: _____ SWC# _____

EPA Waste No.: 0002

Land Ban: Yes No Third-Third

Hazard Class: Corrosive

UN/NA Number: _____

Comments: This determination is

for the spent solution

Signature/Extension Number/Date

TO BE COMPLETED BY WASTE TECHNOLOGY:

Sampling Plan Available: Yes No

Recommended Container: _____

Color Code: _____

RCG: _____

Signature/Extension Number/Date

4 TO BE COMPLETED BY MATERIALS CONTROL AND ACCOUNTABILITY:

Date Received: _____

Storage Location: Building: _____ Bay: _____

Inventory No.: _____

Comments: _____

Signature/Extension Number/Date

5 TO BE COMPLETED BY WASTE MANAGEMENT:

Date Placed in Storage: _____

Storage Location: Building: _____ Bay: _____

Inventory No.: _____

Comments: _____

Signature/Extension Number/Date

Instructions: Items 1, 2, and 3 to be completed before drum is moved. After all five sections are completed distribute one completed copy to each group.

MATERIAL SAFETY DATA SHEET
EASTMAN KODAK COMPANY

-4456-

Date of Revision: 06/21/90

Accession Number: 365981

PRODUCT INFORMATION

Product Name: KODAK ROYALPRINT Activator

Formula: Aqueous Mixture

Kodak Catalog Number(s): CAT 183 2351 - 5 Gallons; CAT 121 0194 - 1/2 Gallon
Ready-to-Use

Solution No.: 3770

Kodak's Internal Hazard Rating Codes: R: 1 S: 2 F: 0 C: 0

Manufacturer/Supplier:

Eastman Kodak Company

343 State Street

Rochester, New York 14650

USA

For Emergency Information: (716) 722-5151

For other purposes, call the Marketing and Distribution Center in your area.

COMPONENT INFORMATION

	Weight Percent	CAS Number	Accession Number
Water	85-90	7732-18-5	035290
Potassium hydroxide	5-10	1310-58-3	901383
Potassium sulfite	1-5	10117-38-1	907064

*Principal Hazardous Component(s)

PHYSICAL DATA

Appearance and Odor: Clear solution; odorless

Boiling Point: GT 100 C (ca. 212 F)

Vapor Pressure: ca. 18 mmHg @ 20 C

Evaporation Rate (n-butyl acetate = 1): ca. 0.4

Vapor Density (Air = 1): ca. 0.6

Volatile Fraction by Weight: ca. 90 %

Specific Gravity (Water = 1): 1.09

pH: ca. 13.0

Solubility in Water (by Weight): Complete

GT = Greater than; LT = Less than

A-0021.000E

84-0169

- 4456 -

2

FIRE AND EXPLOSION HAZARD

FLASH POINT: None, noncombustible
EXTINGUISHING MEDIA: Use appropriate agent for surrounding fire.
SPECIAL FIRE FIGHTING PROCEDURES: Wear self-contained breathing apparatus
and protective clothing.
UNUSUAL FIRE AND EXPLOSION HAZARDS: None

REACTIVITY DATA

STABILITY: Stable
INCOMPATIBILITY: Strong acids
HAZARDOUS DECOMPOSITION PRODUCTS: None
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: Will not occur.

TOXICOLOGICAL PROPERTIES

EXPOSURE LIMITS:
Component: Potassium hydroxide
ACGIH TLV: 2mg/m3, ceiling (ACGIH 1989-1990)
OSHA PEL: 2mg/m3, ceiling

EXPOSURE EFFECTS:

Inhalation: Low hazard for recommended handling.

Eyes: Causes burns.

Skin: Causes burns.

Ingestion: May be harmful if swallowed.

PROTECTION AND PREVENTIVE MEASURES

VENTILATION: Good ventilation* should be sufficient. Supplementary
ventilation or respiratory protection may be needed in special circumstances.

*Typically, 10 room volumes per hour is considered good general ventilation;
ventilation rates should be matched to conditions of use.

SKIN AND EYE PROTECTION: Goggles or face shield are recommended. Impervious
gloves should be worn.

A-0021.000E
84-0169

-4456

STORAGE AND DISPOSAL

SPECIAL STORAGE AND HANDLING PRECAUTIONS: Keep container tightly closed and away from acids.

SPILL, LEAK, AND DISPOSAL PROCEDURES: Small spills: Neutralize with sodium bisulfate. Flush material to the sewer with large amounts of water. Large spills and transportation incidents: Absorb spill with inert material and place in a container for chemical waste. Prevent runoff from entering drains, sewers, and streams. Contract with a licensed chemical disposal agency. Flush residual spill and area with water. Discharge, treatment, or disposal may be subject to federal, state, or local law.

FIRST AID

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get prompt medical attention.

Skin: Immediately flush skin with plenty of water for at least 15 minutes and get medical attention if burns are present after washing. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: If swallowed, do NOT induce vomiting. Immediately give victim a glass of water. Never give anything by mouth to an unconscious person.

ENVIRONMENTAL EFFECTS DATA

This environmental effects summary is written to assist in addressing emergencies created by an accidental spill, which might occur during the shipment of this product, and in general, it is not meant to address discharges to sanitary sewers or publically owned treatment works.

Some laboratory test data and published data are available for the major components of this formulation. Although this product, as such, has not been tested for environmental effects, the data, mentioned above, have been used to provide the following estimates of potential environmental impact, in the event of an accidental spill: (1-4)

This chemical formulation is a strongly alkaline aqueous solution, and this property is the only one expected to cause adverse environmental effects if discharged directly to the environment without treatment. It is expected to have a low biological oxygen demand, and it is expected to cause little oxygen depletion in aquatic systems. If unneutralized and spilled on the ground, this formulation is expected to have a high potential to affect the germination and early growth of some plants. If neutralized, it is expected to have a low potential to affect aquatic organisms, secondary waste treatment microorganisms, and the germination and growth of plants. The components of this chemical formulation are not likely to bioconcentrate.

A-0021.000E
84-0169

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

ORGANIC SLUDGES/PARTICULATES

Sampling Plan 083
 Mat. Type:
 Revised: 7-09-91

Revised Analyses

ATTACHMENT B
 Part I

Lab No. Cust. No. Matrix	Total Organics	TCLP Metals (ppm)	Flash Point (ppm)	pH	Tot		Rel #	Date Met ?
					U	U		
910228-077 R083-1 Solids	Acetone	5.53	Not Req.	Not Req.	60,300	1.30	541	Y VOA Y Hg
	Benzene	0.0243						
	Ethylbenzene	0.274						
	Ethyl Acetate	0.0631						
	MEX	0.153						
	MIBK	0.305						
	2-Nitropropane	0.153						
	Tetrachloroethylene	<0.0083						
	Toluene	0.176						
	1,1,1-Trichloroethane	0.125						
910528-127 R083-2(1D) Solids	Trichloroethylene	0.0276						
	Trichlorotrifluoroethane	0.192						
	Trichlorofluoromethane	0.185						
	Xylenes	<0.0083						
	Acetone	<2.120		Not Req.	Not Req.	Not Req.	541	Y VOA Y Hg
	Benzene	<0.0172						
	Ethylbenzene	0.134						
	Ethyl Acetate	<0.0339						
	MEX	<0.017						
	MIBK	0.0462						
2-Nitropropane	<0.0339							
Tetrachloroethylene	3.100							
Toluene	0.0973							
1,1,1-Trichloroethane	0.119							
Trichloroethylene	0.0150							
Trichlorotrifluoroethane	0.143							
Trichlorofluoromethane	<0.0085							
Xylenes	1.770							

- 4456 -

Sampling Plan 083
 Mat. Type:
 Revised: 7-09-91

Revised Analyses

ATTACHMENT B
 Part I



- 4456 -

Lab No.	Cust. No.	Matrix	Total Organics	TCLP Metals (ppm)	Flash Point (ppm)	pH	Tot U (ppm)	U	Rel #	Date Met ?
910530-131	R083-3	Liquids	10"	Arsenic <0.42 Barium <0.08 Cadmium <0.08 Lead ND Silver <0.25 <0.17 ND <0.47 <0.17 <0.20 <0.22 <0.17 <0.17 <0.10	Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req.	Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req. Not Req.	60 60 60 60 60 60 60 60 60 60 60	235 235 235 235 235 235 235 235 235 235 235	543 543 543 543 543 543 543 543 543 543 543	Y VOA Y Hg Y VOA Y Hg Y VOA Y Hg Y VOA Y Hg Y VOA Y Hg Y VOA Y Hg
910530-132	R083-4	Solids	20"	Arsenic <8.3 Barium <1.3 Cadmium <1.3 Lead ND Silver <3.8 <2.5 ND 15 <1.3 <3.0 <3.3 9.4 4.3 <1.5	Not Req. Not Req.	Not Req. Not Req.	32,000 32,000	1.10 1.10	543 543	Y VOA Y Hg Y VOA Y Hg

083

Wet Process Residues

Statistical Results

ATTACHMENT B

Part II

Case # 24
WED

Mat. Type:

Total Organics (Regulatory Level)	(ppm)	TCLP Metals (Regulatory Level)	(ppm)	Flash Point	pH	Tot U (%)	U	235
Acetone	2.9 2.3 - 3.5	Arsenic (5.0)	0.39 0 - 1.1	Not Req	Not Req	37,000	1.05	
Benzene	0.4 0.2 - 0.6	Barium (100.0)	0.80 0.72 - 0.87			14,000 - 59,000	0.81 - 1.28	
Ethylbenzene	0.4 0.2 - 0.7	Cadmium (1.0)	0.03 0.01 - 0.06					
Ethyl Acetate	See Part I	Lead (5.0)	1.17 0.80 - 1.54					
MEK	1.1 0.1 - 2.1	Silver (5.0)	0.17 0.11 - 0.23					
MIBK	0.8 0.2 - 1.4							
2-Nitropropane	See Part I							
Tetrachloroethylene	17 0 - 37							
Toluene	0.6 0 - 1.2							
1,1,1-Trichloroethane	0.9 0.1 - 1.6							
Trichloroethylene	0.9 0 - 1.8							

Mean and Confidence Interval

- 4456 -

Sampling Plan 083

Mat. Type: Wet Process Residues

Statistical Results

ATTACHMENT B

Part II

Total Organics (Regulatory Level)	(ppm)	TCLP Metals (Regulatory Level)	(ppm)	Flash Point	pH	Tot	
						U	(%)
Trichlorotrifluoroethane	3.5					U	236
Trichlorofluoromethane	0 - 6.9						
Xylenes	1.4						
	0 - 2.9						
	0.7						
	0.5 - 0.9						

Discussion: The data from samples R083-1 and R083-2(1D) were arithmetically averaged to yield one "sample".

Samples R083-3 and R083-4 were taken from the liquid and solid phases of the same drum.

The data were percent averaged based on column layering recorded in the sampling log.

There was a total of three statistically significant samples in the stream: R083-1 & 2(1D), R083-3 & 4, and R083-5.

Mathematical comparison of sample means and standard deviations show the data to be normally distributed for each analyte, with the following exception:

Analyte	COV.
Arsenic	1.66

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

INORGANIC SLUDGES/PARTICULATES

394
 Non-Oily Sludges
 1-2-92

Review analyses

ATTACHMENT B
 Part I

ig Plan:
 Type:
 Revised:

Lab No.
 Cust. No.
 Matrix
 Lot/Drum No.

910027-028
 R304-1
 1ph (Sludge)
 X038-020-0042-0286 #1

910027-029
 R304-2
 1ph (Sludge)
 X038-020-0042-0286 #1

911001-100
 R304-EB

Organic Constituents	Total (ppm)	Metal Constituents	TCLP (ppm)	Radiological Constituents	Other Constituents	Rel #	Date Met ?
Xylenes	0.28	Barium	0.07	Total U (ppm)	pH	864 CNLS	Y VOA
		Cadmium	0.07	U-235 (wt %)	FP		Y Hg
		Chromium	1.21		PFLT		
		Lead	0.27				
		Silver	0.04				
Xylenes	0.28	Barium	0.04	Total U (ppm)	pH	864 CNLS	Y VOA
		Cadmium	0.11	U-235 (wt %)	FP		Y Hg
		Chromium	3.25		PFLT		
		Lead	0.38				
		Silver	0.09				
All Analytes Below Detectable Levels					None Requested	873 TCT	Y VOA Y Hg

4456

111

Total VOAs Constituents:	Mean	STD	CI	Range	COV
Xylenes	0.28	0	0	No Range	<1.25

TCLP Metals Constituents:	(Reg. Level)	Mean	STD	CI	Range	COV
Barium	(100.0)	0.06	0.02121	0.04617	0.01	0.10
Cadmium	(1.0)	0.09	0.02828	0.06156	0.03	0.15
Chromium	(5.0)	2.23	1.44250	3.13956	0	5.37
Lead	(5.0)	0.33	0.07778	0.16929	0.16	0.49
Silver	(5.0)	0.07	0.03536	0.07695	0	0.14

Radiological Constituents:	Mean	STD	CI	Range	COV
Total U (ppm)	160,000	61,317.3	176,985.0	-	336,000
U-235 (wt %)	1.03	0.00707	0.01539	-	1.04

Other Analysis Constituents:	Mean	STD	CI	Range	COV
pH	Not requested				
Flash Point	Not requested				
PFLT	Not requested				

Discussion:

There was a total of two (2) statistically significant results for this single drum waste stream: R394-1; and R394-2.

Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte.

1
4
4
5
6

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456 -

ORGANIC DEBRIS

Plan:
 Mat. type:
 Revised:

R296B
 Non-Recoverable Trash
 7-5-92

Review of /ses

ATTACHMENT B
 Part I

Handwritten initials/signature

Lab No.	Cust. No.	Matrix	Lot/Drum No.	Total Organic Constituent(s)	(ppm)	TCLP Metal Constituent(s)	(ppm)	Radiological Constituent(s)	Other Analyses	Ref #/ Lab	Date Met?
920218-222	R296B-1	1ph (Solid)	W020-000-P003-7305 #1	Acetone MEK 1,1,1-Trichloroethane	<14.4 <14.4 <7.2	Arsenic Barium Lead Mercury	0.023 0.326 0.452 0.00023	Total U (ppm) U-235 (wt%)	11,859 0.20	1209 TCT	Y VOA Y Hg
Note: High Detection Limits											
920213-026	R296B-2	2ph (Solid)	W020-000-P003-7328 #1	Acetone MEK 1,1,1-Trichloroethane	<25.3 <25.3 331	Arsenic Barium Lead Mercury	<0.2 <0.2 <0.2 0.00058	Total U (ppm) U-235 (wt%)	378 0.37	1204 TCT	Y VOA Y Hg
Note: High Detection Limits											
920213-026	R296B-3(20)	2ph (Solid)	W020-000-P003-7328 #1	Acetone MEK 1,1,1-Trichloroethane	57 <25.4 441	Arsenic Barium Lead Mercury	<0.2 <0.2 <0.2 0.00035	Total U (ppm) U-235 (wt%)	1,042 0.23	1204 TCT	Y VOA Y Hg
Note: High Detection Limits											

4456

Plan:
Mat. Type:
Revised:

R296B
Non-Recoverable Trash
7-5-82

Review of Uses

ATTACHMENT B
Part I

Handwritten signature/initials

Lab No.	Cust. No.	Matrix	Lot/Drum No.	Total Organic Constituent(s): (ppm)	TCLP Metal Constituent(s): (ppm)	Radiological Constituent(s): (ppm)	Other Analyses:	Rel #/ Lab	Date Met ?
920213-027	R296B-4	2ph (Liquid)	W020-600-P003-7328 #1	Acetone MEK 1,1,1-Trichloroethane 16%	<0.01 0.0651 4.18	Arsenic Barium Lead Mercury <0.2 <0.2 <0.2 <0.0002	5 pH 0.22 Flash Point	1204 TCT	Y VOA Y Hg
920213-028	R296B-5(40)	2ph (Liquid)	W020-600-P003-7328 #1	Acetone MEK 1,1,1-Trichloroethane 16%	1.0 0.0457 4.24	Arsenic Barium Lead Mercury 0.299 <0.2 0.232 <0.0002	3 pH 0.21 Flash Point	1204 TCT	Y VOA Y Hg
920218-223	R296B-6	1ph (Solid)	W050-600-P003-6947 #2	Acetone MEK 1,1,1-Trichloroethane	114.0 <29.0 <14.5	Arsenic Barium Lead Mercury <0.2 <0.2 <0.2 0.0004	97 PFLT 0.37	1209 TCT	Y VOA Y Hg

Note: High Detection Limits

- 4456

Plan: R296B
 Mat. Type: Non-Recoverable Trash
 Revised: 7-9-92

Statistical Calculations

Attachment B
 Part II

Rev: E24
 CHW

Analyte	(TCLP Reg. Level)	Statistical Mean	Standard Deviation	Confidence Interval (ppm)	C.V.
Total Organic Constituent(s): (ppm)		50	56.30552	0	<1.25
Acetone		10.8	3.65021	6.9	<1.25
MEX		113	186.67002	0	1.65
1,1,1-Trichloroethane					
TCLP Metal Constituent(s): (ppm)		0.1	0.04933	0.03	<1.25
Arsenic	(5.0)	0.2	0.13048	0.03	<1.25
Barium	(100.0)	0.2	0.20043	0	<1.25
Lead	(5.0)	0.0003	0.00010	0.0002	<1.25
Mercury	(0.2)				<1.25
Radiological Constituent(s):		4.167	6.649.24	0	1.59
Total U (ppm)		0.29	0.08501	0.19	<1.25
U-235 (wt%)					
Other					
Analyses:					

See Part I

Discussion:

Samples R296B-2 and RR296B-4 were taken from the liquid and solid phases of the same drum. The data were percent averaged based on the column layering recorded in the sampling log. The same is true for the following sample pairs: R296B-3(2D) and R296B-5(4D).

Samples R296B-3(2D) and R296B-5(4D) are duplicates of samples R296B-2 and R296B-4. The weighted average results [RR296B-3(2D) & 5(4D)] and [R296B-2 & RR296B-4]

There was a total of three (3) statistically significant results for this waste stream: R296B-1; R296B-2, 3, 4(2D) & 5(3D); and R296B-6. Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte.

with the following exceptions:

Analyte	Coef. of Var.
1,1,1-Trichloroethane	1.65
Total U (ppm)	1.59

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

INORGANIC DEBRIS

086
Contaminated Soil, Rocks, Sand, Brick, and Ceramics
07-01-91

Lab No.	Cust. No.	Matrix	Total & (TCLP) Organics	(ppm)	TCLP Metals	(ppm)	Flash Point	pH	Tot U (ppm)	U	Ref #	Date Met ?	
910408-063	R086-2	Damp Dirt	Acetone Benzene Ethylbenzene Tetrachloroethene Toluene Xylenes MEK	<1.000 <0.210 <0.084 <0.210 <1.200 <0.470 <0.420 <0.250 1.200 <0.250	Arsenic Barium Cadmium Chromium Lead Mercury Silver	<0.050 0.319 <0.050 <0.200 0.762 <0.002 3.010	Not Req Not Req	Not Req	2300	0.79	451	Y VOA To Y VOA T Y Hg	
910408-064	R086-3(20)	Damp Dirt	Acetone Benzene Ethylbenzene Tetrachloroethene Toluene Xylenes MEK	<1.000 <0.210 <0.080 <0.210 <1.200 <0.470 <0.420 <0.250 <0.630 <0.250	Arsenic Barium Cadmium Chromium Lead Mercury Silver	<0.050 0.364 <0.050 <0.200 1.020 <0.002 3.460	Not Req Not Req	Not Req	4000	0.82	451	Y VOA To Y VOA T Y Hg	
910410-089	R086-TB	Water	All Analytes Below Detectable Limits		All Analytes Below Detectable Limits				Not Req	Not Req	Not Req	455	Y VOA To Y VOA T Y Hg

4456

Review analyses

086
 Sampling Plan
 Mat. Type:
 Contaminated Soil, Rocks, Sand, Brick, and Ceramics
 Revised: 07-01-01

ATTACHMENT B
 Part I

For [Signature]

Lab No.	Cust. No.	Matrix	Total & (TCLP) Organics	TCLP Metals (ppm)	Flash Point	pH	Tot U (ppm)	U	Res #	Date Met ?
910411-030	R086-5	Damp Sump	Acetone	1.600	Not Req	Not Req	128,000	0.72	457	Y VOA To
			Benzene	<0.210						Y VOA T
			Ethylbenzene	<0.084						Y Hg
			Tetrachloroethene	<0.210						
			Toluene	<1.200						
			Xylenes	<0.470						
			MEK	<0.420						
				<0.250						
				<0.630						
				<0.250						
				<0.100						
				<0.200						
				<0.050						
				<3.200						
				<4.880						
				<0.002						
				12.700						

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**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

HETEROGENEOUS DEBRIS

Mat. Type: Contaminated Burnables
 Revised: 08-09-91

Lab No.	Cust. No.	Matrix	Lot/Drum No.	Total Organics	TCLP Metals (ppm)	Flash Point	pH	Total U (ppm)	U	Ref #	Date Met ?
910214-000	R202-1	2ph Liquid	10"	H003-020-0027-0270 #101	Arsenic 0.208 Barium <0.01 Cadmium <0.005 Lead <0.005 Silver <0.005 <0.005	>200	7.5	110	0.27	309	Y VOA To Y Hg
910219-000	R202-3	2ph Solid	9"	H003-020-0027-0270 #101	Arsenic 2.469 Barium 0.192 Cadmium 0.009 Lead <0.005 Silver <0.005 <0.005	Not Req	Not Req	22,100	0.36	314	Y VOA To Y Hg
910214-000	R202-3(1D)	2ph Liquid	10"	H003-020-0027-0270 #101	Arsenic 0.634 Barium <0.05 Cadmium <0.025 Lead <0.025 Silver <0.005 <0.005	>200	6.0	113	0.27	309	Y VOA To Y Hg

Sampling Plan

202

Mat. Type: Contaminated Burnables
Revised: 08-09-91

Review of Analyses

ATTACHMENT B
Part I

Rev. *[Signature]*

Lab No.	Cust. No.	Matrix	Lot/Drum No.	Total Organics	TCLP Metals (ppm)	Flash Point (ppm)	pH	Tot U (ppm)	U 235	Ref #	Date Met ?
910210-091	R202-4(30)	2ph solid		Acetone MEX Xylenes 1,1,2 Trichloroethane	4.903 <0.01 0.024 0.006	0.229 0.556 <0.1 0.971	Not Req	24,100	0.34	314	Y VOA To Y Hg
H000-620-0027-0279 #101		gr		Ethylbenzene Tetrachloroethene Toluene	<0.005 <0.005 <0.005	<0.05 0.971 <0.05	Not Req				
910220-068	R202-5	1ph solid Granular		Acetone MEX Xylenes 1,1,2 Trichloroethane	0.47 0.038 0.34	0.377 0.978 0.219 1.64	Not Req	59,400	0.31	317	Y VOA To Y Hg
H000-620-0027-0279 #102		gr		Ethylbenzene Tetrachloroethene Toluene	<0.025 0.038 0.36 0.2	0.126	Not Req				

Sampling Plan: 202
 Mat. Type: Contaminated Burnables
 Revised: 09-06-91

Statistical Results

ATTACHMENT B
 Part II

Calc: *[Signature]*
 Rev: *[Signature]*

Mean and Confidence Interval	Total Organics		TCLP Metals (Regulatory Level)		Flash Point	pH	Tot U (ppm)	U
	(ppm)	(ppm)	(Regulatory Level)	(ppm)				
Acetone	1.22 0 - 3.52	Arsenic (5.0)	0.311 0.106 - 0.515	>200	6.7	35,200 0 - 109,700	0.31	No Range
MEK	0.05 0.02 - 0.07	Barium (100.0)	0.7 0 - 1.6					
Xylenes	0.18 0 - 0.68	Cadmium (1.0)	0.1 0 - 0.4					
1,1,2-Trichloroethane	0.009 0 - 0.019	Lead (5.0)	1.1 0 - 2.8					
Ethylbenzene	0.020 0 - 0.075	Silver (5.0)	0.09 0 - 0.20					
Tetrachloroethylene	0.18 0 - 0.73							
Toluene	0.1 0 - 0.4							

Discussion: Samples R202-1 and R202-3 were taken from the liquid and solid phases of the same drum. The data were percent averaged based on the column layering recorded in the sampling log. The same is true for the following sample pair: R202-2(1D) and R202-4(3D).

Sample R202-2(1D) and R202-4(3D) are duplicates of samples R202-1 and R202-3. The weighted average results [R202-2(1D) & 4(3D)] and [R202-1 & R202-3] were further averaged to produce one statistically significant result.

There was a total of two (2) statistically significant results for this waste stream: R202-1, 3, 2(1D), & 4(3D); and R202-5.

(discussion continues)

4456

Sampling Plan: 202
Mat. Type: Contaminated Burnables
Revised: 09-06-91

Statistical Results

ATTACHMENT B
Part II

Discussion continued: Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte, with the following exceptions:

Analyte	Coef. of Var.
Xylenes	1.32
Tetrachloroethene	1.39
Toluene	1.37

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456 -

SOILS WITH ORGANICS

Sampling Plan

1064

Mat. Type:

Contaminated Soil, Rocks, Sand, Bricks and Ceramics

Revised:

4-1-92

Review of Analyses

ATTACHMENT B

Part I

Rev. *RA*
RA

Lab No.	Cust. No.	Matrix	Lo/Drum No.	Organic Constituent(s)	Total Metal (ppm)	Metal Constituent(s)	TCLP (ppm)	Radiological Constituent(s)	Other Analytes	Rel #/ Lab	Date Met 7
920210-004	1004-1	1 Pk(Solid)	W060-710-P011-0340 #3	Acetone MIBK Toluene Xylenes	<1.334 <1.334 <0.667 1.74	Barium Lead	1.24 <0.2	Total U U-235	None Requested	1194 TCT	Y Hg Y VOA
920210-006	1004-2(D1)	1 Pk(Solid)	W060-710-P011-0340 #3	Acetone MIBK Toluene Xylenes	<0.0127 0.09 0.208 0.00789	Barium Lead	1.71 0.237	Total U U-235	None Requested	1194 TCT	Y Hg Y VOA
920211-223	1004-3	1 Pk(Solid)	W060-710-P011-0340 #1	Acetone MIBK Toluene Xylenes	1.43 <1.43 <0.71 0.197	Barium Lead	2.21 0.231	Total U U-235	None Requested	1194 TCT	Y Hg Y VOA
920211-224	1004-4	1 Pk(Solid)	W060-710-P011-0340 #5	Acetone MIBK Toluene Xylenes	18.1 <1.6 <0.8 2.7	Barium Lead	1.78 0.302	Total U U-235	None Requested	1194 TCT	Y Hg Y VOA

- 4456 -

Statistical Calculations

Material Type: Contaminated Soil, Rocks, Sand, Bricks and Ceramics
 Revised: 4-1-92

Attachment B
 Part II

Rev. *03/97*
03/97

Total VOA

Constituents:	Mean	STD	CI	Range	COV
Acetone	6.6	9.95507	10.83990	0	17.5
MIBK	0.6	0.22290	0.24272	0.4	0.9
Toluene	0.3	0.06561	0.07144	0.3	0.4
Xylenes	1.3	1.29472	1.40979	0	2.7

TCLP Metal

Constituents:	Reg. Level	Mean	STD	CI	Range	COV
Barium	100.0	1.82	0.36927	0.40209	1.42	2.22
Lead	5.0	0.2	0.06680	0.07273	0.2	0.3

Radialogical

Constituents:	Mean	STD	CI	Range	COV
Total U	229	110.4	120.2	108	349
U-235	0.76	0.01258	0.01370	0.75	0.78

Other Analyzes:

pH Not requested

Flash Point Not requested

PFLT Pass

Discussion:

Sample R1064-2(D1) is a duplicate of sample R1064-1. The data were arithmetically averaged to produce one statistically significant result.

There was a total of three (3) statistically significant results for this waste stream: R1064-1 & 2(D1); R1064-3; and R1064-4.

Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte, with the following exceptions:

Analyte	Coef. of Var.
Acetone	1.5

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

SOILS WITH INORGANICS

Sampling Plan: 302
 Mat. Type: Contaminated Soil, Rock, Sand, & Brick
 Revised: 10-04-91

Review of Analyses

ATTACHMENT B
 Part I

Rev. *JD*

74456

Lab No.	Cust. No.	Matrix	Lot/Drum No.	Total Organics	TCLP Metals (ppm)	Flash Point (ppm)	pH	Tot U (ppm)	U	Rel #	Date Met 7
910816-027	R302-4	1 Ph(Solid)	8071-100-1011-0888	Acetone Toluene	Arsenic Barium Cadmium Chromium Lead Silver	<0.2 0.551 <0.1 <0.5 <0.2 <0.05	Not Req	2,984	0.43	756	Y Hg Y VOA
910816-028	R302-6(D-4)	1 Ph(Solid)	8071-100-1011-E368	Acetone Toluene	Arsenic Barium Cadmium Chromium Lead Silver	<0.2 0.687 <0.1 <0.5 0.276 <0.05	Not Req	2,087	0.68	756	Y Hg Y VOA
910819-073	R302-6	1 Ph(Solid)	8071-100-1011-F368	Acetone Toluene	Arsenic Barium Cadmium Chromium Lead Silver	<0.02 1.52 0.01 0.18 1.39 <0.01	Not Req	4,908	0.26	760	Y Hg Y VOA
910815-088	R302-TB			Missed Hold Time	All Analytes Below Detection Limits		Not Req	Not Req	Not Req	753	Y Hg N VOA

Sampling Plan: 302
 Mat. Type: Contaminated Soil, Rock, Sand, & Brick
 Revised: 10-31-91

Statistical Results

ATTACHMENT B Part II

Calc: 
 Rev: 

Mean and Confidence Interval	Total Organics		TCLP Metals (Regulatory Level)		Flash Point	pH	Tot U
	(ppm)	(ppm)	(Regulatory Level)	(ppm)	(ppm)		(ppm)
Acetone	1.4	0.2 - 2.6	Arsenic (5.0)	0.1	Not Req	Not Req	5.071
Toluene	0.14	0.07 - 0.21	Barium (100.0)	1.3			2,038 - 8,109
			Cadmium (1.0)	0.03			0.37 - 0.67
			Chromium (5.0)	0.2 - 0.4			
			Lead (5.0)	3.2			
			Silver (5.0)	0.04			

Discussion: Sample R302-5(D4) is a duplicate of sample R302-4. The data were arithmetically averaged to produce one statistically significant result. There was a total of five (5) statistically significant results for this waste stream: R302-4 & R302-5(D4); R302-1; R302-2; R302-3; and R302-6.

Mathematical comparison of the sample means and standard deviations show the data to be normally distributed for each analyte, with the following exceptions:

Analyte	Coef. of Var.
Arsenic	1.56
Lead	1.87

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**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456-

LAB PACKS WITH ORGANICS

MATERIAL EVALUATION FORM

MEF REV. NO.: _____

4/94

SECTION 1 - MATERIAL GENERATOR

1. FMPC SRC: 733		MTC: 233 013		2. PLANT AND/OR BUILDING NO.: Laboratory		3. PROCESS AREA: Room W-4456	
EQUIPMENT NAME(S): Chemicals in storage				5. MEF NO. DATE: 5-1-91		6. MEF REV. DATE: _____	
APPROXIMATE NET WEIGHT OF FULL CONTAINER? <input checked="" type="checkbox"/> <100 lbs. <input type="checkbox"/> 100 to 1000 lbs. <input type="checkbox"/> >1000 lbs.				8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		7. MATERIAL PHYSICAL STATE: <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> Wet Solid (Sludge) <input type="checkbox"/> Dry Solid	
9. IS MATERIAL A WASTE? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		10. COMMON NAMES: d-ethoxyethanol, MIBK, d-methoxyethanol, 1,4-dioxane, ethyl ether, THF, Styrene, 2-butoxy ethanol			11. CHEMICAL NAMES: (see attached list Drum #3)		
12. COMMON/CHEMICAL NAME SOURCE: <input type="checkbox"/> Process Information <input type="checkbox"/> MSDS <input checked="" type="checkbox"/> Container Label <input type="checkbox"/> FMPC Lot Code		OTHER: Chemical packing list, Drum #3			13. SIMILAR MATERIAL NAME: _____		14. SIMILAR MATERIAL LOT CODE(S): _____
15. SUBSTANCES SUSPECTED:							
<input type="checkbox"/> Aerosols	<input type="checkbox"/> Cresol	<input type="checkbox"/> Endrine	<input type="checkbox"/> Methylene Chloride	<input type="checkbox"/> TBP/Kerosene	<input type="checkbox"/> Heptachlor	<input type="checkbox"/> Motor/Engine Oil	<input type="checkbox"/> Tetrachloroethylene
<input type="checkbox"/> Arsenic	<input type="checkbox"/> m-Cresol	<input type="checkbox"/> Hexachlorobenzene	<input type="checkbox"/> Nitrobenzene	<input type="checkbox"/> 1,1,1-Trichloroethane	<input type="checkbox"/> Hexachloroethane	<input type="checkbox"/> Other Organics	<input type="checkbox"/> 2,4,5-TP (Silvex)
<input type="checkbox"/> Barium	<input type="checkbox"/> o-Cresol	<input type="checkbox"/> Hexachloro-1,3-butadiene	<input type="checkbox"/> Paint Stripper	<input type="checkbox"/> 2,4,5-Trichlorophenol	<input type="checkbox"/> Benzene	<input type="checkbox"/> Paint Thinner/Mineral Spirits	<input type="checkbox"/> 2,4,6-Trichlorophenol
<input type="checkbox"/> Cadmium	<input type="checkbox"/> p-Cresol	<input type="checkbox"/> Hydraulic Oil	<input type="checkbox"/> Pentachlorophenol	<input type="checkbox"/> Toxaphene	<input type="checkbox"/> Carbon Tetrachloride	<input type="checkbox"/> Degreaser	<input type="checkbox"/> Trichloroethylene
<input type="checkbox"/> Chloroform	<input type="checkbox"/> 1,4-Dichlorobenzene	<input type="checkbox"/> Ink	<input type="checkbox"/> Perchloroethylene	<input type="checkbox"/> Unknown	<input type="checkbox"/> Chlorobenzene	<input type="checkbox"/> 1,2-Dichloroethane	<input type="checkbox"/> Vinyl Chloride
<input type="checkbox"/> Chromium	<input type="checkbox"/> 1,1-Dichloroethylene	<input type="checkbox"/> Lead	<input type="checkbox"/> Pyridine	<input type="checkbox"/> Xylene	<input type="checkbox"/> 2,4-D	<input type="checkbox"/> Dinitrotoluene	<input type="checkbox"/> Oil
<input type="checkbox"/> Coolants	<input type="checkbox"/> Enamel	<input type="checkbox"/> Mercury	<input type="checkbox"/> Selenium		<input type="checkbox"/> Methoxychlor	<input type="checkbox"/> Silver	
		<input type="checkbox"/> Methyl ethyl ketone	<input type="checkbox"/> Synthetic oil				
16. REASON FOR SUSPECTING ALL SUBSTANCES AND QUANTITY: Chemicals labpacked in vermiculite							
SOURCE FOR REASON AND QUANTITY: (Attach MSDS if Available)							
<input type="checkbox"/> Personnel Interviews	<input type="checkbox"/> AEDO Log	<input checked="" type="checkbox"/> Container Label	<input type="checkbox"/> Prior Evaluation of Similar Material	What Material: _____			
<input type="checkbox"/> Historical Records	<input type="checkbox"/> Physical Evidence	<input type="checkbox"/> Sump Report		SRC: _____ MTC: _____			
<input type="checkbox"/> FMPC Lot Code	<input type="checkbox"/> Process Information	<input type="checkbox"/> Spill Database					
17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. NUMBER OF PHASES: 1 Labpack		19. pH (IF KNOWN): (Attach Lab Results) 4-10		20. FLASH POINT (IF KNOWN): (Attach Lab Results) < 140°F	
21. HAS A PAINT FILTER TEST BEEN COMPLETED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO Chemicals (liquid) packed in vermiculite							
22. IS IT REACTIVE? EXPLAIN: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO							
23. IS IT IGNITABLE? EXPLAIN: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Flash pt. < 140							
24. HEALTH AND SAFETY CONCERNS: Avoid inhalation of vapors and ignition sources							
25. OTHER INFORMATION: (Example: Is the Material a Product or Waste?) Chemicals labpacked to be disposed							
26. ADDITIONAL SOURCES OF INFORMATION:							
27. PRIMARY CONTACT INDIVIDUAL: Robert J. Hellmann		EXTENSION: 6551		DATE COMPLETED: 5-1-91			

(Continued on Reverse)

**FMPC
MATERIAL EVALUATION FORM**
(Continued)

MEF NO.: 829
MEF REV. NO.: 4456

SECTION 2 - SOLID WASTE COMPLIANCE

U117, U213, U108

1. MATERIAL WASTE? YES NO
 2. IS IT EXCLUDED UNDER 261.4(a)? YES NO
 3. IS IT EXCLUDED UNDER 261.4 (b)? YES NO
 4. DOES IT CONTAIN A LISTED WASTE AS PER 261 SUBPART D? k l p u U117, U213, U108 not listed

5. DOES IT EXHIBIT ANY CHARACTERISTICS AS PER 261 SUBPART C? YES NO
 EXPLAIN: Flash point is < 140°F for all material (D001)
 6. IS IT A RO HAZARDOUS SUBSTANCE? YES NO
 POUNDS: Material in Cont. not to exceed 100 lbs.

7. CLASSIFICATION AS A WASTE: Needs Further Action (ie sampling)
 RCRA Hazardous Waste
 Source Exempt
 Non-RCRA Waste
 Radioactive
 EXPLAIN: U117, U213, U108, U359, U161, D001
 8. PRIMARY BASIS FOR CLASSIFICATION: Generator Information Prior material evaluation
 WHAT MATERIAL? _____
 LOT NUMBER: _____
 9. IS IT SUBJECT TO LAND BAN RESTRICTIONS? NO YES Effective Date: 8-8-91

10. OTHER INFORMATION SOURCES USED: "Hawley's Condensed Chemical Dictionary"

11. PRIMARY CONTACT INDIVIDUAL: Larry Honigford EXTENSION: 6910 DATE COMPLETED: 5-1-91

SECTION 3 - WASTE TECHNOLOGY

1. IS SAMPLING REQUIRED? YES NO
 2. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? YES NO
 DATE: _____
 3. INFORMATION ACTION COMPLETION DATE: _____

4. RECOMMENDED STORAGE CONTAINER MATERIAL: Carbon Steel Stainless Steel Polyethylene
 Other: Lab pack
 5. APPLICABLE REACTIVITY GROUP CODES: A B C D
 E F G H

6. OTHER INFORMATION SOURCES USED: _____

7. PRIMARY CONTACT INDIVIDUAL: Deff EXTENSION: 6148 DATE COMPLETED: 5-1-91

SECTION 4 - SWC (SUMMARY SHEET)

1. R D.O.T. SHIPPING NAME: Waste Flammable Liquid, n.o.s., (methyl isobutyl ketone)

2. D.O.T. HAZARD CLASS: Flammable Liquid
 3. REQUIRED LABELS: Flammable Liquid

4. D.O.T. IDENTIFICATION NO.: _____ SUFFIX: 1993
 UN NA

5. EPA WASTE NO.: U117, U213, U108, U359, U161, D001
 6. APPLICABLE REACTIVITY GROUP CODES: (COPY FROM SECTION 3, ITEM 5) B
 7. FMPC SRC AND MTC SRC: 733 MTC: 013
 (COPY FROM SECTION 1, ITEM 1)

8. IS A REVISION TO MEF REQUIRED? YES NO

9. DISTRIBUTION: MATERIAL GENERATOR: _____ DATE: _____
 WASTE TECHNOLOGY: _____ DATE: _____
 MC&A: _____ DATE: _____
 WASTE MANAGEMENT: _____ DATE: _____

10. PRIMARY CONTACT INDIVIDUAL: Larry Honigford EXTENSION: 6910 DATE COMPLETED: 5-1-91

CHEMICAL NAME: ETHYL ETHER ✓ U117, 0001
 Container size: 28m ml gm oz lb
 Container type: Metal Glass Plastic
 Manufacturer: CHEM SERVICE
 Lot Number: 4465B
 Expiration date: 6.92
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 5 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: TETRAHYDROFURAN ✓ U213, 0001
 Container size: 10g ml gm oz lb
 Container type: Metal Glass Plastic
 Manufacturer: CHEM SERVICES
 Lot Number: 45-149B
 Expiration date: 8.92
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: 2-BUTOXY ETHANOL ✓ 0001
 Container size: 10g ml gm oz lb
 Container type: Metal Glass Plastic ~140°F
 Manufacturer: CHEM SERVICE
 Lot Number: 45-43D
 Expiration date: 11.91
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: STYRENE ✓ 0001
 Container size: 5gm ml gm oz lb
 Container type: Metal Glass Plastic
 Manufacturer: CHEM SERVICE
 Lot Number: 41-63B
 Expiration date: 12.92
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 5 cc
 Final Test: 0 ppm peroxide concentration

Questions concerning ETSC Remedial Services procedures or actions with these containers should be directed to Rob Pippenger, Vice President, Operations, ETSC Remedial Services, Inc., P.O. Box 254, Dixon, Missouri 65459. Telephone: (314) 759-7195, Facsimile: (314) 759-2700.

 (Response Team Leader's signature) (date of service)

CHEMICAL NAME: 2-ETHOXY ETHANOL U359, D001
 Container size: 10 gm ml gm oz lb
 Container type: Metal ~~glass~~ Plastic
 Manufacturer: CHEM SERVICES 120°F
 Lot Number: 44-115A
 Expiration date: 9.93
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: METHYL ISOBUTYL KETONE -U161, D001
 Container size: 10 gm ml gm oz lb
 Container type: Metal ~~glass~~ Plastic
 Manufacturer: CHEM SERVICES
 Lot Number: 45-77A
 Expiration date: 6.93
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: 2-METHOXY ETHANOL D001
 Container size: 10 gm ml gm oz lb
 Container type: Metal ~~glass~~ Plastic
 Manufacturer: CHEM SERVICE
 Lot Number: 41114C
 Expiration date: 2.93
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

CHEMICAL NAME: 1,4 DIOXANE ✓ U108, D001
 Container size: 2 gm ml gm oz lb
 Container type: Metal ~~glass~~ Plastic
 Manufacturer: CHEM SERVICE
 Lot Number: 40-26B
 Expiration date: 12.91
 Initial Test: 0 parts per million (ppm)
 Total ferrous ammonium sulfate added: 0 cc
 Total hydroquinone added as inhibitor: 2 cc
 Final Test: 0 ppm peroxide concentration

Questions concerning ETSC Remedial Services procedures or actions with these containers should be directed to Rob Pippenger, Vice President, Operations, ETSC Remedial Services, Inc., P.O. Box 254, Dixon, Missouri 65459. Telephone: (314) 759-7195, Facsimile: (314) 759-2700.

 (Response Team Leader's signature)

 (date of service)

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

REACTIVE METALS

CHROMASCO

CHROMASCO LIMITED, HALEY, ONTARIO, CANADA K0J 1Y0

Non-Ferrous Group
Telephone (613) 432-3621

- 4456 -
10002
Product Name
MAGNESIUM

MATERIAL SAFETY DATA GUIDANCE SHEET

Chromasco Limited assumes no responsibility in connection with the information reflected in this sheet, although all the information is developed from reliable sources and is based on the best opinions and authoritative guidance available.

PRODUCT IDENTIFICATION & SYNONYMS

GROUP II ALKALI METAL

MAGNESIUM OR MAGNESIUM ALLOY INGOTS. BILLETS. GRANULES. EXTRUSIONS

INGREDIENTS

The following data are provided for medical and industrial hygiene guidelines.

ELEMENT	%	ELEMENT	%	OTHER COMPOUNDS	%
Aluminum	.007	Nickel	.001		
Barium		Nitrogen			
Boron	2 ppm	Oxygen			
Cadmium	2 ppm	Rare Earths	.5 ppm		
Calcium		Silicon	.006		
Chlorine		Silver	5 ppm		
Chromium		Strontium			
Copper	.001	Titanium			
Fluorine		Zinc			
Iron	.002	Zirconium			
Lead	.001	Others	.01		
Lithium	2 ppm				
Magnesium	99.95				
Manganese	.004	TOTAL	100		
IN CASE OF EMERGENCY				TOTAL	nil

P. J. HENNEY (613) 432-7630

A. FROATS (613) 432-2003

V. P. HENNEY (613) 735-1347

PHYSICAL DATA

Boiling Point (760 MM Hg)	1097°C	Specific Gravity (H ₂ O = 1)	1.74
Vapour Pressure (MM Hg)		percent. volatile by volume	
Vapour Density (air = 1)		Evaporation Rate	
Solubility in water & by wt.		Melting Point	649°C
Appearance & Odour - SILVERY WHITE - ODOURLESS			

00 136

FLASH POINT (METHOD USED)

EXTINGUISHING MEDIA - inert Atmosphere - Graphite - Chlorides of Na. K. Mg

HAZARDOUS COMBUSTION PRODUCTS - High Temperature. Dense Smoke

- 4456 -

SPECIAL FIRE FIGHTING PROCEDURES - Eliminate Oxygen Sources

USUAL FIRE & EXPLOSION HAZARDS - Avoid Water and Moist Contacts

HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE - Inhalation - Acute effects

CHRONIC EFFECTS - Personal sensitivity

SKIN CONTACT - Dermatitis irritant

SKIN ABSORPTION - No

EYE CONTACT

INGESTION

EMERGENCY AND FIRST AID PROCEDURES

EYE - Washing and Cleansing - Burn Procedures

SKIN - Washing and Cleansing - Burn Procedures

INHALATION

INGESTION

REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY - Moist Atmosphere - Heat

INCOMPATIBILITY - Moisture. Acids. Galvanic Systems

HAZARDOUS DECOMPOSITION PRODUCTS - Finely divided materials or dusts and liquid metal should have oxygen and nitrogen sources eliminated

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED AS SPILLED - Dry collection

WASTE DISPOSAL METHOD - May be ignited by remote fuse ignition

SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS - Maintain dry atmosphere

RESPIRATORY PROTECTION (Specify Type) - Dust filter

EYE PROTECTION - Protect from dust and heat

PROTECTIVE GLOVES - Protect from dust and heat

OTHER CLOTHING & EQUIPMENT - Protect from dust and heat

SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS - Store finely divided forms in sealed dry containers away from combustible materials. oxygen. chlorine. nitrogen and sulphur

OTHER HANDLING & STORAGE PRECAUTIONS - Maintain cover on finely divided forms

ORIGINAL COPY BY

Prepared by ALFREDATS

Chief Metallurgist

Approved by P. MCCANN

Manager

G. H. BLOUIN

V. P. Operations

Date OCT 2 1966

Date

Date

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456

COMPRESSED GASES

ILLINOIS BRONZE PAINT COMPANY
300 EAST MAIN STREET
LAKE ZURICH, IL 60047

Telephone: (708) 438-8201
8 a.m. - 8 p.m. (Central)
For Emergency Medical
Information:
1-800-228-6639

HAZARD RATING:
4 EXTREME
3 HIGH
2 MODERATE
1 SLIGHT
0 INSIGNIFICANT



Product Class: AEROSOL SPRAY PAINT Product Name: WEEKEND (ALL COLORS) Product No. 245-370

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT (CAS Reg. No.)	APPROX. WT. %	OCCUPATIONAL EXPOSURE LIMITS		VAPOR PRESSURE @ 88°F (MM Hg)
		TLV	PEL	
BUTYL CELLOSOLVE 111-76-2	< 1	25ppm	50ppm	0.9mm
ISOPROPANOL 67-63-0	< 1	400ppm	400ppm	33mm
MINERAL SPIRITS 8032-32-4	0 - 4	100ppm	500ppm	4mm
TOLUOL 108-88-3	11 - 43	100ppm	100ppm	17mm
VM&P NAPHTHA 64742-89-8	0 - 14	300ppm	500ppm	17mm
ACETONE 67-64-1	20 - 27	750ppm	750ppm	186mm
PROPELLANT (PROPANE ISOBUTANE) 68476-86-8	30 - 35	N/A	N/A	4400mm
INERT RESINS & PIGMENTS N/A	BALANCE	N/A	N/A	N/A

SECTION III - PHYSICAL DATA

BOILING RANGE 104 - 390°F VAPOR DENSITY: X HEAVIER LIGHTER THAN AIR
EVAPORATION RATE: FASTER SLOWER THAN ETHER % VOLATILE VOLUME: 90% WT./GAL: N/A
PROPELLANT SOLVENT

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION OSHA FLAMMABLE LIQUID - CLASS IA FLASH POINT -400 (-40F) LEL 0.8%
DOT FLAMMABLE LIQUID AUTO IGNITION TEMPERATURE

EXTINGUISHING MEDIA FOAM ALCOHOL FOAM CO₂ DRY CHEMICAL WATER FOAM OTHER

UNUSUAL FIRE AND EXPLOSION HAZARDS
Cans will rupture from internal pressure at about 190 F and discharge flammable contents. When heated to decomposition, toxic fumes are formed.

SPECIAL FIREFIGHTING PROCEDURES
Full protective equipment, including self-contained breathing apparatus, is needed to protect firefighters from any hazardous combustion products.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

INHALATION: Acute (short-term) overexposure can lead to central nervous system depression producing such effects as headaches, dizziness, nausea, and loss of consciousness. Chronic (long-term): Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Overexposure to Xylol and Toluene in lab animals has shown liver abnormalities, kidney, lung, spleen and eye damage as well as anemia. Effects in humans have shown liver and cardiac abnormalities. Overexposure to Ethylene Glycol Butyl Ether has shown blood abnormalities in lab animals.

SKIN: Prolonged contact can cause softening and drying of the skin which may result in skin irritation and dermatitis.

EYES: Acute exposures may result in slight eye irritation. Chronic exposures may be more irritating.

Section V - HEALTH HAZARD DATA

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See Section II

Effects of Overexposure: Irritation of the respiratory tract or acute nervous system depression characterized by headache, dizziness, staggering gait, confusion, unconsciousness or coma. Skin or eye contact: Primary irritant

First Aid Procedures: Fumes: Remove from exposure. Get fresh air. (Spray eyes): Flush immediately with large quantities of running water for at least 5 minutes. Take to a physician. Spray (skin): Wipe off with towel. Remainder with mineral spirits, turpentine or lacquer thinner, in case of lacquer. Wash with soap and water. Remove contaminated clothing.

Section VI - REACTIVITY DATA

Stability: UNSTABLE STABLE

Decomposition Products: Hydrogen Chloride, Carbon Monoxide, Phosgene.

Polymerization: MAY OCCUR WILL NOT OCCUR

Section VII - SPILL OR LEAK PROCEDURES

First Aid: Remove all sources of ignition (flames, surfaces and electrical, static or frictional sparks). Avoid breathing vapors. Remove with inert absorbent.

Disposal Method: Dispose of in accordance with local State and Federal regulations. Do not incinerate closed containers.

Section VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: For casual use none required, provided ventilation is available as outlined below.

Ventilation: Provide general dilution or local exhaust ventilation in volume and pattern to keep TLV of most hazardous ingredient in Section II below acceptable limit, LEL in Section IV below stated limit, and to remove decomposition products during welding or flame cutting on surfaces coated with this product.

Protective Gloves: - None.
Special Protection: - No special protection required.

Section IX - SPECIAL PRECAUTIONS

Precautions: Do not store above 120°F. Store large quantities in buildings designed and protected for storage of NFPA Class 1A flammable liquids.

Other Precautions: Do not spray in eyes. Do not puncture or incinerate cans. Do not stick pins or any other sharp objects into opening on top of can. Do not take internally. Do not flame cut, braze or weld without U.S. Bureau of Mines approved respirator or appropriate ventilation.

SECTION I

(PAGE

Manufacturers Name: SPRAYON PRODUCTS
 Address: 26300 FARGO AVE

Emergency Phone No: 216/292-740

City, State, and Zip Code: BEDFORD HTS. OH 44146

Code Identification: 01800
 Rev. Date: 05/01/89

Product Class (AEROSOL) COATINGS
 Trade Name: 01800 OSHA GLOSS WHITE

Date: 03/08/9
 Lab No.: 48425

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	PEL FPM	TLV FPM	TLV MG/M3	LEL	CAS NUMB
1 TOLUENE ✓	10	200	200	375.00	1.2	00108-88-
2 ETHYL BENZENE ✓	15	100	100	425.00	1.2	00100-41-
3 XYLENE ✓	15	100	100	435.00	1.1	01330-20-
TITANIUM DIOXIDE AS A DUST	11.750	15	N/E	15.00	NONE	13463-67-
4 ACETONE ✓	20	1000	1000	2400.00	2.6	00067-64-
ETHYL -ETHOXYPROPIONATE	15	N/E	50	N/E	1.0	00763-69-
A ISOBUTANE	15	1000	1000	1900.00	1.8	00075-28-
A PROPANE	15	1000	1000	1900.00	2.3	00074-98-

0 = SARA TITLE III See Below *
 AEROSOL - CONTENTS UNDER PRESSURE 55 +/- 5 PSIG

Carcinogenicity: THIS PRODUCT IS NOT CONSIDERED TO BE A CARCINOGEN
 BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON
 CANCER, THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OR NATIONAL
 INSTITUTE FOR OCCUPATIONAL SAFETY & HEALTH.

SARA: These ingredients are subject to SARA TITLE III Section 313 reporting for
 Superfund Amendments and Reauthorization Act of 1986 and CFR 40 part 372.

SARA: Aerosol products are subject to SARA TITLE III Section 312 reporting for
 Superfund Amendments and Reauthorization Act of 1986 and CFR 40 part 372.

Pursuant to Proposition 65: CERTAIN RAW MATERIALS USED IN MAKING THIS
 PRODUCT MAY CONTAIN SMALL AMOUNTS OF MATERIALS AS IMPURITIES WHICH ARE
 REGULATED BY PROPOSITION 65. SEE SECTION IX.

SECTION III - PHYSICAL DATA

Boiling Range: PROPELLANT BELOW 0.0 F Vapor Density: HEAVIER THAN AIR

EVAPORATION RATE FASTER THAN ETHER
 *PROPELLANTS Percent Volatile By Weight: 74 Weight Per Gallon: NOT APPLICABLE

Specific Gravity: NOT APPLICABLE Appearance & Color: COATINGS

NOT APPLICABLE Vapor Pressure: NOT APPLICABLE

NOT APPLICABLE Melting Point: NOT APPLICABLE

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT Category: CONSUMER COMMODITY Flash Point: PROPELLANT BELOW 20 F LEL: SEE ORM-D (T.C.) SECTION II

Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

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Special Fire Fighting Procedures: DO NOT SPRAY NEAR OPEN FLAME. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR OTHER HEAT MAY CAUSE BURSTING.

Special Fire Fighting Procedures: WATER MAY BE INEFFECTIVE - WATER MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL.

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value: (SEE SECTION II HAZARDOUS INGREDIENTS)

Effects of Overexposure: IN A CONFINED AREA VAPORS IN HIGH CONCENTRATION ARE ANESTHETIC. IRRITANT TO SKIN AND UPPER RESPIRATORY SYSTEM. OVER-EXPOSURE MAY RESULT IN LIGHT-HEADEDNESS, STAGGERING GAIT, GIDDINESS AND POSSIBLE NAUSEA. CONTAINS PETROLEUM DISTILLATES - HARMFUL OR FATAL IF SWALLOWED

Chronic: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE, ALSO KIDNEY AND LIVER DAMAGE.

Medical Conditions Prone to Aggravation by Exposure: NONE ESTABLISHED.

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES

Emergency and First Aid Procedures: Breathing: REMOVE PATIENT TO FRESH AIR. Eyes: FLUSH WITH WATER FOR AT LEAST 15 MINUTES. Skin: WASH WITH SOAP AND WATER. Swallowing: CALL PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.

SECTION VI - REACTIVITY DATA

Stability: STABLE Conditions to Avoid: DO NOT STORE ABOVE 120 F

Incompatibility (NONE)

Hazardous Decomposition Products By open flame: CARBON MONOXIDE, CARBON DIOXIDE

Hazardous Polymerization: WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled: REMOVE ALL SOURCES OF IGNITION, VENTILATE AVOID BREATHING VAPORS (SEE SECTION X) AND REMOVE WITH INERT ABSORBENT

Waste disposal method: DO NOT INCINERATE - DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS REGARDING POLLUTION

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: AVOID BREATHING OF VAPOR OR SPRAY MIST (SEE SECTION X)

Ventilation: PROVIDE LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF ALL HAZARDOUS INGREDIENTS IN SECTION II BELOW ACCEPTABLE LIMIT, AND LEL IN SECTION II BELOW STATED LIMIT.

Protective Gloves: RECOMMENDED FOR PROLONGED OR REPEATED CONTACT.

Eye Protection: FOR PROLONGED USE IN CLOSE QUARTERS RECOMMEND SAFETY GLASSES WITH UNPERFORATED SIDESHIELDS.

Other Protective Equipment:

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing:

DO NOT STORE ABOVE 120 F. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR HEAT MAY CAUSE BURSTING.

Other Precautions:

- KEEP AWAY FROM CHILDREN.
DO NOT PUNCTURE OR INCINERATE.
DO NOT SPRAY NEAR FIRE OR OPEN FLAME.

Pursuant to Proposition 65:

PROPOSITION 65 APPLIES TO A LIST OF CHEMICALS NAMED BY THE GOVERNOR OF CALIFORNIA AS CARCINOGENS OR REPRODUCTIVE TOXINS. WARNING REQUIREMENTS FOR SPECIFIC CHEMICALS TAKE EFFECT ONE YEAR AFTER THEY ARE ADDED TO THE GOVERNOR'S LIST. OTHER CHEMICALS ALREADY ADDED TO THE GOVERNOR'S LIST WILL BE REGULATED LATER UNDER PROPOSITION 65.

SECTION X HAZARDOUS MATERIAL IDENTIFICATION

COMMUNICATION OF PHYSICAL PROPERTY, HEALTH, AND SAFETY INFORMATION IS A KEY FACTOR IN OUR PRODUCT SAFETY PROGRAM. WITH THIS INFORMATION YOU CAN BETTER FULFILL YOUR OBLIGATION TO EDUCATE EXPOSED PERSONNEL IN THE PROPER HANDLING TECHNIQUES REQUIRED TO MAINTAIN SAFETY IN THE WORKPLACE. LISTED IN THIS SECTION IS NPCA-HMIS CLASSIFICATION FOR THIS PRODUCT.

HMIS CLASSIFICATION CODE

Table with 2 columns: Hazard Type and Code. Rows include Health (2), Flammability (4), Reactivity (1), and Personal protection (D).

THE ABOVE INFORMATION PERTAINS TO THIS PRODUCT AS CURRENTLY FORMULATED, AND IS BASED ON THE INFORMATION AVAILABLE AT THIS TIME. ADDITION OF REDUCERS OR OTHER ADDITIVES TO THIS PRODUCT MAY SUBSTANTIALLY ALTER THE COMPOSITION AND HAZARDS OF THE PRODUCT SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.

SECTION I

Manufacturers Name: SPRAYON PRODUCTS
Street Address: 26300 FARGO AVE

Emergency Phone No: 216/292-7400

City, State, and Zip Code: BEDFORD HTS., OH 44146

Code Identification: 03720 F
Rev. Date: 02/15/89

Product Class (AEROSOL) COATING
Trade Name: 03720 FLAT WHITE

Date: 06/12/89
Lab No.: 45938

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	PEL PPM	TLV PPM	TLV MG/M3	LEL	CAS NUMBER
TOLUENE	20	200	200	375.00	1.2	00108-88-3
XYLENE	15	100	100	435.00	1.1	01330-20-7
METHYL ETHYL KETOXIME	.090	N/E	N/E	N/E	NONE	00096-29-7
BENTONITE CLAY	.090	N/E	N/E	N/E	NONE	01302-78-9
MAGNESIUM SILICATE AS A DUST	5.310	N/E	N/E	2.00	NONE	14807-96-6
TITANIUM DIOXIDE AS A DUST	7.301	15	N/E	15.00	NONE	13463-67-7
IRON OXIDE	.004	N/E	N/E	10.00	NONE	01309-37-1
LECITHINS	.086	N/E	N/E	N/E	NONE	08002-43-5
ACETONE	15	1000	1000	2400.00	2.6	00067-64-1
AROMATIC PETROLEUM DISTILLATE	<5	100	100	N/E	1.0	64742-95-6
A ISOBUTANE	15	1000	1000	1800.00	1.8	00075-28-5
A PROPANE	15	1000	1000	1800.00	2.3	00074-98-6

* = SARA TITLE III See Below

AEROSOL - CONTENTS UNDER PRESSURE

55 +/- 5 PSIG

Carcinogenicity: THIS PRODUCT IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OR NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY & HEALTH.

SARA: These ingredients are subject to SARA TITLE III Section 313 reporting for superfund amendments and reauthorization act of 1986 and CFR part 372.

Pursuant to Proposition 65: CERTAIN RAW MATERIALS USED IN MAKING THIS PRODUCT MAY CONTAIN SMALL AMOUNTS OF MATERIALS AS IMPURITIES WHICH ARE REGULATED BY PROPOSITION 65. SEE SECTION IX.

SECTION III - PHYSICAL DATA

Boiling Range: PROPELLANT BELOW 0.0 F Vapor Density: HEAVIER THAN AIR

EVAPORATION RATE FASTER THAN ETHER	Percent Volatile	Weight Per
*PROPELLANTS	By Weight: 77	Gallon: NOT APPLICABLE
Specific Gravity: NOT APPLICABLE	Appearance & Odor: COATING	
PH: NOT APPLICABLE	Vapor Pressure: NOT APPLICABLE	
Solubility in Water: NOT APPLICABLE	Melting Point: NOT APPLICABLE	

(CONTINUED)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

DOT Category: CONSUMER COMMODITY Flash Point: PROPELLANT BELOW 20 F LEL: SEE
ORM-D (T. O. C.) SECTION II
Extinguishing Media: CARBON DIOXIDE, DRY CHEMICAL OR FOAM.

- 4456 -

Unusual Fire and Explosion Hazards: DO NOT SPRAY NEAR OPEN FLAME. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR OTHER HEAT MAY CAUSE BURSTING.

Special Fire Fighting Procedures: WATER MAY BE INEFFECTIVE - WATER MAY BE USED TO KEEP FIRE EXPOSED CONTAINERS COOL.

SECTION V - HEALTH HAZARD DATA

Threshold Limit Value: (SEE SECTION II HAZARDOUS INGREDIENTS)

Effects of Overexposure: IN A CONFINED AREA VAPORS IN HIGH CONCENTRATION ARE ANESTHETIC. IRRITANT TO SKIN AND UPPER RESPIRATORY SYSTEM. OVER-EXPOSURE MAY RESULT IN LIGHT-HEADEDNESS, STAGGERING GAIT, GIDDINESS AND POSSIBLE NAUSEA. HARMFUL OR FATAL IF SWALLOWED

Chronic: REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE, ALSO KIDNEY AND LIVER DAMAGE.

Medical Conditions Prone to Aggravation by Exposure: NONE ESTABLISHED.

Routes of Entry: Inhalation: YES Skin: YES Ingestion: YES

Emergency and First Aid Procedures:
Breathing: REMOVE PATIENT TO FRESH AIR.
Eyes: FLUSH WITH WATER FOR AT LEAST 15 MINUTES.
Skin: WASH WITH SOAP AND WATER.
Swallowing: CALL PHYSICIAN IMMEDIATELY. DO NOT INDUCE VOMITING.

SECTION VI - REACTIVITY DATA

Stability: STABLE Conditions to Avoid: DO NOT STORE ABOVE 120 F
Incompatibility (NONE)
Hazardous Decomposition Products By open flame: CARBON MONOXIDE, CARBON DIOXIDE.
Hazardous Polymerization: WILL NOT OCCUR

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:
REMOVE ALL SOURCES OF IGNITION, VENTILATE AVOID BREATHING VAPORS (SEE SECTION X) AND REMOVE WITH INERT ABSORBENT

Waste disposal method:
DO NOT INCINERATE - DISPOSE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS REGARDING POLLUTION.

(CONTINUED)

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection: AVOID BREATHING OF VAPOR OR SPRAY MIST (SEE SECTION X)

Ventilation: PROVIDE LOCAL EXHAUST VENTILATION IN VOLUME AND PATTERN TO KEEP TLV OF ALL HAZARDOUS INGREDIENTS IN SECTION II BELOW ACCEPTABLE LIMIT, AND LEL IN SECTION II BELOW STATED LIMIT.

Protective Gloves: RECOMMENDED FOR PROLONGED OR REPEATED CONTACT.

Eye Protection: FOR PROLONGED USE IN CLOSE QUARTERS RECOMMEND SAFETY GLASSES WITH UNPERFORATED SIDESHIELDS.

Other Protective Equipment:

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be taken in handling and storing:

DO NOT STORE ABOVE 120 F. KEEP AT ROOM TEMPERATURE AS EXPOSURE TO DIRECT SUNLIGHT OR HEAT MAY CAUSE BURSTING.

Other Precautions:

- KEEP AWAY FROM CHILDREN.
DO NOT PUNCTURE OR INCINERATE.
DO NOT SPRAY NEAR FIRE OR OPEN FLAME.

Pursuant to Proposition 65:

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HMIS. CLASSIFICATION CODE

Health: 2 MODERATE HAZARD
Flammability: 4 SEVERE HAZARD
Reactivity: 1 SLIGHT HAZARD
Personal protection: D FACE SHIELD, GLOVES, APRON

THE ABOVE INFORMATION PERTAINS TO THIS PRODUCT AS CURRENTLY FORMULATED, AND IS BASED ON THE INFORMATION AVAILABLE AT THIS TIME. ADDITION OF REDUCERS OR OTHER ADDITIVES TO THIS PRODUCT MAY SUBSTANTIALLY ALTER THE COMPOSITION AND HAZARDS OF THE PRODUCT. SINCE CONDITIONS OF USE ARE OUTSIDE OUR CONTROL, WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

- 4456 -

LIQUID MERCURY



Mercury

MATERIAL SAFETY DATA SHEET 5.926

01/03/87

-4456¹²²²

SECTION I - NAME AND PRODUCT

MFG NAME AND ADDRESS
DF GOLDSMITH CHEMICAL
AND METAL CORP
PRIVATE PACKAGE
EVANSTON
IL 60202

CHEMICAL NUMBER:
ITEM NUMBER : 504588
VANDR CATLG NBR : MERCURY-5LB
ENTRY DATE : 09-17-85
CHANGE DATE : 09-17-85
EMERGENCY PHONE: 312 8897800

CHEMICAL NAME :
CMS MERCURY TRIPLE DISTILLED 5LB

TRADE NAME SYN :
DFG MERCURY (SPECTROMERC)
CHEMICAL FAMILY :
N/A

SECTION II - HAZARDOUS INGREDIENTS

HAZARDOUS COMPONENTS		%	TLV(UNITS)
ALLOYS AND METALLIC COATINGS			
BASE METAL	MERCURY	100	1MG/10M3

SECTION III - PHYSICAL DATA 5/10 - SEE SECTION X

BOIL. POINT	SPECIFIC GRAVITY	VAPOR PRESS.	MELT. POINT	VAPOR DENSITY	EVAP. RATE	SOLUBLE IN WATER	PERCENT VOLATILE
356.0	13.546	N/A	N/A	N/A	N/A	NIL	N/A

APPEARANCE AND ODR:
SILVERY, ODRLESS LIQUID AT ROOM TEMPERATURE

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE
FLAMMABLE LEL: N/A
FLAMMABLE UEL: N/A

EXTINGUISHING MEDIA:
N/A

SPECIAL FIRE FIGHTING PROCEDURES:
N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS:
N/A



MERCURY

01/03/87

-4456-

SECTION V - HEALTH HAZARD DATA

THRESHOLD-LIMIT-VALUE:
AVOID PROLONGED BREATHING OF VAPOR AND INGESTION

EFFECTS OF OVEREXPOSURE:
MUSCLE TREMORS, LOOSENING OF TEETH, MENTAL ABERRATIONS, POSSIBLE DEATH

EMERGENCY AND FIRST AID PROCEDURES:
REMOVE FROM SOURCE OF CONTAMINATION, CALL PHYSICIAN

SECTION VI - REACTIVITY DATA

INDICATORS: STABILITY - STABLE POLYMERIZATION - MAY NOT OCCUR
CONDITIONS TO AVOID:
AVOID LONG EXPOSURE TO AIR, HEAT AND NON-FERROUS METALS.

INCOMPATIBILITY (MATERIAL TO AVOID):
NON-FERROUS METALS

HAZARDOUS DECOMPOSITION OR BY PRODUCTS:
MERCURY VAPOR

POLYMERIZATION CONDITIONS TO AVOID:
N/A

SECTION VII - SPILL OR LEAK PROCEDURES OR DISPOSAL

MATERIAL RELEASE OR SPILL PROCEDURES:

USE UNDER WELL-VENTILATED CONDITIONS, SWEEP SPILLS PROMPTLY (USING SPECIAL VACUUM CLEANER IF POSSIBLE), USE SULFUR-BEARING SWEEPING COMPOUND.

WASTE DISPOSAL METHOD:

RETURN WASTES TO SUPPLIER FOR REDISTILLATION.



01/03/87

SEO NC

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:
 N/A
 VENTILATION - LOCAL:
 AIR CHANGE EVERY 3-5 MINUTES
 VENTILATION - MECHANICAL:
 N/A
 VENTILATION - SPECIAL:
 N/A
 OTHER
 APRONS, RUBBER SOLED SHOES, CLOTHING CHANGES SUGGESTED.
 PROTECTIVE GLOVES:
 YES
 EYE PROTECTION:
 NO

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SECTION IX - SPECIAL PRECAUTIONS

HANDLING AND STORAGE PRECAUTIONS:
 KEEP IN CLOSED BOTTLES OR UNDER WATER.

SECTION X - OTHER INFORMATION

N/A

THE STATEMENTS CONTAINED HEREIN ARE OFFERED FOR INFORMATION PURPOSES ONLY. WE MAKE NO WARRANTIES, EXPRESS OR IMPLIED, AND ASSUME NO LIABILITY IN CONNECTION WITH ANY USE OF THIS INFORMATION.

NOTE: NA OR N/A DENOTES NOT-AVAILABLE OR NON-APPLICABLE

**TABLE C-5
EXAMPLE ANALYTICAL RESULTS**

-4456 -

BATTERIES (LEAD ACID, CADMIUM)

MATERIAL SAFETY DATA SHEET

- 4456 -

Date Issued 5/91
Page 1 of 6

I. PRODUCT IDENTIFICATION

Chemical/Trade Name (as used on label)

Lead-Acid Battery

Manufacturer's Name/Address

Exide Corporation
645 Penn Street
Reading, PA 19601

Chemical Family/Classification

Electric Storage Battery

Telephone

For information and emergencies,
contact Environmental Resources
Dept. (215) 378-0757.

24-hour Emergency Contact:
CHEMTREC (800) 424-9300
(Only in the event of chemical
emergencies involving a spill,
leak, fire, exposure, or
accident involving chemicals).

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

<u>Components</u>	<u>CAS Number</u>	<u>% by Wt. or Vol.</u>	<u>Air Exposure Limits (ug/m³)</u>		
			<u>OSHA</u>	<u>ACGIH</u>	<u>NIOSH</u>
Inorganic lead compound:					
Lead	7439-92-1	60	50	150	100
Antimony	7440-36-0	2	500	500	--
Arsenic	7440-38-2	0.2	10	20	--
Calcium	7440-70-2	0.2	--	--	--
Tin	7440-31-5	0.2	2000	2000	--
Electrolyte (sulfuric acid)	7664-93-9	10-30	1000	1000	1000
Case Material:		5-10	N/A	N/A	N/A
Polypropylene	9003-07-0				
Polystyrene	9003-53-6				
Styrene					
Acrylonitrile	9003-54-7				
Acrylonitrile					
Butadiene Styrene	9003-56-9				
Styrene Butadiene	9003-55-8				
Polyvinylchloride	9002-86-2				
Polycarbonate	--				
Hard Rubber	--				
Other:					
Silicon dioxide (gel cell batteries only)	60676-86-0	10	N/A	N/A	N/A

645 Penn Street Reading, PA 19601
P.O. Box 14205 Reading, PA 19612-4205
215/378-0600 TWX 510/651-5288 Telecopier 215/378-0616

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION (Continued)

Components	CAS Number	% by Wt. or Vol.	Exposure Limits (ug/m ³)		
			OSHA	ACGIH	NIOSH
Other:					
Sheet Molding Compound (glass reinforced polyester)	--	10	N/A	N/A	N/A

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NOTE: Inorganic lead and electrolyte (sulfuric acid) are the primary components of every battery manufactured by Exide Corporation or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries; other case material may apply to varieties of industrial batteries.

III. PHYSICAL DATA**Electrolyte:**

<u>Boiling Point:</u>	203°F	<u>Specific Gravity (H₂O=1):</u>	1.230 to 1.350
<u>Melting Point:</u>	Not Applicable	<u>Vapor Pressure (mm Hg):</u>	10
<u>Solubility in Water:</u>	100%	<u>Vapor Density (AIR=1):</u>	Greater Than 1
<u>Evaporation Rate (Butyl acetate=1)</u>	Less Than 1	<u>% Volatiles by Weight:</u>	Not Applicable
<u>Appearance and Odor:</u>	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.		

FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable Flammable Limits: LEL = 4.1% (Hydrogen Gas) UEL = 74.2%

Extinguishing media: CO₂; foam; dry chemical; halogen

Special Fire Fighting Procedures: If batteries are on charge, shut off power. Use positive pressure, self-contained breathing apparatus. Water applied to electrolyte generates heat and causes it to spatter. Wear acid-resistant clothing.

Unusual Fire and Explosion hazards: Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. Follow manufacturer's instructions for installation and service.

V. REACTIVITY DATA

Stability: Stable X Conditions to Avoid: Prolonged overcharge; sources of ignition.
 Unstable _____

Incompatibility: (materials to avoid)

Contact of sulfuric acid with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

V. REACTIVITY DATA (Continued)Incompatibility: (materials to avoid) (Continued)

- 4456 -

Avoid contact of lead compounds with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen and reducing agents.

Hazardous Decomposition Products:

Sulfuric acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen.

Lead compounds: High temperatures likely to produce toxic metal fume, vapor or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

VI. HEALTH HAZARD DATA

Routes of Entry: Sulfuric acid is harmful by all routes of entry. Hazardous exposure to lead compounds can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume.

Inhalation: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation. Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Ingestion:

Sulfuric acid: May cause severe irritation of mouth, throat, esophagus and stomach.

Lead compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and should be treated by a physician.

Skin Contact

Sulfuric acid: Severe irritation, burns and ulceration.

Lead compounds: Not absorbed through the skin.

Eye Contact:

Sulfuric acid: Severe irritation, burns, cornea damage, blindness.

Lead compounds: May cause eye irritation.

Effects of Overexposure - Acute:

Sulfuric acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

Lead compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

VI. HEALTH HAZARD DATA (Continued)Effects of Overexposure - Chronic:

= 4456 -

Sulfuric acid: Possible erosion of tooth enamel; inflammation of nose, throat and bronchial tubes.

Lead compounds: Anemia, neuropathy, particularly of the motor nerves, with wrist drop, kidney damage, reproductive changes in both males and females.

Carcinogenicity:

Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present. Arsenic is listed as a carcinogen by National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH with prolonged exposure at high levels only.

Medical Conditions Generally Aggravated by Exposure:

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate skin diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

Emergency and First Aid Procedures:Inhalation:

Lead - Remove from exposure, gargle, wash nose and lips; consult physician.

Sulfuric acid - Remove to fresh air immediately. If breathing is difficult, give oxygen.

Ingestion:

Lead - Consult physician.

Sulfuric acid - Give large quantities of water; do not induce vomiting; consult physician.

Skin: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Eyes: Flush immediately with water for at least 15 minutes; consult physician.

VII. PRECAUTIONS FOR SAFE HANDLING AND USESpill or Leak Procedures:

Stop flow of material, contain/absorb small spills with dry sand, earth, vermiculite. Do not use combustible materials. If possible, carefully neutralize with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of unneutralized acid to sewer.

PRECAUTIONS FOR SAFE HANDLING AND USE (Continued)

- 4456 -

Waste Disposal Methods:

Place neutralized slurry into sealed containers and dispose of as hazardous waste, as applicable. Large, water-diluted spills, after neutralization and testing, should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency.

Spent batteries: Send to secondary lead smelter for recycling.

Handling and Storage:

Store in cool, dry, well-ventilated areas with impervious surfaces and adequate containment in the event of spills. Batteries should also be stored under roof for protection against adverse weather conditions. Separate from incompatible materials. Store and handle only in areas with adequate water supply and spill control. Avoid damage to containers. Keep away from fire, sparks and heat.

Precautionary Labelling:

POISON - CAUSES SEVERE BURNS

DANGER - CONTAINS SULFURIC ACID

II. CONTROL MEASURES

Engineering Controls:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.

Work Practices:

Handle batteries cautiously to avoid spills. Make certain vent caps are on securely. Avoid contact with internal components.

Respiratory Protection:

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

Protective gloves:

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

Eye Protection:

Chemical goggles or face shield.

Other Protection:

Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

VIII. CONTROL MEASURES (Continued)

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Emergency Flushing:

In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

IX. OTHER REGULATORY INFORMATIONNFPA Hazard Rating for sulfuric acid:

Flammability (Red) = 0

Health (Blue) = 3

Reactivity (Yellow) = 2

Sulfuric acid is water-reactive if concentrated.

U.S. DOT: Wet (filled with electrolyte) batteries are regulated by U.S. DOT as hazardous material.

Proper Shipping Name: Battery, wet, filled with acid

Hazard Class: Corrosive Material

ID Number: UN2794

RCRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled.

Spilled sulfuric acid is a characteristic hazardous waste; EPA hazardous waste number 0002 (corrosivity).

CERCLA (Superfund) and EPCRA: Reportable Quantity (RQ) for spilled 100% sulfuric acid under Superfund and EPCRA (Emergency Planning and Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.

Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs.

Notification is required under EPCRA if 1,000 lbs. or more of sulfuric acid is present at one site. An average automotive/commercial battery contains approximately 5 lbs. of sulfuric acid; quantity of sulfuric acid in industrial battery types will vary.

Table C-6 Test Methods

Table C-6 has been excerpted from Appendix G of the Sitewide CERCLA Quality (SCQ) Assurance Project Plan. Table G-1 of the SCQ follows this page.

APPENDIX G

ANALYTICAL METHODS AND PERFORMANCE CRITERIA

G.1 INTRODUCTION

This appendix gives the methods and/or performance criteria for all analyses performed for the FEMP. Table G-1, the Methods Selection Table, lists the standard methods which may be used for organic and inorganic analyses. The performance criteria associated with the methods in Table G-1 are presented in Table G-2. Table G-3 lists radiochemical analytes and the matrices and ASLs for which there are performance criteria. Table G-4 gives the performance specifications for radiochemical analyses.

G.2 ABBREVIATIONS

- ADC - Analog to Digital Converter
- CCB - Continuing Calibration Blank
- CCV(S) - Continuing Calibration Verification (Standard)
- DR - Data are qualified based on results, using the review and validation guidance
- DUP - Duplicate
- DWB - Dilution Water Blank
- ECV - Energy Calibration Verification
- EDXRF - Energy Dispersive X-Ray Fluorescence
- FCV - Final Calibration Verification
- GAC - Glucose-Glutamic Acid Check
- HAMDC - Highest Allowable Minimum Detectable Concentration
- IAP - Ion Abundance Pattern
- IC - Initial Calibration
- ICB - Initial Calibration Blank
- ICS - Interference Check Standard
- ICV(S) - Initial Calibration Verification (Standard)
- IDL - Instrument Detection Limit
- IS - Internal Standards
- LCS - Laboratory Control Sample (second source verification)
- MB - Method Blank
- MDC - Minimum Detectable Concentration
- MS - Matrix Spike
- MSA - Method of Standard Additions
- MSD - Matrix Spike Duplicate
- PQL - Practical Quantitation Limit
- RER - Relative Error Rate
- RMV - Reference Monitor Verification
- RPD - Relative Percent Difference

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**TABLE G-1
SCQ ANALYTICAL METHODS SELECTION TABLE
FOR ORGANIC AND INORGANIC ANALYSES**

Analyte or Class of Analytes	ASL	Matrices and Methods			
		Water & Wastewater		Soil & Solids	
with performance criteria numbers		Prep Method(s) ^{1,2}	Analytical Method(s)	Prep Method(s) ¹	Analytical Method(s)
1. Volatile Organic Compounds	B	W	SW 846-8240 or 8260 or EPA 524.2	W	SW 846-8240 or 8260 or EPA 524.2
	C, D	W	3/90 CLP	W	3/90 CLP
2. Semi-Volatile Organic Compounds	B	SW 846-3510 or 3520	SW 846-8270	SW 846- 3540 or 3550	SW 846-8270
	C, D	W	3/90 CLP	W	3/90 CLP
3. Chlorinated Pesticides and PCBS	B	SW 846-3510 or 3520	SW 846-8080	SW 846- 3540 or 3550	SW 846-8080
	C, D	W	3/90 CLP	W	3/90 CLP
4. Organophosphorus Pesticides	B	SW 846-3510 or 3520	SW 846-8140	SW 846- 3540 or 3550	SW 846-8140
5. Herbicides	B	W	SW 846-8150	W	SW 846-8150
6. Aromatic Volatile Organics	B	SW 846-5030	SW 846-8020	SW 846- 5030	SW 846-8020
7. Halogenated Volatile Organics	B	SW 846-5030	SW 846-8010	SW 846- 5030	SW 846-8010
8. Purgeable Organic Halogens	B	W	SW 846-9021	W	SW 846-9021
9. Metals by GFAA	B	SW 846-3020 or 3050, 7060, 7740 or 7761	SW 846-7000 series or 3500 ⁽⁴⁾ series	SW 846- 3050 or 7761	SW 846-7000 series or 3500 ⁽⁴⁾ series
	C, D	W	3/90 CLP	W	3/90 CLP

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TABLE G-1
SCQ ANALYTICAL METHODS SELECTION TABLE
FOR ORGANIC AND INORGANIC ANALYSES (cont.)

Analyte or Class of Analytes	ASL	Matrices and Methods			
		Water & Wastewater		Soil & Solids	
with performance criteria numbers		Prep Method(s) ^{1,2}	Analytical Method(s)	Prep Method(s) ^{1,2}	Analytical Method(s)
10. Metals by AAS (Flame)	B	SW 846-3010 or 3050 or 7760	SW 846-7000 series or 3500 ⁽⁴⁾ series	SW 846-3050 or 7760	SW 846-700 series or 3500 ⁽⁴⁾ series
	C, D	W	3/90 CLP	W	3/90 CLP
11. Metals by ICP	B	SW 846-3010 or 3050 or 7760	SW 846-6010 or 3500 ⁽⁴⁾ series	SW 846-3050 or 7760	SW 846-6010 or 3500 ⁽⁴⁾ series
	C, D	W	3/90 CLP	W	3/90 CLP
12. Mercury by Cold Vapor AAS	B	W	SW 846-7470	W	SW 846-7471
	C, D	W	3/90 CLP	W	3/90 CLP
13. Cyanide (Tot)	B	W	335.2 ⁽³⁾	W	335.2 ⁽³⁾
14. Cyanide (Low)	B	W	335.3 ⁽³⁾	W	335.3 ⁽³⁾
15. Soil pH	B	NA	NA	W	SW 846-9045
16. pH (electrometric)	B	W	SW 846-9040 or 4500-H ⁺ B ⁽⁴⁾	NA	NA
17. Nitrogen, Nitrate/Nitrite	B	W	353.1 ⁽³⁾ , 353.2 ⁽³⁾ , 4500D ⁽⁴⁾ , E ⁽⁴⁾	NA	NA
18. Conductivity	B	W	120.1 ⁽³⁾ or 2510B ⁽⁴⁾	NA	NA
19. TKN	B	W	351.2 ⁽³⁾	NA	NA
20. TOC	B	W	SW 846-9060	NA	NA
21. Alkalinity	B	W	310.1 ⁽³⁾ or 2320B ⁽⁴⁾	NA	NA

TABLE G-1

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SCQ ANALYTICAL METHODS SELECTION TABLE
FOR ORGANIC AND INORGANIC ANALYSES (cont.)

Analyte or Class of Analytes	ASL	Matrices and Methods			
		Water & Wastewater		Soil & Solids	
with performance criteria numbers		Prep Method(s) ^{1,2}	Analytical Method(s)	Prep Method(s) ^{1,2}	Analytical Method(s)
22. Chloride	B	W	325.2 ⁽³⁾ , 300.(all) ⁽³⁾ or 4500B ⁽⁴⁾	NA	NA
23. Sulfide	B	W	376.1 ⁽³⁾ or SW 846-9030	NA	NA
24. Ammonia	B	W	350.1 ⁽³⁾ , 350.3 ⁽³⁾ , 4500C & F ⁽⁴⁾	NA	NA
25. Hexavalent Cr	B	W	SW 846-7195	W	SW 846-7195
26. Oil & Grease	B	W	SW 846-9070	W	SW 846-9070
27. Temperature	B	W	170.1 ⁽³⁾	W	170.1 ⁽³⁾
28. Percent Solids (Moisture)	B	W	160.3 ⁽³⁾	W	160.3 ⁽³⁾
29. TPH	B	W	418.1 ⁽³⁾	W	SW 846-9071
30. Total Dissolved Solids	B	W	160.1 ⁽³⁾ or 25400 ⁽⁴⁾	NA	NA
31. Phosphorus	B	W	365.(all) ⁽³⁾ or 4500 E ⁽⁴⁾	NA	NA
32. Surfactants (MBAS)	B	W	5540C ⁽⁴⁾	NA	NA
33. Phenolics, Total Recoverable	B	W	SW 846-9065 or 9066	W	SW 846-9065 or 9066
34. Sulfate	B	W	375.2 ⁽³⁾ , 300.0 ⁽³⁾ or 4500-SO ₄ E ⁽⁴⁾	NA	NA
35. Fluoride	B	W	340.2 ⁽³⁾ , 300.0 ⁽³⁾ or 4500-F C ⁽⁴⁾	NA	NA

TABLE G-1

FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
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SCQ ANALYTICAL METHODS SELECTION TABLE
FOR ORGANIC AND INORGANIC ANALYSES (cont.)

Analyte or Class of Analytes	ASL	Matrices and Methods			
		Water & Wastewater		Soil & Solids	
with performance criteria numbers		Prep Method(s) ^{1,2}	Analytical Method(s)	Prep Method(s) ^{1,2}	Analytical Method(s)
36. Total Organic Halides	B	W	SW 846-9020	NA	NA
37. Color	B	W	110.2 ⁽³⁾	NA	NA
38. Red/Ox Potential	B	W	ASTM-1498	NA	NA
39. Total Suspended Solids	B	W	160.2 ⁽³⁾ or 2540D ⁽⁴⁾	NA	NA
40. Paint Filter Test	B	W	SW 846-9095	W	SW 846-9095
41. COD	B	W	5220D ⁽⁴⁾	NA	NA
42. BOD ₅ & CBOD ₅	B	W	5210B ⁽⁴⁾	NA	NA
43. Total Fecal Coliforms	B	W	9222D ⁽⁴⁾	NA	NA
44. Reactivity	B	W	SW 846- parts 7.3.3 & 7.3.4	W	SW 846- parts 7.3.3 & 7.3.4
45. Corrosivity	B	W	SW 846-1110	W	SW 846-1110
46. Ignitability	B	W	SW 846-1010	W	SW 846-1010
47. Sulfide, Extractable	B	W	SW 846-9031	W	SW 846-9031
48. U & Th in Soil by EDXRF	B	W	EPM 9011 ⁽⁵⁾	W	EPM 9011 ⁽⁵⁾
49. U & Th in Concrete by EDXRF	B	W	EPM 7004 ⁽⁵⁾	W	EPM 7004 ⁽⁵⁾
50. Thorium, Low Level	B	W	EPM 1080 ⁽⁵⁾ , 3059 ⁽⁵⁾ , 3063 ⁽⁵⁾	W	EPM 1080 ⁽⁵⁾ , 3059 ⁽⁵⁾ , 3063 ⁽⁵⁾
51. Uranium, Low (ppm) Level	B	W	EPM 3002 ⁽⁵⁾	W	EPM 3002 ⁽⁵⁾

TABLE G-1
 SCQ ANALYTICAL METHODS SELECTION TABLE
 FOR ORGANIC AND INORGANIC ANALYSES (cont.)

Analyte or Class of Analytes	ASL	Matrices and Methods			
		Water & Wastewater		Soil & Solids	
with performance criteria numbers		Prep Method(s) ^{1,2}	Analytical Method(s)	Prep Method(s) ^{1,2}	Analytical Method(s) ^{1,2}
52. Uranium, High Level	B	W	EPM 1039 ⁽⁵⁾	W	EPM 1039 ⁽⁵⁾
53. Semi-Quant. Analysis by EDXRF	B	W	EPM 9025 ⁽⁵⁾	W	EPM 9025 ⁽⁵⁾
54. Total Hardness	B	W	2340c ⁽⁴⁾	NA	NA
55. Methanol by GC	B	W	EPM 2002 ⁽⁵⁾	W	EPM 2002 ⁽⁵⁾
56. Dioxins by GC/MS	B	W	SW 846-8280	W	SW 846-8280

- ¹ SW 846-1311 (TCLP) could be a prep, however, it is not necessary in all cases.
- ² "W" signifies that the preparation is contained within the analytical method.
- ³ *Methods for Chemical Analysis of Water and Wastes*, EPA 600/4-79-020.
- ⁴ *Standard Methods for the Analysis of Water and Wastewater*, 17th ed.
- ⁵ *FEMP Environmental Process Monitoring Lab Method*.

Table C-7 Sampling Equipment

SECTION C - WASTE CHARACTERISTICS
TABLE C-7
SAMPLING EQUIPMENT FOR PARTICULAR WASTE TYPES

WASTE TYPE	DRUM	SAND AND BAGS	STORAGE TANKS OR BINS
Free flowing liquid and slurries	Coliwsa Tube Thief	N/A	Bleed Valve Weighted Bottle Vacuum Sampler
Sludges	Tube Thief Trier	N/A	Tube Thief Trier
Moist powders or granules	Tube Thief Thief	Tube Thief Trier	Tube Thief Trier
Dry powders or granules	Thief Thief	Thief Thief	Thief Thief
Sand packed powders and granules	Auger Shovel Trier	Auger Shovel Trier	Shovel Trier
Large grained solids	Large Trier	Large Trier	Large Trier

Table C-8 Sample Volumes and Holding Times

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Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS

Analyte	Container	Preservative	Holding Time	Permissible Sample Type
Radiological Samples in Water				
Total uranium	1,000-mL plastic or glass	HNO ₃ , pH < 2	6 months ⁷	G or C
Radium - 228	1,000-mL plastic or glass	HNO ₃ , pH < 2	6 months ⁷	G or C
Lead - 210	1,000-mL plastic or glass	HNO ₃ , pH < 2	6 months ⁷	G or C
Gross Alpha	1,000-mL plastic or glass	HNO ₃ , pH < 2	6 months ⁷	G or C
Gross Beta	1,000-mL plastic or glass	HNO ₃ , pH < 2	6 months ⁷	G or C
Isotopic uranium	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Isotopic thorium	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Radium - 226	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Gamma scan	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Isotopic neptunium	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Isotopic plutonium	1,000-mL plastic or glass	HCl, 0.5N	6 months ⁷	G or C
Radiological Samples in Soil/Sediment				
Radium - 226	8-oz. widemouth glass or sealed plastic bag	None	1 year	G or C
Isotopic thorium	8-oz. widemouth glass or sealed plastic bag	None	1 year	G or C
Isotopic uranium	8-oz. widemouth glass or sealed plastic bag	None	1 year	G or C
Gamma scan	8-oz. widemouth glass or sealed plastic bag	None	1 year	G or C
Radiological Samples - Other Materials				
Radium - 228 in air	Sampling jig	None	1 year	G or C
Radium - 226 in air	Sampling jig	None	1 year	G or C
Isotopic uranium in air	Sampling jig	None	1 year	G or C
Uranium in air	Sampling jig	None	1 year	G or C
Gamma scan in air	Sampling jig	None	1 year	G or C
Gross Alpha, Beta in air	Sampling jig	None	1 year	G or C
Radium - 226 in milk	100-mL plastic or glass	5 mL/liter H ₃ CCHO	3 months	G or C

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Analyte	Container	Preservative	Holding Times	Permissible Sample Type
Radiological Samples - Other Materials (cont.)				
Isotopic thorium in milk	100-mL plastic or glass	5 mL/liter H ₃ CCHO	3 months	G or C
Isotopic uranium in milk	100-mL plastic or glass	5 mL/liter H ₃ CCHO	3 months	G or C
Gamma scan in milk	100-mL plastic or glass	5 mL/liter H ₃ CCHO	3 months	G or C
Isotopic thorium in vegetation	Sealed plastic bag	Freeze (< 0°C)	1 year	G or C
Isotopic uranium in tissue/ vegetation	Sealed plastic bag	Freeze (< 0°C)	1 year	G or C
Concentrated Waste Samples				
Organic compounds ^A	8-oz. widemouth glass with Teflon liner	None	6 months	G or C
Metals and other ^A inorganic compounds	8-oz. widemouth glass with Teflon liner	None	6 months	G or C
EP toxicity ^B	8-oz. widemouth glass with Teflon liner	None	6 months	G or C
TCLP	500-mL amber glass with Teflon lined lid	Cool ^C	Organics 14 days Inorganics 28 days	G or C
Flash point and/or ^B heat content	8-oz. widemouth glass with Teflon liner	None	28 days	G
Fish Samples				
Semi volatile compounds, ^A organochlorine chlorine pesticides PCBs, herbicides, organo-phosphate pesticides	Wrap in aluminum foil	Freeze	14/40 days ^D	G or C
Metals and other ^A inorganic compounds except Hg	Place in plastic ziplock bag	Freeze	6 months ^E	G or C

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Fish Samples (cont)				
Mercury	Place in plastic ziplock bag	Freeze	28 days	G or C
Liquid - Low to Medium Concentration Samples				
Alkalinity ^c	1-liter polyethylene ² with polyethylene or polyethylene-lined closure	Cool ⁶	14 days	G or C
Acidity ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	Cool ⁶	Immediate (in field)	G or C
Ammonia	1-liter polyethylene ² with polyethylene or polyethylene-lined closure	Cool ⁶ H ₂ SO ₄ to pH < 2	28 days	G or C
Bacteriological ^c	250-mL glass with glass closure or plastic capable of being autoclaved	Cool ⁶	24 hours	G
Static Bioassay ^d	1-gal. amber glass (not solvent rinsed)	Cool ⁶	36 hours	G or C
Biochemical oxygen demand (BOD) ^c	1/2-gal. polyethylene ² with polyethylene closure	Cool ⁶	48 hours	G or C
Chloride ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	None	28 days	G or C
Chlorine residual ^c	In-situ (beaker or bucket)	None	24 hours	G
Color ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	Cool ⁶	48 hours	G or C

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Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Liquid - Low to Medium Concentration Samples (cont.)				
Conductivity ^c	500-mL or 1-liter poly- ¹ ethylene with polyethylene or polyethylene-lined closure	Cool ⁶	28 days	G or C
Chromium, hexavalent ^c	1-liter polyethylene with polyethylene closure	Cool ⁶	24 hours	G
Cyanide ^c	1-liter or 1/2 gallon polyethylene with polyethylene or polyethylene-lined closure	Ascorbic acid ^{3,5} sodium hydroxide pH > 12 Cool ⁶	14 days	G
Dissolved oxygen ^c (probe)	In-situ (beaker or bucket)	None	Immediate (in field)	G
Dissolved oxygen ^c (winkler)	300-mL glass (BOD bottle)	Fix on site, store in dark	24 hours	G
EP toxicity ^b	1-gal. glass (amber) with Teflon liner	Cool ⁶	6 months	G or C
Fluoride ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	None	28 days	G or C
Hardness ^c	500-mL or 1-liter polyethylene with polyethylene or polyethylene-lined closure	50% nitric ³ acid pH < 2	6 months	G or C
MBAS ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	Cool ⁶	48 hours	G or C
Metals ^c except Hg	1-liter polyethylene with polyethylene-lined closure	50% nitric ³ acid pH < 2	6 months ⁸	G or C

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Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Liquid - Low to Medium Concentration Samples (cont.)				
Mercury	1-liter polyethylene with polyethylene-lined closure	50% nitric ³ acid pH < 2	28 days	G or C
Metals, dissolved ^c except Hg	1-liter polyethylene with polyethylene lined closure	Filter-on-site ³ 50% nitric acid pH < 2	6 months ⁸	G
Mercury	1-liter polyethylene with polyethylene-lined	Filter-on-site ³ 50% nitric acid pH < 2	28 days	G
Oil and grease ^c	1-liter widemouth glass with Teflon liner	50% sulfuric ³ acid pH < 2 Cool ⁶	28 days	G
Semi volatile compounds, ^c organochlorine chlorine pesticides PCBs, herbicides, organo-phosphate pesticides in water				
No residual chlorine ^c present	1-gal. amber glass or 2 1/2-gal. amber glass with Teflon liner	Cool ⁶	7/40 days ¹	G or C
Residual chlorine ^c present	1-gal. amber glass or 2 1/2-gal. amber glass with Teflon liner	Add 3 mL 10% sodium thio- sulfate per gallon Cool ⁶	7/40 days ¹	G or C
Volatile organic compounds			14 days	
No residual chlorine ^c present	2 40-mL vials with Teflon lined septum caps	4 drops conc. hydrochloric acid Cool ⁶	14 days	G

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Liquid - Low to Medium Concentration Samples (cont.)				
No residual chlorine ^c present	2 40-mL vials with Teflon lined septum caps	Cool ⁶	7 days	G
Residual chlorine ^c present - drinking water	2 40-mL vials with Teflon lined septum caps	See Note 4	7 days	G
Semi volatile compounds, ^c organochlorine chlorine pesticides PCBs, herbicides, organo-phosphate pesticides	1-gal. glass (amber) or 2 1/2-gal. glass (amber) with Teflon lined closure	Cool ⁶	7/40 days ¹	G or C
Organic halogens, ^E total (TOX)	250-mL amber glass with Teflon-lined septum closure	Cool ⁶	28 days	G
pH ^c	In-situ (beaker or) bucket	None	Immediate (in field)	G
Total Phenols ^c	1-liter amber glass with Teflon-lined closure	50% sulfuric acid pH < 4 Cool ⁶	28 days	G
Phosphate-ortho ^c	500-mL or 1-liter polyethylene with polyethylene or polyethylene-lined closure	Filter-on-site Cool ⁶	48 hours	G
Phosphorus, total ^c dissolved	500-mL or 1-liter polyethylene with polyethylene or polyethylene-lined closure	Filter-on-site 50% sulfuric acid pH < 2 Cool ⁶	28 days	G
Solids, settleable ^c	1/2-gal. polyethylene with polyethylene closure	Cool ⁶	7 days	G or C
Solids (total and ^c suspended, etc.)	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene lined closure	Cool ⁶	7 days	G or C

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Liquid - Low to Medium Concentration Samples (cont.)				
Sulfates ^c	500-mL or 1-liter poly- ² ethylene with polyethylene or polyethylene-lined closure	Cool ⁶	28 days	G or C
Sulfides ^c	500-mL or 1-liter poly- ³ ethylene with polyethylene or polyethylene-lined closure	2 mL zinc acetate ³ conc. Sodium hydroxide pH > 9 Cool ⁶	7 days	G
Temperature ^c	In-situ (beaker or bucket)	None	Immediate (in field)	G
Total dissolved solids	1000-mL polyethylene ² with polyethylene or polyethylene-lined closure	None	7 days	G or C
Soil, Sediment, or Sludge Samples - Low to Medium Concentration				
Cation exchange capacity	1000-mL polyethylene ² with polyethylene or polyethylene-lined closure	Cool ⁶	6 months	G or C
EP toxicity ^b	8-oz. widemouth glass with Teflon-lined closure	Cool ⁶	6 months	G or C
Metals ^a except Hg	8-oz. widemouth glass with Teflon-lined closure	Cool ⁶	6 months ⁸	G or C
Mercury	8-oz. widemouth glass with Teflon-lined closure	Cool ⁶	28 days	G or C
Nutrients ^a - nitrogen, phosphorus, chemical oxygen demand	500-mL polyethylene with polyethylene closure or 8-oz. widemouth glass with Teflon-lined closure	Cool ⁶	28 days	G or C
Total petroleum hydrocarbons	1000-mL glass with Teflon-lined closure	Cool ⁶ HCl to pH < 2	28 days	G or C

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Parameter	Container	Preservative	Holding Time	Permissible Sample Type
Soil, Sediment, or Sludge Samples - Low to Medium Concentration (cont.)				
Semi volatile compounds, ^c organochlorine chlorine pesticides PCBs, herbicides, organo-phosphate pesticides	8-oz. widemouth glass with Teflon liner	Cool ⁶	14/40 days ¹	G or C
Volatile organic compounds ^A	4-oz. (120-mL) widemouth glass with Teflon liner	Cool ⁶	14/40 days ¹	G or C
Other inorganic ^A compounds including cyanide	500-mL polyethylene with polyethylene closure or 8-oz. widemouth glass with Teflon-lined closure	Cool ⁶	14/40 days ¹	G or C
TCLP	500-mL amber glass widemouth with Teflon lined-closure 4-oz glass with Teflon-lined closure for VOC	Cool ⁶	Organics 14 days Inorganics 6 months	G or C
Total petroleum hydrocarbons	500-mL glass with Teflon- lined closure	Cool ⁶	28 days	G or C

Notes

- For holding times listed as xx/yy days, the first number is the allowed holding time for extraction or preparation of the sample for analysis and the second number is the allowed holding time for analysis of the extract.
- Use indicated container for single parameter requests, 1/2 gallon polyethylene container for multiple parameter requests except those including BOD, or 1-gallon polyethylene container for multiple parameter request that include BOD.
- ~~Preserved sample in the field at time of collection.~~
- Collect the sample in a 4-ounce soil VOA container that has been pre-preserved with four drops of 10-percent sodium thiosulfate solution. Gently mix the sample and transfer to a 40-mL VOA vial that has been pre-preserved with four drops concentrated HCl. Cool to between 2° and 6° C.
- Use ascorbic acid only if the sample contains residual chlorine. Test a drop of sample with potassium iodide-starch test paper. A blue color indicates need for treatment. Add ascorbic acid, a few crystals at a time, until a drop of sample produces no color on the indicator paper, then add an additional 0.6 grams of ascorbic acid for each liter of sample volume.

Notes (cont)

- 6. Cool to the range of 2° to 6° C.
- 7. Radiochemical holding times are 6 months or 5 half-lives, whichever is shorter.
- 8. Holding time for Mercury analyses is 28 days.

Table 6-1 SAMPLE CONTAINER AND PRESERVATION REQUIREMENTS (cont.)

Abbreviations

- G - Grab
- C - Composite
- VOA - Volatile organic analysis
- VOC - Volatile organic compound

References

- A U.S. EPA Region IV, Environmental Services Division, *Analytical Support Branch, Operations and Quality Control Manual*, June 1, 1985, or latest version.
- B EPA Method 1310, "Extraction Procedures", 1982, SW 846, U.S. EPA, Office of Solid Wastes, Washington, D.C.
- C 40 CFR Part 136, Federal Register, Vol, 49, No. 209, October 26, 1984.
- D U.S. EPA Region IV, Environmental Services Division, *Ecological Support Branch, Standard Operating Procedures Manual*, latest version.
- E EPA Interim Method 450.1, "Total Organic Halide" U.S. EPA, ORD, EMSL, Physical and Chemical Method Branch, Cincinnati, Ohio, November, 1980.

Table 9-1 METHODS IN THE FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
LABORATORY ANALYTICAL METHODS MANUAL

No.	Method	Method Number
Volume I--Organic and Inorganic Methods		
1	General Requirements	FM-GEN-0010
2	VOCs by GC/MS--Medium Level	FM-ORG-0010
3	BTEX by CG/PID	FM-ORG-0020
4	Pesticides/PCBs by GC	FM-ORG-0030
5	Organophosphorus Pesticides	FM-ORG-0040
6	VOCs by GC--Purge and Trap	FM-ORG-0050
7	SVOCs by GC/MS	FM-ORG-0060
8	Herbicides	FM-ORG-0070
9	VOCs by GC/MS	FM-ORG-0100
10	TCLP	FM-MISC-0010
11	Corrosivity	FM-MISC-0020
12	Flash Point (Ignitability)	FM-MISC-0030
13	Reactivity	FM-MISC-0040
14	Metals by GFAA	FM-INO-0010
15	Metals by Flame AA	FM-INO-0020
16	Metals by ICP	FM-INO-0030
17	Mercury by CVAA	FM-INO-0040
Volume II--Conventional Methods		
18	Total Cyanide (Spectrophotometric)	FM-CON-0010
19	Total Cyanide (Colorimetric)	FM-CON-0015
20	pH of Soil	FM-CON-0020
21	Nitrogen, Nitrate/Nitrite (Colormetric)	FM-CON-0030
22	Nitrogen, Nitrate/Nitrite (Spectrophotometric)	FM-CON-0040

Table C-9 Acceptance Criteria

SECTION C - WASTE CHARACTERISTICS

TABLE C-9

ACCEPTANCE CRITERIA ON FINGERPRINT ANALYSIS FOR WASTE RECEIVED FROM OFF-SITE

<u>Parameter</u>	<u>Acceptance Criteria</u>
pH	The pH must be within two units of the value on the MEF to be acceptable unless the variation changes the regulatory determination in which case the variation is unacceptable.
Physical State	The physical state must agree with the designation on the MEF.
Flashpoint	The flashpoint must be within 20% of that reported on the MEF.
Specific Gravity	The specific gravity must be within 20% of that reported on the MEF.
Compatibility	The presence/absence of cyanide must agree with the MEF. The presence/absence of sulfides must agree with the MEF.

Table C-10 Land Disposal Restriction Treatment Standards

LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewaters			Nonwastewaters		
			268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW
D001	Ignitable Liquids based on 261.21(a)(1)-Wastewaters			DEACT				
D001	Ignitable Liquids based on 261.21(a)(1)- Low TOC Ignitable Liquids Subcategory- Less than 10% total organic carbon						DEACT	
D001	Ignitable Liquids based on 261.21(a)(1)- High TOC Ignitable Liquids Subcategory- Greater than or equal to 10% total organic carbon						PSUBS; RORGS; or INCIN	
D001	Ignitable compressed gases based on 216.21(a)(3)						DEACT ⁴	
D001	Ignitable reactives based on 261.21(a)(2)			DEACT			DEACT	
D001	Oxidizers based on 261.21(a)(1)			DEACT			DEACT	
D002	Acid Subcategory based on 261.22(a)(1)			DEACT			DEACT	
D002	Alkaline Subcategory based on 261.22(a)(1)			DEACT			DEACT	
D002	Other Corrosives based on 261.22(a)(2)			DEACT			DEACT	
D003	Reactive Cyanides Subcategory based on 261.23(a)(5)	Cyanides (Total) Cyanides (Amenable)			0.86			590
D003	Reactive Sulfides based on 261.23(a)(5)			DEACT ⁴			DEACT ⁴	
D003	Explosives based on 261.23(a)(6), (7), and (8)			DEACT			DEACT	
D003	Water reactives based on 261.23(a)(2), (3), and (4)						DEACT	
D003	Other reactives based on 261.21(a)(1)			DEACT			DEACT	
D004	Arsenic	Arsenic			5.0		5.0	
D005	Barium	Barium			100		100	
D006	Cadmium	Cadmium			1.0		1.0	

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LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewater			Nonwastewater			
			268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	
D005	Cadmium containing batteries								
D007	Chromium	Chromium (total)			5.0		5.0	RTHRM	
D008	Lead Lead Acid batteries identified as RCRA hazardous waste	Lead			5.0		5.0	RLEAD	
	Radioactive lead solids subcategory (Note: these lead solids include, but are not limited to, all forms of lead shielding, and other elemental forms of lead. These lead solids do not include treatment residuals such as hydroxide sludges, other wastewater treatment residuals, or incinerator ashes that can undergo conventional pozzolanic stabilization, nor do they include organolead materials that can be incinerated and stabilized as ash.)							MACRO	
D009	Mercury Low Mercury Subcategory- less than 260 mg/kg Mercury High Mercury Subcategory > 260 mg/kg total mercury - contains mercury and organics (and are not incineration residue) High Mercury Subcategory > 260 mg/kg total mercury - inorganics (including incinerator residues and residues from RMERC) Elemental mercury contaminated with radioactive materials Hydraulic oil contaminated with mercury; radioactive materials subcategory	Mercury Mercury Mercury			.20		.20	IMERC; or RMERC RMERC	
D010	Selenium	Selenium			1.0		5.7	AMLGM IMERC	
D011	Silver	Silver			5.0		5.0		

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LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewaters			Nonwastewaters		
			268.41 ¹ CCWE	268.42 ² BDAT ^m	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ^m	268.43 ³ CCW
F001, F002, F003, F005	Spent solvent/solvent mixture	Acetone	0.05 ^e		0.28	5.0 ^e		160
		Benzene			0.070 (0.070) ^e			3.7 (3.7) ^e
		n-Butyl Alcohol	5.0 ^e		5.6	5.0 ^e		2.6
		Carbon Disulfide	1.05 ^e			4.8 (4.81) ^e		
		Carbon Tetrachloride	0.15 ^e		0.057	0.96 ^e		5.6
		Chlorobenzene			0.057			5.7
		Cresols (and Cresylic Acid)	2.82 ^e			0.75 ^e		
		Cresols (m- and p-isomers)			0.77			3.2
		o-cresol			0.11			5.6
		o-Dichlorobenzene			0.088			6.2
		Cyclohexanone	0.125 ^e			0.75 (0.75) ^e		
		1,2-Dichlorobenzene	0.65 ^e		0.088	0.125 ^e		6.2
		Ethyl Acetate	0.05 ^e		0.34	0.75 ^e		33
		Ethyl Benzene	0.05 ^e		0.057	0.053 ^e		6.0
		Ethyl Ether	0.05 ^e		0.12	0.75 ^e		160
		Isobutanol	5.0 ^e		5.6	5.0 ^e		170
Methanol	0.25 ^e			0.75 (0.75) ^e				
Methylene Chloride	0.20 ^e		0.089	0.96 ^e		33		
Methyl Ethyl Ketone	0.05 ^e		0.28	0.75 ^e		36		
Methyl Isobutyl Ketone	0.05 ^e		0.14	0.33 ^e		33		
Nitrobenzene	0.66 ^e		0.068	0.125 ^e		14		

LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewaters			Nonwastewaters		
			268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW
P001, P002, P003, P005 (continued)	Spent solvent/solvent mixture	Pyridine	1.12 ⁴		0.014	0.33 ⁴		16
		Tetrachloroethylene	0.079 ⁴		0.056	0.05 ⁴		5.6
		Toluene	1.12 ⁴		0.06	0.33 ⁴		28
		1,1,1-Trichloroethane	1.05 ⁴		0.054	0.41 ⁴		5.6
		1,1,2-Trichloroethane			0.030 (0.030) ⁴		7.6 (7.6) ⁴	
		1,1,1-Trichloro-1,2,2-Trifluoroethane	1.05 ⁴		0.057	0.96 ⁴		28
		Trichloroethylene	0.062 ⁴		0.054	0.091 ⁴		5.6
		Trichlorofluoromethane	0.05 ⁴		0.02	0.96 ⁴		33
		Xylene (total)	0.05 ⁴		0.32	0.15 ⁴		28
		Potassium cyanide	Cyanide (total)			1.9		
	Cyanide (amenable)			0.10			9.1	
U019	Benzene	Benzene			0.14			36
U044	Chloroform	Chloroform			0.046			5.6
U075	Dichlorodifluoromethane	Dichlorodifluoromethane			0.23			7.2
U080	Dichloromethane	Dichloromethane			0.089			33
U107	Di-n-octyl Phthalate	Di-n-octyl Phthalate			0.54			28
U108	1,4-Dioxane	1,4-Dioxane			0.12			170
U117	Ethyl Ether	Ethyl Ether			0.12			160
U121	Trichlorofluoromethane	Trichlorofluoromethane			0.020			33

LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewater			Nonwastewater			
			268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ³	268.43 ³ CCW	
U134	Hydrogen Flouride	Hydrogen Flouride			35		ADGAS or NEUTR; OR NEUTR		
U151	Mercury: Elemental mercury contaminated with radioactive materials Mercury: High Mercury Subcategory- greater than or equal to 260 mg/kg total Mercury Mercury	Mercury			0.030		AMLQM		
		Mercury					RMERC		
		Mercury: Low Mercury Subcategory- Less than 260 mg/kg Mercury- that are not residues from RMERC				0.025			
		Mercury							
U159	Methyl ethyl ketone	Methyl ethyl ketone			0.28			36	
U161	Methyl isobutyl ketone	Methyl isobutyl ketone			0.14			33	
U210	Tetrachloroethylene	Tetrachloroethylene			0.056			5.6	
U211	Carbon Tetrachloride	Carbon Tetrachloride			0.057			5.6	
U213	Tetrahydrofuran	Tetrahydrofuran							
					(METOX or CHOXD) or CARBN; or INCIN		PSUBS: OR INCIN		
U220	Toluene	Toluene			0.080			28	
U226	1,1,1-Trichloroethane	1,1,1-Trichloroethane			0.054			5.6	
U228	Trichloroethylene	Trichloroethylene			0.025			0.10	
U239	Xylene	Xylene			0.32			28	
U359	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Ethylene Glycol Monoethyl ether							

LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

EPA Waste Code	Waste Description and/or treatment subcategory	Regulated Constituent	Wastewaters			Nonwastewaters		
			268.41 ¹ CCWE	268.42 ² BDAT ^m	268.43 ³ CCW	268.41 ¹ CCWE	268.42 ² BDAT ^m	268.43 ³ CCW
D018	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Benzene						
D019	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Carbon Tetrachloride						
D021	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Chlorobenzene						
D022	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Chloroform						
D026	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Cresol						
D028	NO LAND BAN TREATMENT STANDARD ESTABLISHED	1,2-Dichloroethane						
D029	NO LAND BAN TREATMENT STANDARD ESTABLISHED	1,1-Dichloroethylene						
D035	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Methyl ethyl ketone						
D037	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Pentachlorophenol						
D039	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Tetrachloroethylene						
D040	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Trichloroethylene						
D043	NO LAND BAN TREATMENT STANDARD ESTABLISHED	Vinyl Chloride						

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LAND DISPOSAL RESTRICTION TREATMENT STANDARDS

TABLE C-10

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1 OAC 3745-59-41
2 OAC 3745-59-42
3 OAC 3745-59-43

* This waste code exists in gaseous form and is not categorized as wastewater or nonwastewater forms.
* May not be diluted.

* Current Ohio Environmental Protection Agency treatment standards.

40 CFR 266.42 Table 1.- Technology Codes and Description of Technology-Based Standards

Code	Description
DEACT	Deactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity.
RTHRM	Thermal Recovery of metals or inorganics from nonwastewaters in units identified as industrial furnaces according to 40 CFR 260.10 (1), (6), (7), (11) and (12) under the definition of "industrial furnace."
RLPAD	Thermal Recovery of lead in secondary lead smelters.
DMERC	Incineration of wastes containing organics and mercury in units operated in accordance with the technical operating requirements of 40 CFR part 264 subpart O and part 265 subpart O. All wastewater and nonwastewater residues derived from this process must then comply with the corresponding treatment standards per waste code with consideration of any applicable subcategories (e.g., High or Low Mercury Subcategories)
RMERC	Retorting or roasting in a thermal processing unit capable of volatilizing mercury and subsequently condensing the volatilized mercury of recovery.
FSUBS	Fuel substitution in units operated in accordance with applicable technical operating requirements.
ADGAS	Venting of compressed gases into an absorbing or reacting media (i.e., solid or liquid)- venting can be accomplished through physical release utilizing valves/piping; physical penetration of the container; and/or penetration through detonation.
NEUTR	Neutralization with the following reagents (or waste reagents) or combinations of reagents: (1) Acids; (2) bases; or (3) water (including wastewaters) resulting in a pH greater than 2 but less than 12.5 as measured in the aqueous residual.
AMLGM	Amalgamation of liquid, elemental mercury contaminated with radioactive materials utilizing inorganic reagents such as copper, zinc, nickel, gold, and sulfur that result in a nonliquid, semi-solid amalgam and thereby reducing potential emissions of elemental mercury vapors to the air.
INCN	Incineration in units operated in accordance with the technical operating requirements of 40 CFR part 264 subpart O and part 265 subpart O.
ROGGS	Recovery of organics utilizing one or more of the following technologies: (1) Distillation; (2) thin film evaporation; (3) steam stripping; (4) carbon absorption; (5) critical fluid extraction; (6) liquid-liquid extraction; (7) precipitation/crystallization (including freeze crystallization); or (8) chemical phase separation techniques (i.e., addition of acids, bases, demulsifiers, or similar chemicals). Note: this does not preclude the use of other physical phase separation techniques such as decantation, filtration (including ultrafiltration), and centrifugation, when used in conjunction with the above listed recovery technologies.
MACRO	Macroencapsulation with surface coating materials such as polymeric organics (e.g., resins and plastics) or with a jacket of inert inorganic materials to substantially reduce surface exposure to potential leaching media. Macroencapsulation specifically does not include any material that would be classified as a tank or container according to 40 CFR 261.10.

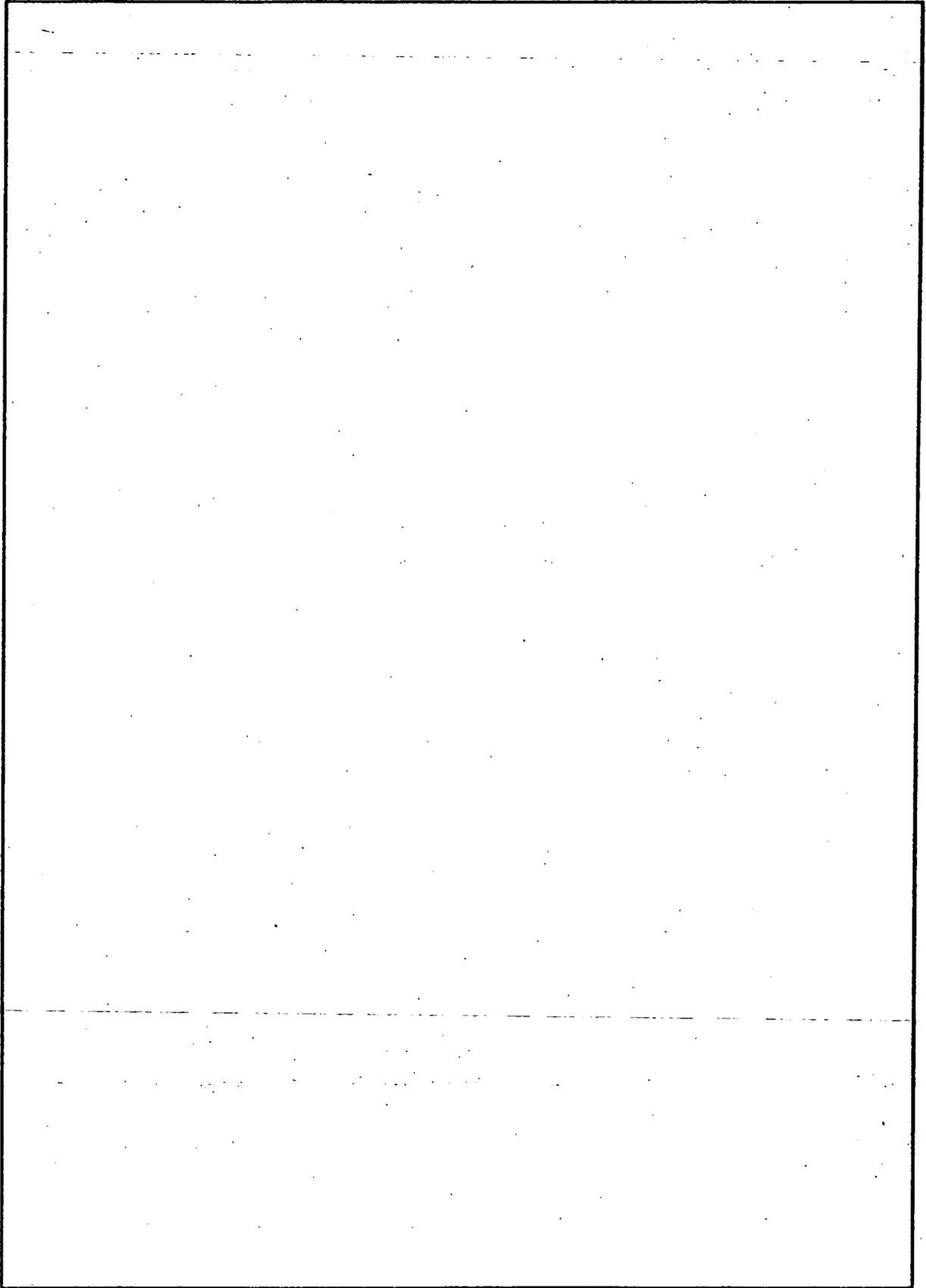


Figure C-1 Waste Characterization Flowchart

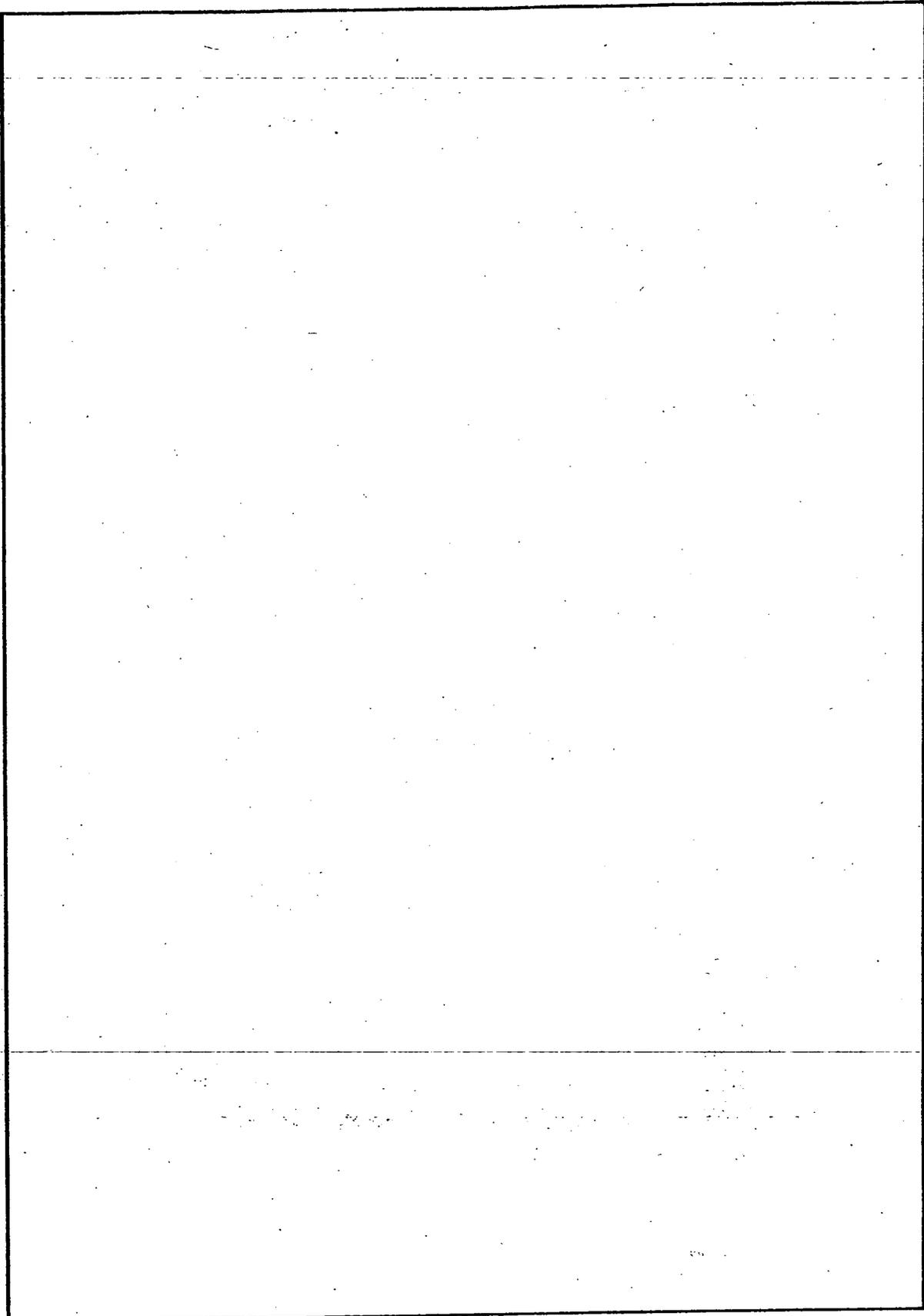


Figure C-2 Material Evaluation Form (MEF)

**Fernald Site
MATERIAL EVALUATION FORM**

MEF NO: 4456 -

MEF REV. NO.: _____

SECTION I - MATERIAL GENERATOR			
SRC: _____	MTC: _____	2. PLANT AND/OR BUILDING NO.: _____	3. PROCESS AREA: _____
4. EQUIPMENT NAME(S): _____		5. MEF NO. DATE: _____	MEF REV. DATE: _____
7. APPROXIMATE NET WEIGHT OF FULL CONTAINER? <input type="checkbox"/> <100 lbs. <input type="checkbox"/> 100 to 1000 lbs. <input type="checkbox"/> >1000 lbs.		8. DOES MATERIAL CONSIST OF MORE THAN ONE SUBSTANCE? <input type="checkbox"/> YES <input type="checkbox"/> NO	
9. IS MATERIAL A WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO		10. COMMON NAMES: _____	
11. CHEMICAL NAMES: _____		6. MATERIAL PHYSICAL STATE: <input type="checkbox"/> Liquid <input type="checkbox"/> Gas <input type="checkbox"/> Wet Solid (Sludge) <input type="checkbox"/> Dry Solid	
12. COMMON/CHEMICAL NAME SOURCE: <input type="checkbox"/> Process Information <input type="checkbox"/> MSDS <input type="checkbox"/> Container Label <input type="checkbox"/> FEMP Lot Code		OTHER: _____	
13. SIMILAR MATERIAL NAME: _____		14. SIMILAR MATERIAL LOT CODE(S): _____	
15. SUBSTANCES SUSPECTED:			
<input type="checkbox"/> Aerosols	<input type="checkbox"/> Cresol	<input type="checkbox"/> Endrine	<input type="checkbox"/> Methylene Chloride
<input type="checkbox"/> Arsenic	<input type="checkbox"/> m-Cresol	<input type="checkbox"/> Heptachlor	<input type="checkbox"/> Motor/Engine Oil
<input type="checkbox"/> Barium	<input type="checkbox"/> o-Cresol	<input type="checkbox"/> Hexachlorobenzene	<input type="checkbox"/> Nitrobenzene
<input type="checkbox"/> Benzene	<input type="checkbox"/> p-Cresol	<input type="checkbox"/> Hexachloroethane	<input type="checkbox"/> Other Organics
<input type="checkbox"/> Cadmium	<input type="checkbox"/> 2,4-D	<input type="checkbox"/> Hexachloro-1,3-butadiene	<input type="checkbox"/> Paint Stripper
<input type="checkbox"/> Carbon Tetrachloride	<input type="checkbox"/> Degreaser	<input type="checkbox"/> Hydraulic Oil	<input type="checkbox"/> Paint Thinner/Mineral Spirits
<input type="checkbox"/> Chlordane	<input type="checkbox"/> 1,4-Dichlorobenzene	<input type="checkbox"/> Ink	<input type="checkbox"/> Pentachlorophenol
<input type="checkbox"/> Chlorobenzene	<input type="checkbox"/> 1,2-Dichloroethane	<input type="checkbox"/> Lead	<input type="checkbox"/> Perchloroethylene
<input type="checkbox"/> Chloroform	<input type="checkbox"/> 1,1-Dichloroethylene	<input type="checkbox"/> Lindane	<input type="checkbox"/> Pyridine
<input type="checkbox"/> Chromium	<input type="checkbox"/> 2,4-Dinitrotoluene	<input type="checkbox"/> Mercury	<input type="checkbox"/> Selenium
<input type="checkbox"/> Constants	<input type="checkbox"/> Enamel	<input type="checkbox"/> Methoxychlor	<input type="checkbox"/> Silver
		<input type="checkbox"/> Methyl ethyl ketone	<input type="checkbox"/> Synthetic oil
			<input type="checkbox"/> TBP/Kerosene
			<input type="checkbox"/> Tetrachloroethylene
			<input type="checkbox"/> 1,1,1-Trichloroethane
			<input type="checkbox"/> 2,4,5-TP (Silvex)
			<input type="checkbox"/> 2,4,5-Trichlorophenol
			<input type="checkbox"/> 2,4,6-Trichlorophenol
			<input type="checkbox"/> Toxaphene
			<input type="checkbox"/> Trichloroethylene
			<input type="checkbox"/> Unknown
			<input type="checkbox"/> Vinyl Chloride
			<input type="checkbox"/> Xylene
			<input type="checkbox"/> Oil
16. a. REASON FOR SUSPECTING SUBSTANCES AND QUANTITY: _____			
16. b. SOURCE FOR REASON AND QUANTITY: (Attach MSDS if Available)			
<input type="checkbox"/> Personnel Interviews	<input type="checkbox"/> AEDO Log	<input type="checkbox"/> MSDS	<input type="checkbox"/> Prior Evaluation of Similar Material
<input type="checkbox"/> Historical Records	<input type="checkbox"/> Physical Evidence	<input type="checkbox"/> Container Label	What Material: _____
<input type="checkbox"/> FEMP Lot Code	<input type="checkbox"/> Process Information	<input type="checkbox"/> Sump Report	SRC: _____ MTC: _____
<input type="checkbox"/> Spill Database			
16. c. HEALTH AND SAFETY CONCERNS/ REQUIREMENTS: _____		16. d. SIGNATURE AND DATE: _____	
17. HAS THE "FINGERPRINT" VISUAL INSPECTION BEEN COMPLETED? <input type="checkbox"/> YES <input type="checkbox"/> NO		18. NUMBER OF PHASES: _____	
		19. pH (IF KNOWN): (Attach Lab Results)	
		20. FLASH POINT (IF KNOWN): (Attach Lab Results)	
21. HAS A PAINT FILTER TEST BEEN COMPLETED? <input type="checkbox"/> YES <input type="checkbox"/> NO			
22. IS IT REACTIVE? <input type="checkbox"/> YES <input type="checkbox"/> NO EXPLAIN: _____			
23. IS IT IGNITABLE? <input type="checkbox"/> YES <input type="checkbox"/> NO EXPLAIN: _____			
24. OTHER INFORMATION: (Example: Is the Material a Product or Waste?) _____			
25. ADDITIONAL SOURCES OF INFORMATION: _____			
26. PRIMARY CONTACT INDIVIDUAL: _____		EXTENSION: _____	
		DATE COMPLETED: _____	

NOTE: Form shall be completed using Ink or a typewriter.
NOTE: Only WEMCO employees shall sign this form.

Fernald Site
MATERIAL EVALUATION FORM
(Continued)

MEF NO.: **- 4456 -**

MEF REV. NO.: _____

SECTION II - FACILITY AND MATERIALS EVALUATION

1. IS MATERIAL A LISTED WASTE? <input type="checkbox"/> YES <input type="checkbox"/> NO	2. IS IT EXCLUDED UNDER 261.4(a)? <input type="checkbox"/> YES <input type="checkbox"/> NO	3. IS IT EXCLUDED UNDER 261.4 (b)? <input type="checkbox"/> YES <input type="checkbox"/> NO	4. DOES IT CONTAIN A LISTED WASTE AS PER 261 SUBPART D? <input type="checkbox"/> k _____ <input type="checkbox"/> l _____ <input type="checkbox"/> p _____ <input type="checkbox"/> v _____ <input type="checkbox"/> not listed
5. DOES IT EXHIBIT ANY OF THE CHARACTERISTICS AS PER 261 SUBPART C? <input type="checkbox"/> YES <input type="checkbox"/> NO EXPLAIN: _____			6. IS IT A RO HAZARDOUS SUBSTANCE? <input type="checkbox"/> YES <input type="checkbox"/> NO POUNDS: _____
7. CLASSIFICATION AS A WASTE: <input type="checkbox"/> RCRA Hazardous Waste <input type="checkbox"/> Source Exempt <input type="checkbox"/> Non-RCRA Waste <input type="checkbox"/> Radioactive <input type="checkbox"/> Needs Further Action (ie sampling) EXPLAIN: _____		8. PRIMARY BASIS FOR CLASSIFICATION: WHAT MATERIAL? <input type="checkbox"/> Generator Information <input type="checkbox"/> Prior material evaluation LOT NUMBER: _____	
9. IS IT SUBJECT TO LAND BAN RESTRICTIONS? <input type="checkbox"/> NO <input type="checkbox"/> YES Effective Date: _____			
10. DISTRIBUTE PER SECTION IV, ITEM 9.			
11. OTHER INFORMATION SOURCES USED:			
12. PRIMARY CONTACT INDIVIDUAL: _____		EXTENSION: _____	
13. IS SAMPLING REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO		14. IS TRANSFER TO CONTROLLED HOLDING AREA REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO	
15. INFORMATION ACTION COMPLETION DATE: _____		DATE: _____	
16. HEALTH AND SAFETY CONCERNS REQUIREMENTS: _____		16. b. SIGNATURE AND DATE	

SECTION III - ENVIRONMENTAL ENGINEERING

1. RECOMMENDED STORAGE CONTAINER MATERIAL <input type="checkbox"/> Carbon Steel <input type="checkbox"/> Stainless Steel <input type="checkbox"/> Polyethylene <input type="checkbox"/> Other: _____	2. APPLICABLE REACTIVITY GROUP CODES: <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F <input type="checkbox"/> G <input type="checkbox"/> H
3. OTHER INFORMATION SOURCES USED:	
4. PRIMARY CONTACT INDIVIDUAL: _____	EXTENSION: _____
DATE COMPLETED: _____	

SECTION IV - TOXIC AND SOLID WASTE PROGRAMS

1. PROPER D.O.T. SHIPPING NAME: _____		
2. D.O.T. HAZARD CLASS: _____		3. REQUIRED LABELS: _____
4. D.O.T. IDENTIFICATION NO.: <input type="checkbox"/> UN <input type="checkbox"/> NA		5. EPA WASTE NO.: _____
6. SUFFIX: _____		7. FEMP SRC AND MTC (COPY FROM SECTION I, ITEM 1) SRC: _____ MTC: _____
8. IS A REVISION TO MEF REQUIRED? <input type="checkbox"/> YES <input type="checkbox"/> NO		
9. DISTRIBUTION:	MATERIAL GENERATOR: _____	DATE: _____
	ENVIRONMENTAL ENGINEERING: J. L. Stoffer	DATE: _____
	ENVIRONMENTAL MONITORING: _____	DATE: _____
	MC&A: H. J. Knue	DATE: _____
	IRS&T: J. A. Craighead	DATE: _____
	FACILITIES AND WAREHOUSING: M. C. Harper	DATE: _____
	F&ME: L. L. Honigford	DATE: _____
	CONTROLLED HOLDING AREA: C. J. Stafford	DATE: _____
10. PRIMARY CONTACT INDIVIDUAL: _____	EXTENSION: _____	DATE COMPLETED: _____

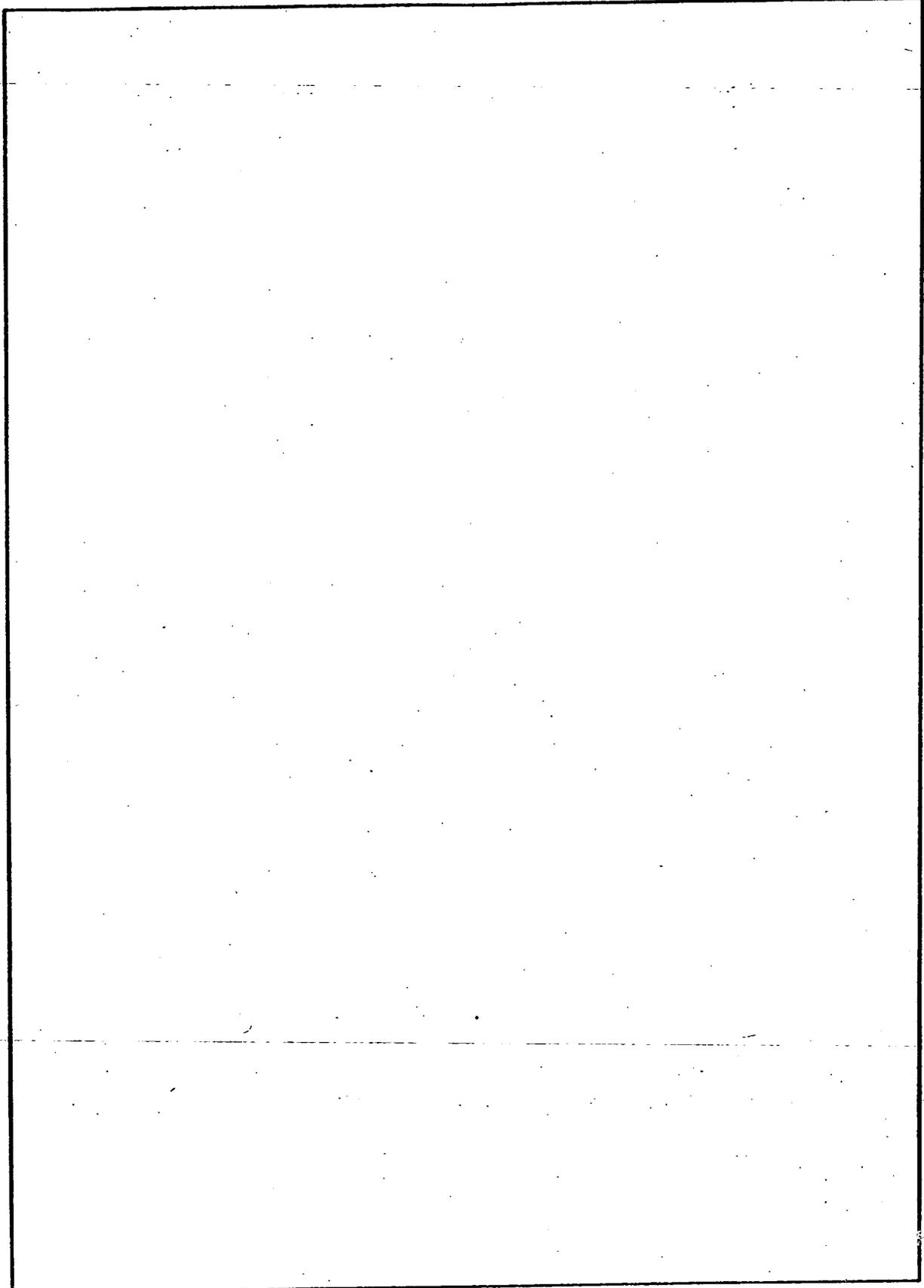


Figure C-3 Debris Checklists

FEMP
LOW-LEVEL RADIOACTIVE WASTE
MATERIALS EVALUATION AND CONTAINER INFORMATION - WOOD

SECTION I			
WASTE EVALUATION	YES	NO	N/A
1. Treated: a. Material free from creosote treatment			
2. Residues: a. Free from process or waste residues			
3. Stains: a. Stains cover less than 10% of wood surface or Stain covers more than 10% of wood surface caused by green salt, black oxide, white salt, or orange oxide.			
4. Paint: a. Free from lead-based paint or Paint covers less than 10% of material			
5. Plastic/Rubber: a. Material consists of less than 20% by volumes other materials and does not contain any oil, solid residues, or entrapped liquids (e.g. plastic or rubber parts/hardware)			
6. Metal: a. Metal constitutes more than 10% by volume (If yes, then metals checklist (FS-F-3464) must also be used.)			

SECTION II - CONTAINER INFORMATION			
1. MATERIAL ORIGIN/DESCRIPTION: 			
2. PACKAGING START DATE	PACKAGING FINISH DATE:	3. OPERATOR(S) SIGNATURE:	DATE:
4. CONTAINER NUMBER:	5. CONTAINER TYPE: <input type="checkbox"/> S/L <input type="checkbox"/> WHITE METAL BOX		
6. 65 CARD NUMBER:	7. LOCATION PACKAGED:		
8. MEF NUMBER:	9. % COMBUSTIBLE:		
APPROVED BY: 	APPROVED BY: 		
SUPERVISOR(S) SIGNATURE/DATE	QA SIGNATURE/DATE		

* When materials are packaged that do not meet the criteria established in Section I, but have an approved MEF number, the MEF number and material must be recorded.

GENERATOR TO MAKE DISTRIBUTION:	
Original to Facilities and Material Evaluation	MS65
2 Copy to Waste Shipping	MS63
3 Copy to Environmental Compliance	MS65
4 Copy to Materials Control and Accountability	MS28

**Fernald Site
LOW-LEVEL RADIOACTIVE WASTE
EVALUATION AND CONTAINER INFORMATION - SCRAP VEHICLE**

SECTION I				
WASTE EVALUATION	YES	UNKNOWN	NO	N/A
Free from the following fluids:				
a. Anti-freeze				
b. Brake fluid				
c. Gasoline				
d. Transmission fluid				
e. Engine oil				
f. Power steering				
g. Differential fluid (rear end)				
h. Windshield Wiper Fluid				
2. Removed:				
a. Radios				
b. Distributor coils and amplifiers				
c. Alternators				
d. Electronic fuel injector circuit				
3. Fuel tank removed				
4. Propane tank removed				
5. Tires Deflated				
6. Tire valve stem removed				
7. Freon pumped/contained for recycling				
8. Auxiliary Hydraulic Unit removed or drained				
9. Oil filter removed				
10. Oil filter drained				
Oil filter replaced in vehicle or discarded and oil line capped				
12. Batteries removed				

SECTION II - CONTAINER INFORMATION			
1. MATERIAL ORIGIN/DESCRIPTION:			
2. PACKAGING START DATE		3. OPERATOR(S) SIGNATURE:	
PACKAGING FINISH DATE:		DATE:	
4. CONTAINER NUMBER:		5. CONTAINER TYPE:	
6. 65 CARD NUMBER:		7. LOCATION PACKAGED:	
8. MEF NUMBER:		9. % COMBUSTIBLE:	

GENERATOR TO MAKE DISTRIBUTION:	
Original to Facilities and Material Evaluation	MS46
2 Copy to Waste Shipping	MS63
3 Copy to Environmental Compliance	MS65
4 Copy to Materials Control and Accountability	MS28

APPROVED BY: _____	DATE: _____
SUPERVISOR'S SIGNATURE	DATE

* When materials are packaged that do not meet the criteria established in Section I, but have an approved MEF number, the MEF number and material must be recorded.

LOW-LEVEL RADIOACTIVE WASTE

MATERIALS EVALUATION AND CONTAINER INFORMATION - METAL - 4456

SECTION I

WASTE EVALUATION		YES	NO	N/A
1. Free from the following:	a. Grease/oils			
	b. Solid residues			
	c. Entrapped liquids			
	d. Internal fluids			
2. Material tagged as drained				
3. Paint: Material free from lead-based paint or Paint covers less than 10% of materials or Material is greater than 1/16 inch thick				
4. Electrical Equipment:	a. Ballasts removed			
	b. Starter caps removed			
	c. Mercury switches removed			
	d. Dielectric fluid removed			
5. Plastic/Rubber: a. Material consists of less than 20% other materials by volume and meets the criteria set in #1 (e.g. plastic, or rubber parts/hardware)				
6. Wood: a. Constitutes more than 20% by volume (If yes, then wood checklist (FS-F-3465) must also be used.)				

SECTION II - CONTAINER INFORMATION

1. MATERIAL ORIGIN/DESCRIPTION:

2. PACKAGING START DATE	PACKAGING FINISH DATE	3. OPERATOR(S) SIGNATURE	DATE
4. CONTAINER NUMBER:		5. CONTAINER TYPE:	
6. 66 CARD NUMBER:		7. LOCATION PACKAGED:	
8. MEF NUMBER:		9. % COMBUSTIBLE:	
APPROVED BY: SUPERVISOR(S) SIGNATURE/DATE		APPROVED BY: QA SIGNATURE/DATE	

* When materials are packaged that do not meet the criteria established in Section I, but have an approved MEF number, the MEF number and material must be recorded.

GENERATOR TO MAKE DISTRIBUTION:		
1	Original to Facilities and Material Evaluation	MS48
2	Copy to Waste Shipping	MS63
3	Copy to Environmental Compliance	MS65
4	Copy to Materials Control and Accountability	MS28

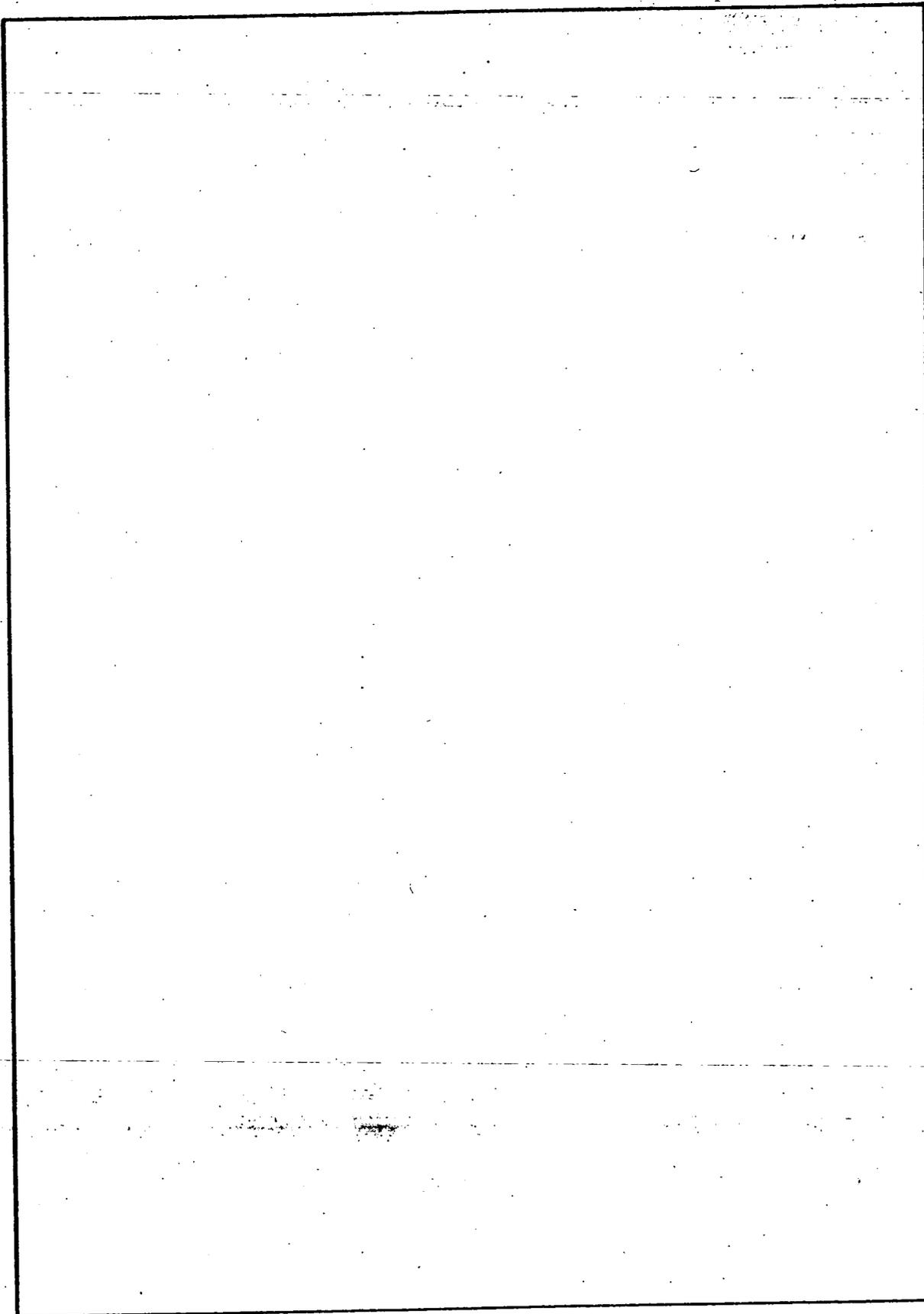


Figure C-4 Compatibility Codes

SECTION C - WASTE CHARACTERISTICS

FIGURE C-4

HAZARDOUS WASTE COMPATIBILITY CHART

REACTIVITY GROUP DESCRIPTION	REACTIVITY GROUP CODE (RGC)	A	B	C	D	E	F	G	H	I	J	K
Nitriles, Halogenated Organics	A	X	X	0	0	X	X	X	0	0	X	X
Combustibles (hydrocarbons)	B	X	X	0	X	X	X	X	X	0	0	X
Mineral acids and other corrosive mixtures	C	0	0	X	0	0	0	0	0	0	0	0
Caustics	D	0	X	0	X	0	X	X	X	0	0	X
Toxic Metals and Metal Compounds	E	X	X	0	0	X	X	X	X	0	X	X
Fluorides (inorganic)	F	X	X	0	X	X	X	X	X	0	X	X
Water-containing Mixtures	G	X	X	0	X	X	X	X	X	0	0	X
Cyanide Solutions and Compounds	H	0	X	0	X	X	X	X	X	0	0	X
Strong Oxidizers	I	0	0	0	0	0	0	0	0	X	0	0
Free Metals	J	X	0	0	0	X	X	0	0	0	X	0
Ignitable (Alcohols, D001)	K	X	X	0	X	X	X	X	X	0	0	X

X - Compatible
0 - Not Compatible

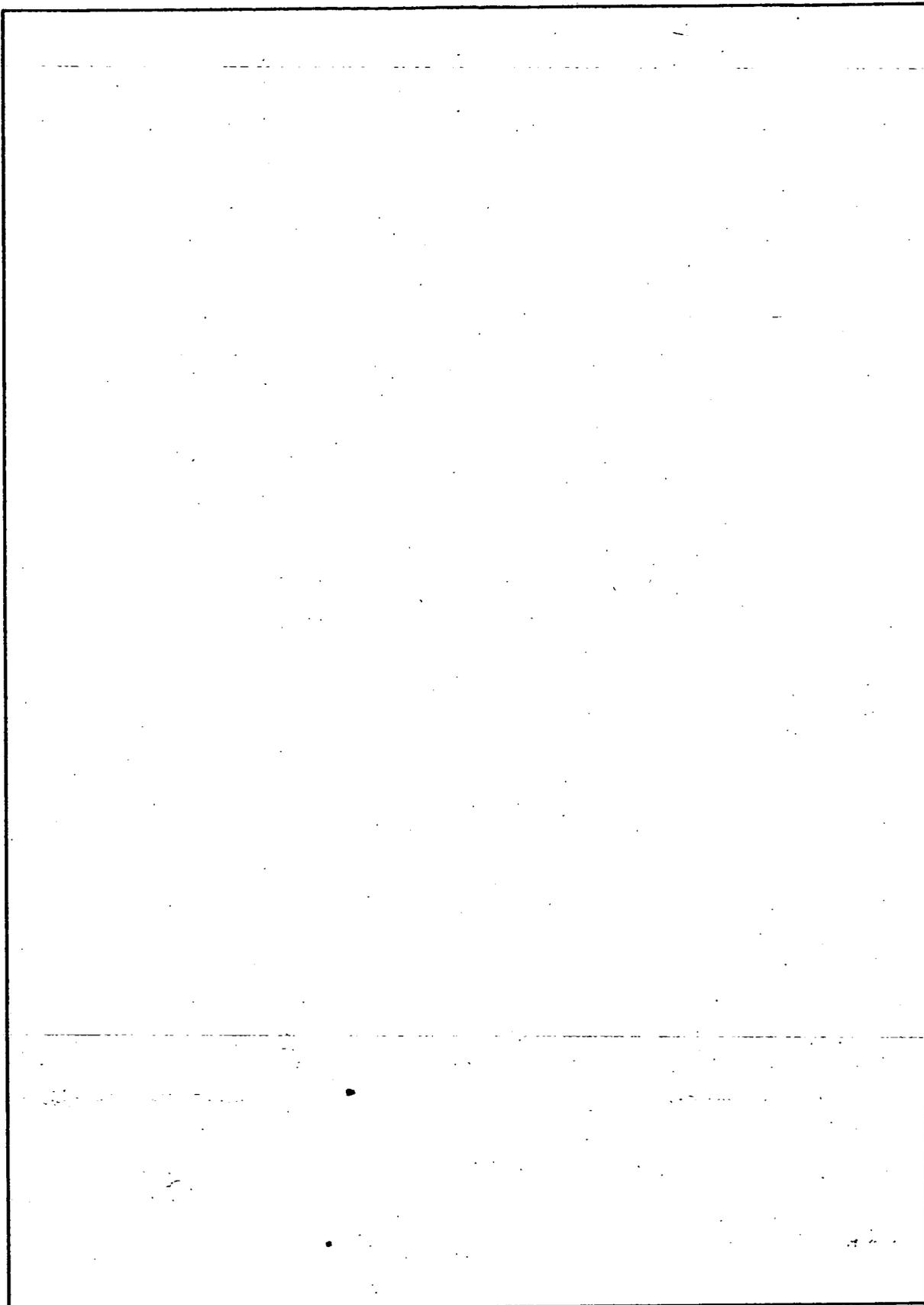


Figure C-5 LDR Documentation

LDR ADDENDUM TO THE MEF - SPENT SOLVENTS NOTIFICATION

FIGURE C-5

MEF Number: _____ Rev No.: _____

If the waste identified on the form LDR ADDENDUM TO THE MEF - NOTIFICATION is described by any of the following hazardous waste codes: F001, F002, F003, F004, or F005, then this page MUST be completed and this information MUST accompany any shipment of this waste as part of the required notification/certification.

_____ all solvent constituents known to be present in the waste and the treatment standard that applies for the treatability group.

- 4456 -

A. SOLVENT WASTE TREATMENT STANDARDS

F001 through F005 spent solvent constituents and their associated hazardous waste code(s)	Treatment Standard*		F001 through F005 spent solvent constituents and their associated hazardous waste code(s)	Treatment Standard*	
	Wastewaters	Nonwastewaters		Wastewaters	Nonwastewaters
acetone (F003)	0.28	160	methylene chloride (F001, F002)	0.089	33
benzene (F005)	0.070	3.7	methyl ethyl ketone (F005)	0.28	36
n-butyl alcohol (F003)	5.6	2.6	methyl isobutyl ketone (F003)	0.14	33
carbon disulfide (F005)	0.14	4.8 (40 CFR 268.41)	nitrobenzene (F004)	0.068	14
carbon tetrachloride (F001)	0.057	5.6	2-nitropropane (F005)	((WETOX or CHOXD) or CARBN) or INCIN (40 CFR 268.42)	INCIN (40 CFR 268.42)
chlorobenzene (F002)	0.057	5.7	pyridine (F005)	0.014	16.0
cresols (m and p isomers)	0.77	3.2	tetrachloroethylene (F001, F002)	0.056	5.6
o-cresol (F004)	0.11	5.6	toluene (F005)	0.08	28
cyclohexanone (F003)	0.36	0.75 (40 CFR 268.41)			
1,2-dichlorobenzene (F002)	0.088	6.2	1,1,1-trichloroethane (F001, F002)	0.054	5.6
2-ethoxyethanol (also called ethylene glycol monoethyl ether) (F005)	INCIN or BIODG (40 CFR 268.42)	INCIN (40 CFR 268.42)	1,1,2-trichloroethane (F002)	0.03	7.6
ethyl acetate (F003)	0.34	33	trichloroethylene (F001, F002)	0.054	5.6
ethyl benzene (F003)	0.057	6.0	1,1,2-trichloro-1,2,2-trifluoromethane (F002)	0.057	28
ethyl ether (F003)	0.12	160	trichloromonofluoromethane (F002)	0.02	33
isobutyl alcohol (F005)	5.6	170	xylene (total) (F003)	0.32	28
methanol (F003)	5.6	0.75 (40 CFR 268.41)			

*All spent solvent treatment standards taken from 40 CFR 268.43/OAC 3745-59-43, unless otherwise noted. Numerical treatment standards are expressed in ppm. 40 CFR 268.41/OAC 3745-59-41 treatment standards are based on constituent concentration in the waste extract (based on TCLP analysis). 40 CFR 268.43/OAC 3745-59-43 treatment standards are based on constituent concentration in the waste (based on total waste analysis - TWA).

MEF Number: _____ Rev No.: _____

If the waste identified on the form LDR ADDENDUM TO THE MEF - NOTIFICATION is identified as a California List waste, then this MUST be completed and this information MUST accompany any shipment of this waste as part of the required notification/certification.

- 4456

Apply all California List Prohibitions that apply to the waste identified on the referenced MEF.

A. CALIFORNIA LIST PROHIBITIONS			
Prohibition Applies	California List Prohibition	Treatment Standard or Statutory Prohibition Level	40 CFR 268/OAC 3745-59 or RCRA 3004(d) Reference
<input type="checkbox"/> yes <input type="checkbox"/> no	Liquid hazardous waste, contains free cyanides at concentrations greater than or equal to 1,000 mg/L	Treat to a concentration less than 1,000 mg/L. No specific treatment method is required.	RCRA Section 3004(d)
<input type="checkbox"/> yes <input type="checkbox"/> no (if yes mark each applicable constituent)	Liquid hazardous waste, including any free liquids associated with any solid or sludge, contains the following metals, (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to the concentrations specified in RCRA Section 3004(d). Mark each applicable constituent: <input type="checkbox"/> arsenic and/or compounds (as As) \geq 500 mg/L <input type="checkbox"/> cadmium and/or compounds (as Cd) \geq 100 mg/L <input type="checkbox"/> chromium VI and/or compounds (as Cr VI) \geq 500 mg/L <input type="checkbox"/> lead and/or compounds (as Pb) \geq 500 mg/L <input type="checkbox"/> mercury and/or compounds (as Hg) \geq 20 mg/L <input type="checkbox"/> nickel and/or compounds (as Ni) \geq 134 mg/L <input type="checkbox"/> selenium and/or compounds (as Se) \geq 100 mg/L <input type="checkbox"/> thallium and/or compounds (as Tl) \geq 130 mg/L	Treat to a concentration less than the prohibition level. No specific treatment method is required.	RCRA Section 3004(d)
<input type="checkbox"/> yes <input type="checkbox"/> no	Liquid hazardous waste, pH less than 2.0	DEACT Treat to pH greater than 2.0. No specific treatment method is required.	40 CFR 268.42 Table 2/ OAC 3745-59-42 Table 2
<input type="checkbox"/> yes <input type="checkbox"/> no	Liquid hazardous waste, contains PCBs greater or equal to 50 ppm, but less 500 ppm	Incinerate in accordance with the technical requirements of 40 CFR 761.70 or burned in high efficiency boilers in accordance with the technical requirements of 40 CFR 761.60. Thermal treatment must also be in compliance with the applicable regulations in 40 CFR Parts 264, 265, and 266.	40 CFR 268.42(a)(1)/ OAC 3745-59-42
<input type="checkbox"/> yes <input type="checkbox"/> no	Liquid hazardous waste, contains PCBs greater than or equal to 500 ppm	Incinerate in accordance with the technical requirements of 40 CFR 761.70. Thermal treatment must also be in compliance with the applicable regulations in 40 CFR Parts 264, 265, and 266.	40 CFR 268.42(a)(1)/ OAC 3745-59-42
<input type="checkbox"/> yes <input type="checkbox"/> no	Hazardous waste (with or without free liquids, but other than those wastes prohibited under 40 CFR 268.32(a)(3)), contains halogenated organic compounds (HOCs) identified in 40 CFR Appendix III greater than or equal to 1,000 ppm.	Incinerate in accordance with the requirements of 40 CFR 264, subpart O or 40 CFR 265, subpart O.	40 CFR 268.42(a)(2)/ OAC 3745-59-42
<input type="checkbox"/> yes <input type="checkbox"/> no	Liquid hazardous waste that are primarily water, contains halogenated organic compounds (HOCs) identified in 40 CFR Appendix III greater than or equal to 1,000 mg/L, but less than 10,000 mg/L	Treat to a concentration of less than 1,000 mg/L. No specific treatment method is required.	40 CFR 268.32(a)(3)/OAC 3745-59-32

A. WASTE STREAM IDENTIFICATION

1. MEF #:	2. MTC _____ SRC _____ (see MEF for 15 digit lot codes)
3. EVALUATOR:	4. DATE:

B. EPA HAZARDOUS WASTE NUMBERS

LIST ALL EPA HAZARDOUS WASTE NUMBERS FROM SECTION 2 OF THE MEF, OR "NONE":

C. TREATABILITY GROUP DATA

1a. TOTAL ORGANIC CARBON (TOC):		1b. TOC DETERMINATION BASIS:
<input type="checkbox"/> TOC < 1%	<input type="checkbox"/> TOC ≥ 1% (D001 only) <input type="checkbox"/> TOC ≥ 10%	<input type="checkbox"/> PK <input type="checkbox"/> ANL
2a. TOTAL SUSPENDED SOLIDS (TSS):		2b. TSS DETERMINATION BASIS:
<input type="checkbox"/> < 1%	<input type="checkbox"/> ≥ 1%	<input type="checkbox"/> PK <input type="checkbox"/> ANL

D. CALIFORNIA LIST RESTRICTIONS DATA

1a. FREE LIQUIDS TEST (PFLT):		1b. FREE LIQUID DETERMINATION BASIS:
<input type="checkbox"/> free liquids	<input type="checkbox"/> no free liquids	<input type="checkbox"/> PK <input type="checkbox"/> ANL
2a. FREE CYANIDES (mg/l):		2b. FREE CYANIDES DETERMINATION BASIS:
<input type="checkbox"/> ≥ 1,000	<input type="checkbox"/> < 1,000	<input type="checkbox"/> PK <input type="checkbox"/> ANL
3a. CALIFORNIA LIST METALS (mg/l):		3b. METALS DETERMINATION BASIS:
<input type="checkbox"/> As ≥ 500	<input type="checkbox"/> As < 500	<input type="checkbox"/> PK <input type="checkbox"/> ANL
<input type="checkbox"/> Cd ≥ 100	<input type="checkbox"/> Cd < 100	
<input type="checkbox"/> Cr VI ≥ 500	<input type="checkbox"/> Cr VI < 500	
<input type="checkbox"/> Pb ≥ 500	<input type="checkbox"/> Pb < 500	
<input type="checkbox"/> Hg ≥ 20	<input type="checkbox"/> Hg < 20	
<input type="checkbox"/> Ni ≥ 134	<input type="checkbox"/> Ni < 134	
<input type="checkbox"/> Se ≥ 100	<input type="checkbox"/> Se < 100	
<input type="checkbox"/> Tl ≥ 130	<input type="checkbox"/> Tl < 130	
4a. pH:		4b. pH DETERMINATION BASIS:
<input type="checkbox"/> ≤ 2.0	<input type="checkbox"/> > 2.0	<input type="checkbox"/> PK <input type="checkbox"/> ANL
5a. PCBs (mg/l):		5b. PCBs DETERMINATION BASIS:
<input type="checkbox"/> 50 ≤ PCBs < 500	<input type="checkbox"/> < 50	<input type="checkbox"/> PK <input type="checkbox"/> ANL
6a. HALOGENATED ORGANIC COMPOUNDS (mg/kg):		6b. HOCs DETERMINATION BASIS:
1,000 ≤ HOCs < 10,000		<input type="checkbox"/> PK

**SAMPLE NOTICE FROM GENERATOR THAT
RESTRICTED WASTES ARE EXEMPT FROM LAND DISPOSAL PROHIBITIONS**

The wastes identified on manifest number _____ and bearing Hazardous Waste Numbers _____ are restricted wastes that have been exempted from the land disposal prohibitions of 40 CFR Part 268 for the following reasons (check all that apply):

- A case-by-case extension for the wastes has been granted under Section 268.5.
- A "no-migration" petition has been granted for the wastes and disposal facility under Section 268.6.
- The wastes are subject to an nationwide extension of the effective dates. The treatment standards, prohibition levels, and effective dates for the wastes are given below.
- This shipment includes F001-F005 spent solvents, as identified on the attached sheet.
- This shipment includes F039 multi-source leachate, as identified on the attached sheet(s).
- This shipment includes RCRA Section 3004(d) California list wastes, as identified on the attached sheet.
- This shipment includes additional wastes identified below:

Hazardous Waste No. ¹	Subcategory ²	Treatability group ³	CFR reference for treatment standard ⁴	Five-letter code(s) ⁵	Effective date ⁶
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

¹Hazardous waste numbers can be determined from 40 CFR 261 Subparts C and D, e.g., D009

²Subcategory (if any) can be determined from CCWE & CCW in 40 CFR 268, e.g., low mercury subcategory.

³Treatability group is either "wastewater" or "nonwastewater."

⁴To find the CFR reference for the treatment standard, refer the waste in 268.41(a)-Table CCWE; 268.42(a)(1), (a)(2), (c); and 268.43(a)-Table CCW. The reference must include both the section and paragraph where the treatment standard is found, e.g. 268.42(a).

⁵Wherever the CFR reference is 268.42, a five-letter code (e.g. INCIN) must be included.

⁶For effective dates that have passed, refer to Appendix VII or VIII of Part 268.

Analysis data for these wastes are attached, where available.

NOTIFICATION AND CERTIFICATION APPLICABLE TO ORGANOMETALLIC OR ORGANIC LAB PACKS

- 4456 -

The wastes identified on manifest number _____ and bearing the EPA Hazardous Waste Number(s) _____ are part of an Appendix IV or V (circle one) lab pack and are subject to the land disposal restrictions of 40 CFR Part 268. The wastes do not meet the treatment standards specified in Part 268 Subpart D or do not meet the prohibitions specified in 268.32 or RCRA SECTION 3004(d). The treatment standards or prohibition levels applicable to each waste are identified below: (Check all that apply)

- This lab pack includes F001-F005 spent solvents, as identified on the attached sheet.
- This lab pack includes F039 multi-source leachate, as identified on the attached sheet(s).
- This lab pack includes RCRA Section 3004(d) California list wastes, as identified on the attached sheet.
- This lab pack includes additional wastes identified below:

Hazardous Waste No. ¹	Subcategory ²	Treatability group ³	CFR reference for treatment standard ⁴	Five-letter code(s) ⁵
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

¹Hazardous waste numbers can be determined from 40 CFR 261 Subparts C and D. e.g., D009

²Subcategory (if any) can be determined from CCW & CCWE in 40 CFR 268. e.g., low mercury subcategory.

³Treatability group is either "wastewater" or "nonwastewater."

⁴To find the CFR reference for the treatment standard, refer the waste in 268.41(a)-Table CCWE; 268.42(a)(1), (a)(2), (c); and 268.43(a)-Table CCW. The reference must include both the section and paragraph where the treatment standard is found. e.g. 268.42(a).

⁵Wherever the CFR reference is 268.42, a five-letter code (e.g. INCIN) must be included.

A waste analysis for these wastes is attached, where available.

As required by 40 CFR 268.7(a)(8), the following certification is made for these restricted wastes:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste and that the lab pack contains only organic waste specified in Appendix _____ to Part 268 or solid waste not subject to regulation under 40 CFR Part 261. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment.

Authorized Signature

TREATMENT STANDARDS FOR F001-F005 SPENT SOLVENTS

[Instructions: Check the box beside each waste included in the offsite shipment: **4456** circle or otherwise identify the individual constituents likely to be present in each waste.]

Hazardous waste description	Constituents of concern	Nonwastewater		
		Total composition, mg/kg	TCLP, mg/L	Wastewater, total composition, mg/L
<input type="checkbox"/> F001 - Spent halogenated solvents used in degreasing	Carbon tetrachloride		0.96	0.05
	Methylene chloride		0.96	0.20
	Tetrachloroethylene		0.05	0.079
	1,1,1-Trichloroethane		0.41	1.05
	Trichloroethylene		0.091	0.062
	1,1,2-Trichloro-1,2,2-trifluoroethane		0.96	1.05
	Trichlorofluoromethane		0.96	0.05
	Chlorobenzene		0.05	0.15
<input type="checkbox"/> F002 - Spent halogenated solvents	1,2-Dichlorobenzene		0.125	0.65
	Methylene chloride		0.96	0.20
	Methylene chloride (from the pharmaceutical industry)		—	0.44
	Tetrachloroethylene		0.05	0.079
	1,1,1-Trichloroethane		0.41	1.05
	1,1,2-Trichloroethane	6		0.030
	Trichloroethylene		0.091	0.062
	1,1,2-Trichloro-1,2,2-trifluoroethane		0.96	1.05
<input type="checkbox"/> F003 - Spent non-halogenated solvents	Trichlorofluoromethane		0.96	0.05
	Acetone		0.59	0.05
	n-Butyl alcohol		5.0	5.0
	Cyclohexanone		0.75	0.125
	Ethyl acetate		0.75	0.05
	Ethyl benzene		0.053	0.05
	Ethyl ether		0.75	0.05
	Methanol		0.75	0.25
	Methyl isobutyl ketone		0.33	0.05
Xylene		0.15	0.05	
<input type="checkbox"/> F004 - Spent non-halogenated solvents	Cresols (and cresylic acid)		0.75	1.52
	Nitrobenzene		0.125	0.66
<input type="checkbox"/> F005 - Spent non-halogenated solvents	Benzene	3.7		0.070
	Carbon disulfide		4.81	1.05
	2-Ethoxyethanol	Incineration ¹		Biological degradation or incineration ²
	Isobutanol		5.0	5.0
	Methyl ethyl ketone		0.75	0.05
	2-Nitropropane	Incineration ¹		(Wet oxidation or chemical oxidation) followed by carbon adsorption or incineration ³
	Pyridine		0.33	1.12
	Toluene		0.33	1.12

¹Five-letter code is "INCIN".

²Five-letter codes are "BIODG" or "INCIN".

³Five-letter codes are "(WETOX or CHOXD) to CARBN" or "INCIN".

Source: McCoy and Associates, Inc.

F039 TREATMENT STANDARDS

- 4456 -

[Identify individual constituents likely to be present]

Multi-source leachate	Nonwaste-water total composition. (mg/kg)	Waste-water total composition. (mg/L)	Multi-source leachate	Nonwaste-water total composition. (mg/kg)	Waste-water total composition. (mg/L)
Acetone	160	0.28	Chlorodibromomethane	15	0.057
Acenaphthalene	3.4	0.059	Chloroethane	6.0	0.27
Acenaphthene	4.0	0.059	bis-(2-Chloroethoxy) methane	7.2	0.036
Acetonitrile	NA	0.17	bis-(2-Chloroethyl) ether	7.2	0.033
Acetophenone	9.7	0.010	Chloroform	5.6	0.046
2-Acetylaminofluorene	140	0.059	bis(2-Chloroisopropyl) ether	7.2	0.055
Acrolein	NA	0.29	p-Chloro-m-cresol	14	0.018
Acrylonitrile	84	0.24	Chloromethane (methyl chloride)	33	0.19
Aldrin	0.066	0.021	2-Chloronaphthalene	5.6	0.055
4-Aminobiphenyl	NA	0.13	2-Chlorophenol	5.7	0.044
Aniline	14	0.81	3-Chloropropylene	28	0.036
Anthracene	4.0	0.059	Chrysene	8.2	0.059
Aramite	NA	0.36	o-Cresol	5.6	0.11
Aroclor 1016	0.92	0.013	Cresol (m- and p-isomers)	3.2	0.77
Aroclor 1221	0.92	0.014	Cyclohexanone	NA	0.36
Aroclor 1232	0.92	0.013	1,2-Dibromo-3-chloro-propane	15	0.11
Aroclor 1242	0.92	0.017	1,2-Dibromoethane (Ethylene dibromide)	15	0.028
Aroclor 1248	0.92	0.013	Dibromomethane	15	0.11
Aroclor 1254	1.8	0.014	2,4-Dichlorophenoxy-acetic acid (2,4-D)	10	0.72
Aroclor 1260	1.8	0.014	o,p'-DDD	0.087	0.023
alpha-BHC	0.066	0.00014	p,p'-DDD	0.087	0.023
beta-BHC	0.066	0.00014	o,p'-DDE	0.087	0.031
delta-BHC	0.066	0.023	p,p'-DDE	0.087	0.031
gamma-BHC	0.066	0.0017	o,p'-DDT	0.087	0.0039
Benzene	36	0.14	p,p'-DDT	0.087	0.0039
Benzo(a)anthracene	8.2	0.059	Dibenz(a,h)anthracene	8.2	0.055
Benzo(b)fluoranthene	3.4	0.055	Dibenzo(a,c)pyrene	NA	0.061
Benzo(k)fluoranthene	3.4	0.059	m-Dichlorobenzene	6.2	0.036
Benzo(g,h,i)perylene	1.5	0.0055	o-Dichlorobenzene	6.2	0.088
Benzo(a)pyrene	8.2	0.061	p-Dichlorobenzene	6.2	0.090
Bromodichloromethane	15	0.35	Dichlorodifluoromethane	7.2	0.23
Bromoform	15	0.63	1,1-Dichloroethane	7.2	0.059
Bromomethane (methyl bromide)	15	0.11	1,2-Dichloroethane	7.2	0.21
+Bromophenyl phenyl ether	15	0.055	1,1-Dichloroethylene	33	0.025
n-Butyl alcohol	2.6	5.6	trans-1,2-Dichloroethylene	33	0.054
Butyl benzyl phthalate	7.9	0.017	2,4-Dichlorophenol	14	0.044
2-sec-Butyl-4,6-dinitrophenol	2.5	0.066	2,6-Dichlorophenol	14	0.044
Carbon tetrachloride	5.6	0.057	1,2-Dichloropropane	18	0.85
Carbon disulfide	NA	0.014	cis-1,3-Dichloropropene	18	0.036
Chlordane	0.13	0.0033			
p-Chloroaniline	16	0.46			
Chlorobenzene	5.7	0.057			
Chlorobenzilate	NA	0.10			
2-chloro-1,3-butadiene	NA	0.057			

F039 TREATMENT STANDARDS

[Identify individual constituents likely to be present]

Multi-source leachate	Nonwaste-water total composition. (mg/kg)	Waste-water total composition. (mg/L)	Multi-source leachate	Nonwaste-water total composition. (mg/kg)	Waste-water total composition. (mg/L)
trans-1,3-Dichloropropene	18	0.036	Indeno(1,2,3-c,d)pyrene	8.2	0.0055
Dieldrin	0.13	0.017	Iodomethane	65	0.19
Diethyl phthalate	28	0.20	Isobutanol	170	5.6
2,4-Dimethyl phenol	14	0.036	Isodrin	0.066	0.021
Dimethyl phthalate	28	0.047	Isosafrole	2.6	0.081
Di-n-butyl phthalate	28	0.057	Kepone	0.13	0.0011
1,4-Dinitrobenzene	23	0.32	Methacrylonitrile	84	0.24
4,6-Dinitro-o-cresol	160	0.28	Methanol	NA	5.6
2,4-Dinitrophenol	160	0.12	Methapyrilene	1.5	0.081
2,4-Dinitrotoluene	140	0.52	Methoxychlor	0.18	0.25
2,6-Dinitrotoluene	28	0.55	3-Methylcholanthrene	15	0.0055
Di-n-octyl phthalate	28	0.017	4,4-Methylene-bis-(2-chloroaniline)	35	0.50
Di-n-propylnitrosoamine	14	0.40	Methylene chloride	33	0.089
Diphenylamine	NA	0.52	Methyl ethyl ketone	36	0.28
1,2-Diphenyl hydrazine	NA	0.087	Methyl isobutyl ketone	33	0.14
Diphenylnitrosamine	NA	0.40	Methyl methacrylate	160	0.14
1,4-Dioxane	170	0.12	Methyl methansulfonate	NA	0.018
Disulfoton	6.2	0.017	Methyl parathion	4.6	0.014
Endosulfan I	0.066	0.023	Naphthalene	3.1	0.059
Endosulfan II	0.13	0.029	2-Naphthylamine	NA	0.52
Endosulfan sulfate	0.13	0.029	p-Nitroaniline	28	0.028
Endrin	0.13	0.0028	Nitrobenzene	14	0.068
Endrin aldehyde	0.13	0.025	5-Nitro-o-toluidine	28	0.32
Ethyl acetate	33	0.34	4-Nitrophenol	29	0.12
Ethyl cyanide	360	0.24	N-Nitrosodiethylamine	28	0.40
Ethyl benzene	6.0	0.057	N-Nitrosodimethylamine	NA	0.40
Ethyl ether	160	0.12	N-Nitroso-di-n-butylamine	17	0.40
bis(2-Ethylhexyl) phthalate	28	0.28	N-Nitrosomethylethylamine	23	0.40
Ethyl methacrylate	160	0.14	N-Nitrosomorpholine	23	0.40
Ethylene oxide	NA	0.12	N-Nitrosopiperidine	35	0.013
Famphur	15	0.017	N-Nitrosopyrrolidine	35	0.013
Fluoranthene	8.2	0.068	Parathion	4.6	0.014
Fluorene	4.0	0.059	Pentachlorobenzene	37	0.055
Fluorotrichloromethane	33	0.020	Pentachlorodibenzo-furans	0.001	0.000063
Heptachlor	0.066	0.0012	Pentachlorodibenzo-p-dioxins	0.001	0.000063
Heptachlor epoxide	0.066	0.016	Pentachloronitrobenzene	4.8	0.055
Hexachlorobenzene	37	0.055	Phenachlorophenol	7.4	0.089
Hexachlorobutadiene	28	0.055	Phenacetin	16	0.081
Hexachlorocyclopentadiene	3.6	0.057	Phenanthrene	3.1	0.059
Hexachlorodibenzo-furans	0.001	0.000063	Phenol	6.2	0.039
Hexachlorodibenzo-p-dioxins	0.001	0.000063	Phorate	4.6	0.021
Hexachloroethane	28	0.055	Phthalic anhydride	NA	0.069
Hexachloropropene	28	0.035			

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F039 TREATMENT STANDARDS

[Identify individual constituents likely to be present]

Multi-source leachate	Nonwaste-water total composition, (mg/kg)	Waste-water total composition, (mg/L)	Multi-source leachate	Nonwaste-water total composition, (mg/kg)	Waste-water total composition, (mg/L)
Pronamide	15	0.093	1,1,2-Trichloro-1,2,2-trifluoroethane	28	0.057
Pyrene	8.2	0.067	Tris(2,3-dibromopropyl) phosphate	NA	0.11
Pyridine	16	0.014	Vinyl chloride	33	0.27
Safrole	22	0.081	Xylenes)	28	0.32
Silvex (2,4,5-TP)	7.9	0.72	Cyanides (Total)	1.8	1.2
2,4,5-T	7.9	0.72	Fluoride	NA	35
1,2,4,5-Tetrachlorobenzene	19	0.055	Sulfide	NA	14
Tetrachlorodibenzofurans	0.001	0.000063	Antimony	0.23 ¹	1.9
Tetrachlorodibenzo-p-dioxins	0.001	0.000063	Arsenic	5.0 ¹	1.4
1,1,1,2-Tetrachloroethane	42	0.057	Barium	52 ¹	1.2
1,1,2,2-Tetrachloroethane	42	0.057	Beryllium	NA	0.82
Tetrachloroethylene	5.6	0.056	Cadmium	0.066 ¹	0.20
2,3,4,6-Tetrachlorophenol	37	0.030	Chromium (Total)	5.2 ¹	0.37
Toluene	28	0.080	Copper	NA	1.3
Toxaphene	1.3	0.0095	Lead	0.51 ¹	0.28
1,2,4-Trichlorobenzene	19	0.055	Mercury	0.025 ¹	0.15
1,1,1-Trichloroethane	5.6	0.054	Nickel	0.32 ¹	0.55
1,1,2-Trichloroethane	5.6	0.054	Selenium	5.7 ¹	0.82
Trichloroethylene	5.6	0.054	Silver	0.072 ¹	0.29
2,4,5-Trichlorophenol	37	0.18	Thallium	NA	1.4
2,4,6-Trichlorophenol	37	0.035	Vanadium	NA	0.042
1,2,3-Trichloropropane	28	0.85	Zinc	NA	1.0

¹Treatment standards for heavy metals nonwastewaters are based on concentrations in the TCLP extract, mg/L.

Source: 56 FR 3892-3911.

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CALIFORNIA LIST CONSTITUENTS
AND THEIR PROHIBITION LEVELS

(Identify constituents likely to be present)

Constituent	Concentration (mg/L)
Cyanides	1,000
Arsenic	500
Cadmium	100
Chromium VI	500
Lead	500
Mercury	20
Nickel	134
Selenium	100
Thallium	130
Liquids with pH \leq 2.0	—
Liquids with PCBs	50 ppm
Wastes containing HOCs ¹	1,000 mg/kg

¹Halogenated organic compounds.

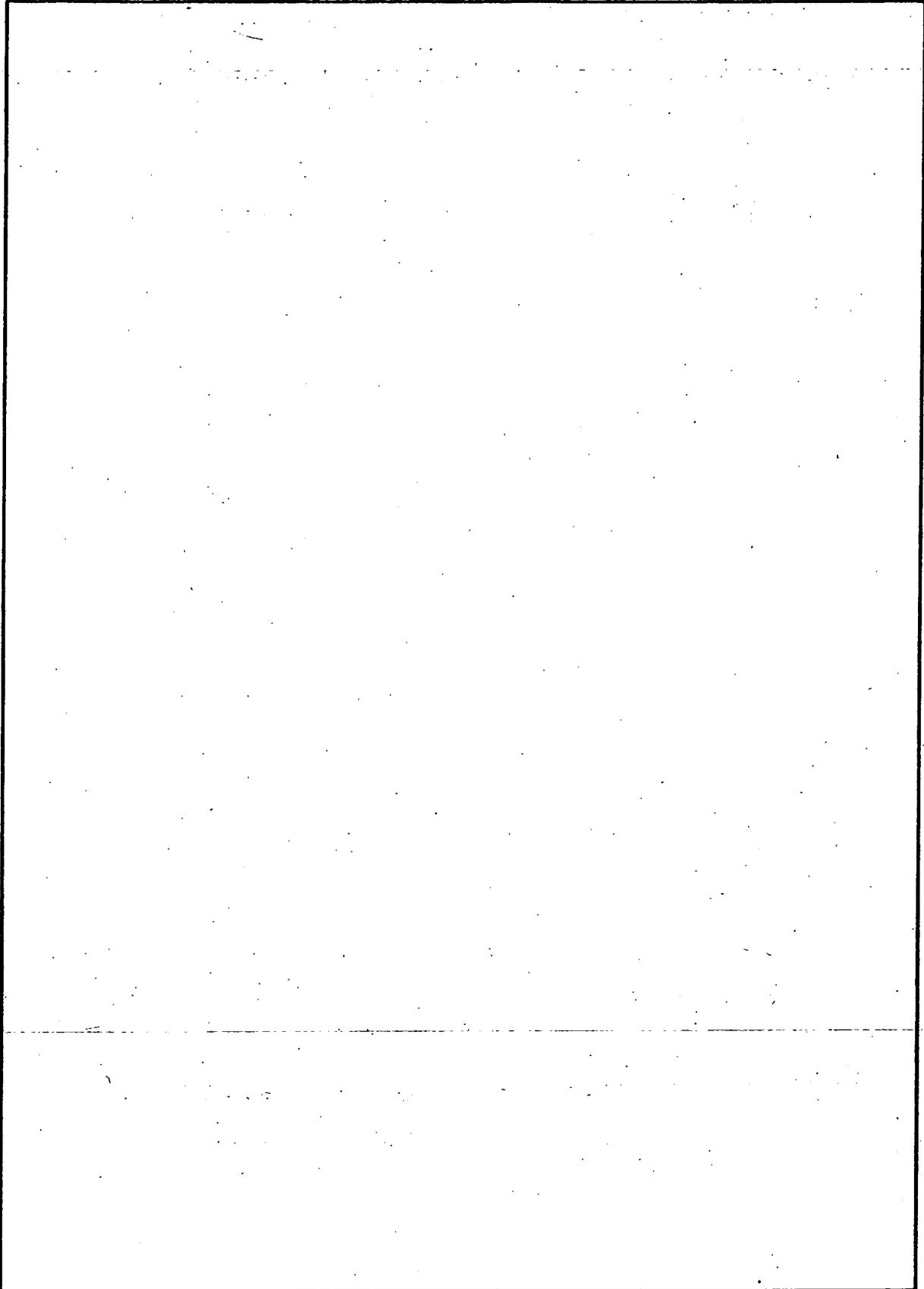


Figure C-6 LDR Certification

SAMPLE NOTICE AND CERTIFICATION FROM GENERATOR TO DISPOSAL FACILITY FOR WASTES MEETING THE TREATMENT STANDARD

The wastes identified on manifest number _____ and bearing the EPA Hazardous Waste Number(s) _____ are subject to the land disposal restrictions of 40 CFR Part 268. The wastes comply with the treatment standards specified in 268 Subpart D, the applicable prohibitions of Section 268.32, or RCRA section 3004(d). The treatment standards or prohibition levels applicable to each waste are identified below:

(Check all boxes that apply).

- This shipment includes F001-F005 spent solvents, as identified on the attached sheet.
- This shipment includes F039 multi-source leachate, as identified on the attached sheet(s).
- This shipment includes RCRA Section 3004(d) California list wastes, as identified on the attached sheet.
- This shipment includes additional wastes identified below:

Hazardous Waste No. ¹	Subcategory ²	Treatability group ³	CFR reference for treatment standard ⁴	Five-letter code(s) ⁵
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

¹Hazardous waste numbers can be determined from 40 CFR 261 Subparts C and D, e.g., D009
²Subcategory (if any) can be determined from CCW & CCWE in 40 CFR 268, e.g., low mercury subcategory.
³Treatability group is either "wastewater" or "nonwastewater."
⁴To find the CFR reference for the treatment standard, refer the waste in 268.41(a)-Table CCWE; 268.42(a)(1), (a)(2), (c); and 268.43(a)-Table CCW. The reference must include both the section and paragraph where the treatment standard is found, e.g. 268.42(a).
⁵Wherever the CFR reference is 268.42, a five-letter code (e.g. INCIN) must be included.

A waste analysis for these wastes is attached, where available.

As required by 40 CFR 268.7(a)(8), the following certification is made for these restricted wastes:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

 Authorized Signature

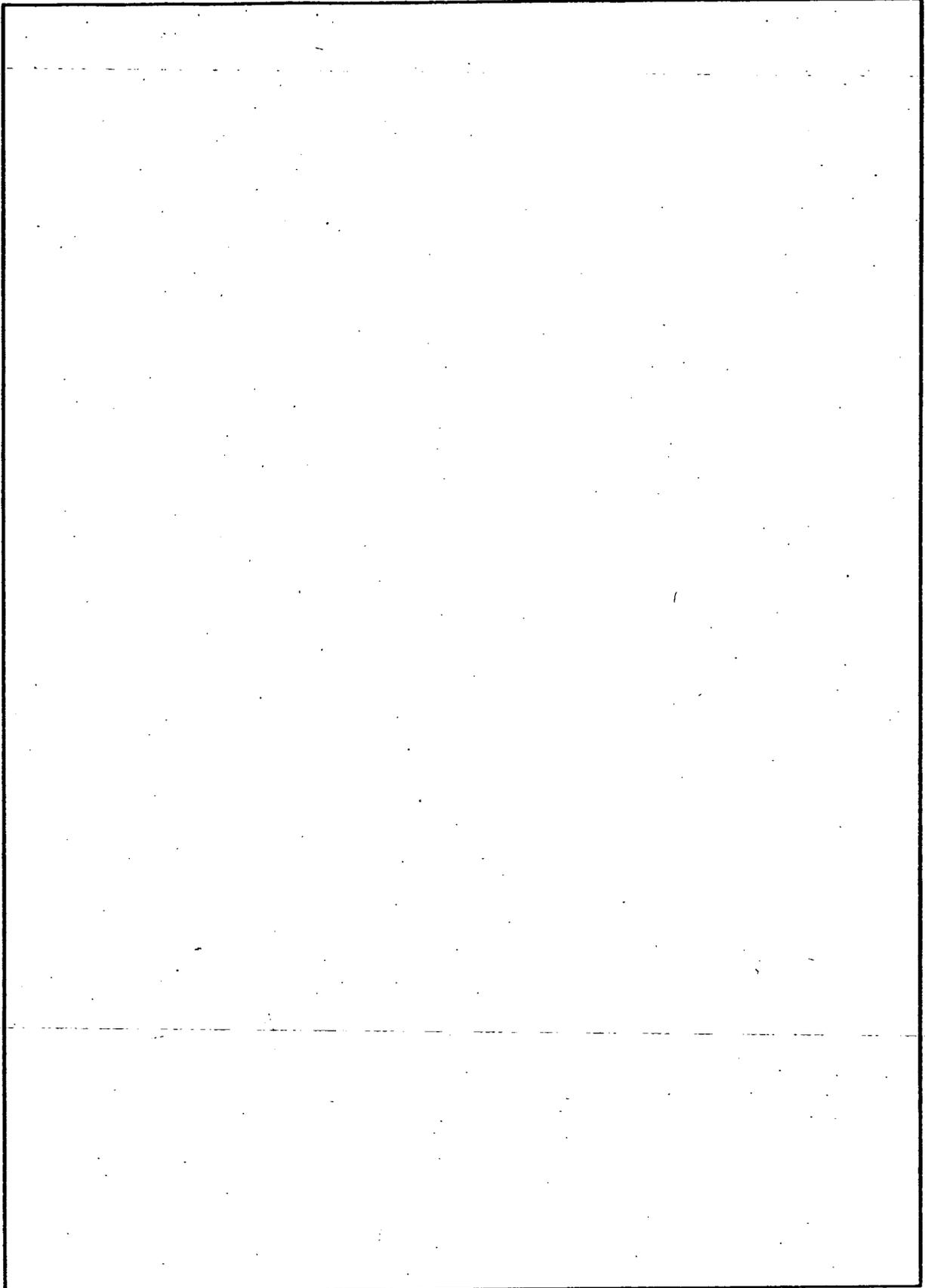


Figure C-7 Chain of Custody Form

OFF-SITE LABORATORY CUSTODY TRANSFER AND ANALYSIS REQUEST RECORD (OCTR)

PURCHASE ORDER NO.: [REDACTED] REPORT TO: FERMCO
 P.O. BOX 398704
 CINCINNATI, OH 45239-8704

RELEASE NO.: [REDACTED] FERMCO CONTACT/PHONE: [REDACTED]

SAMPLE SHIPMENT DATE: [REDACTED] RECEIVING LAB NAME: [REDACTED]

SAMPLE SHIPPER: [REDACTED] RECEIVING LAB ADDRESS: [REDACTED]

OFF-SITE LAB CONTACT: [REDACTED]

REQUIRED REPORT DATE: [REDACTED]

SAMPLE TEAM: [REDACTED]

SAMPLE NUMBER	DESCRIPTION/TYPE/CODE	DATE/TIME COLLECTED	CONTAINER TYPE	SAMPLE VOLUME	PRESERVATION	ANALYSIS REQUESTED	CONDITION UPON RECEIPT
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							

SPECIAL INSTRUCTIONS: [REDACTED]

SAMPLE PLAN NUMBER: [REDACTED] PROJECT NAME: [REDACTED] CHARGE NUMBER: [REDACTED]

CAN NO.	SEAL NO.	CAN NO.	SEAL NO.	CAN NO.	SEAL NO.	RECEIVED	
						DATE	TIME

DISTRIBUTION OF COPIES

1	WHITE	REMAIN WITH SAMPLES
2	YELLOW	OFF-SITE LAB
3	PINK	FERMCO DATA REVIEW AND REPORTING
4	BLUE	ORIGINATOR

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*IF SEALS ARE BROKEN, CONTACT THE FERMCO CONTACT LISTED ABOVE IMMEDIATELY.

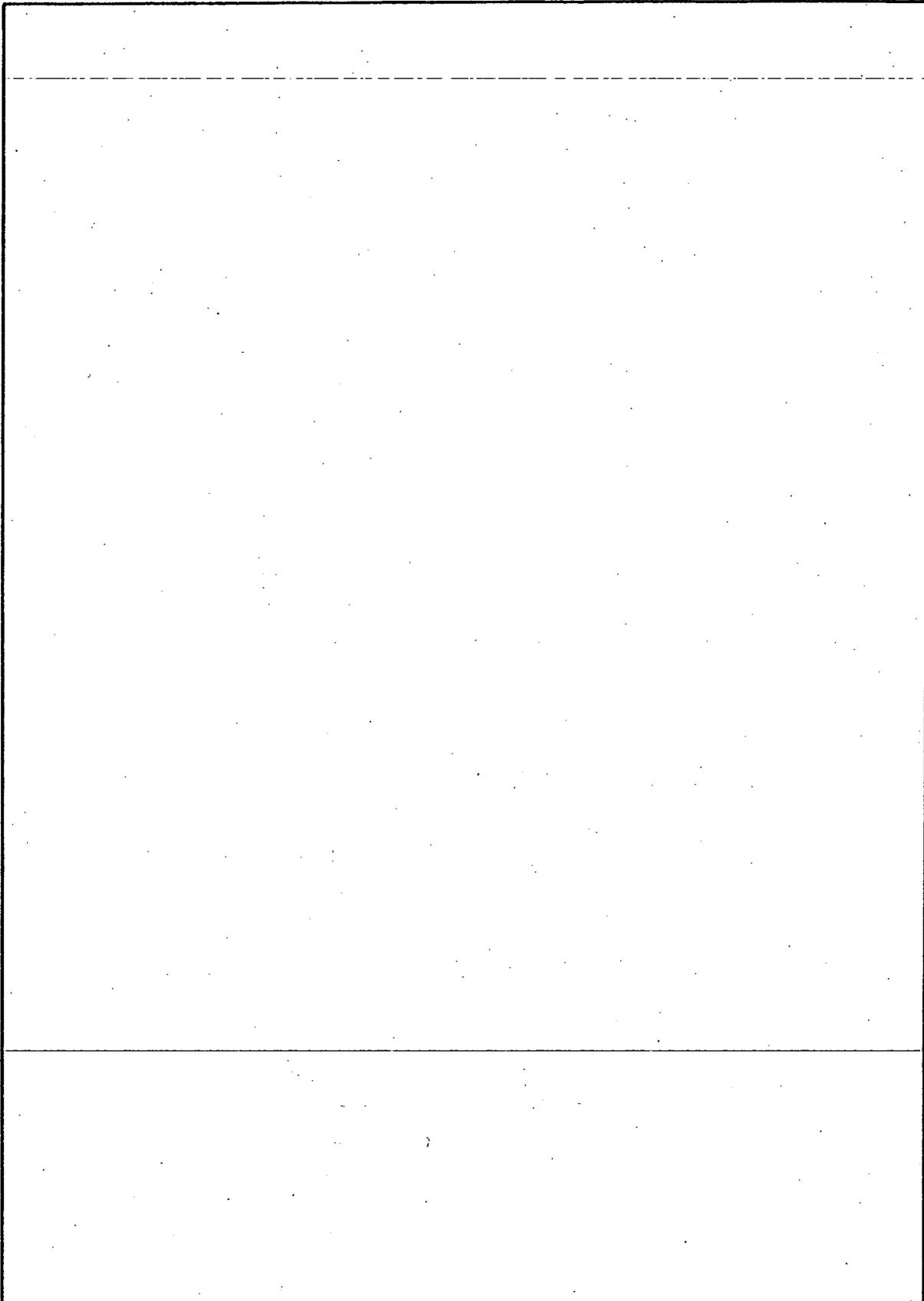
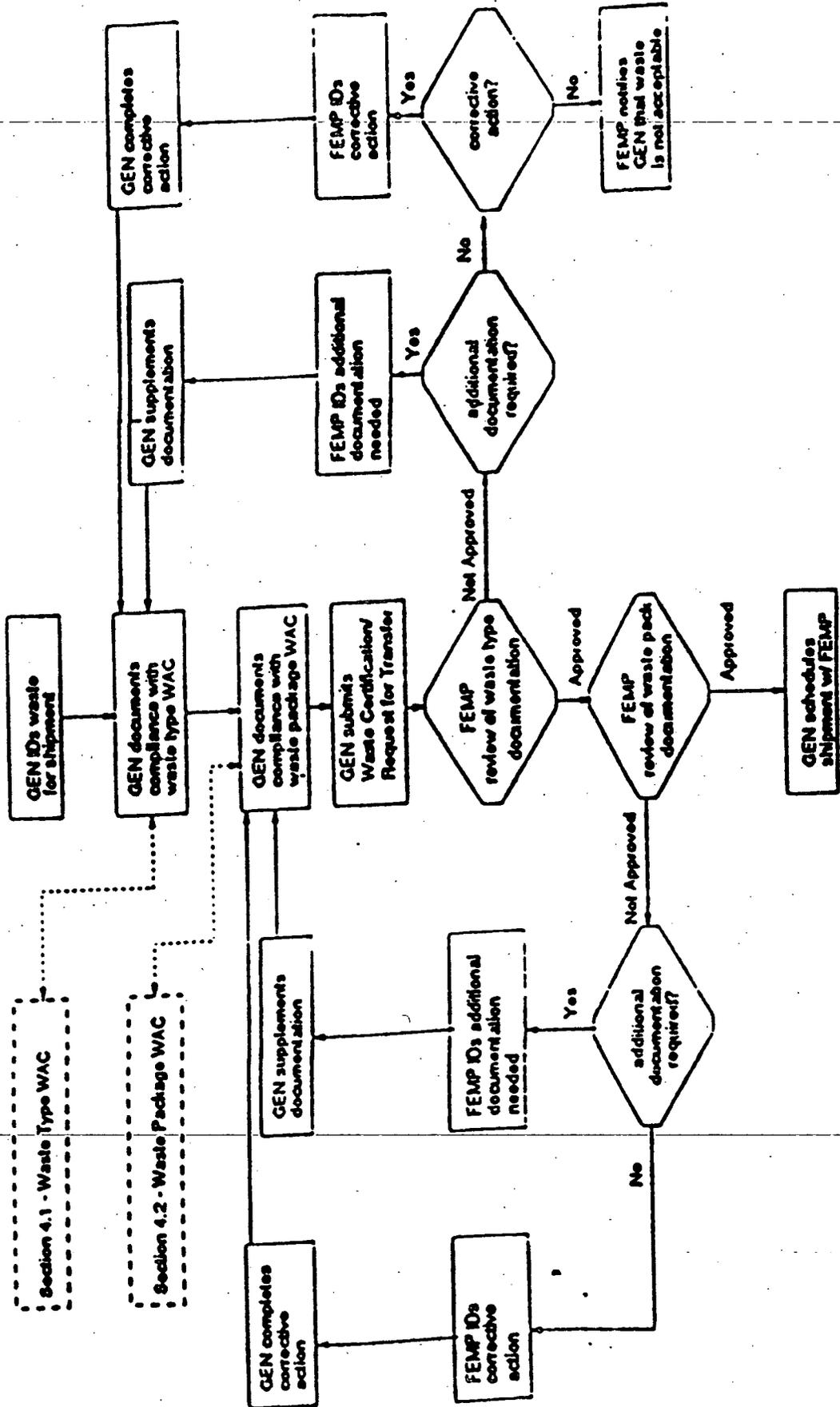


Figure C-8 Decision Diagram for Pre-Acceptance Phase

FIGURE C-8

Decision Diagram for Pre-acceptance Phase



NOTE: Narrative describing decision-making criteria are included in Section 6.0

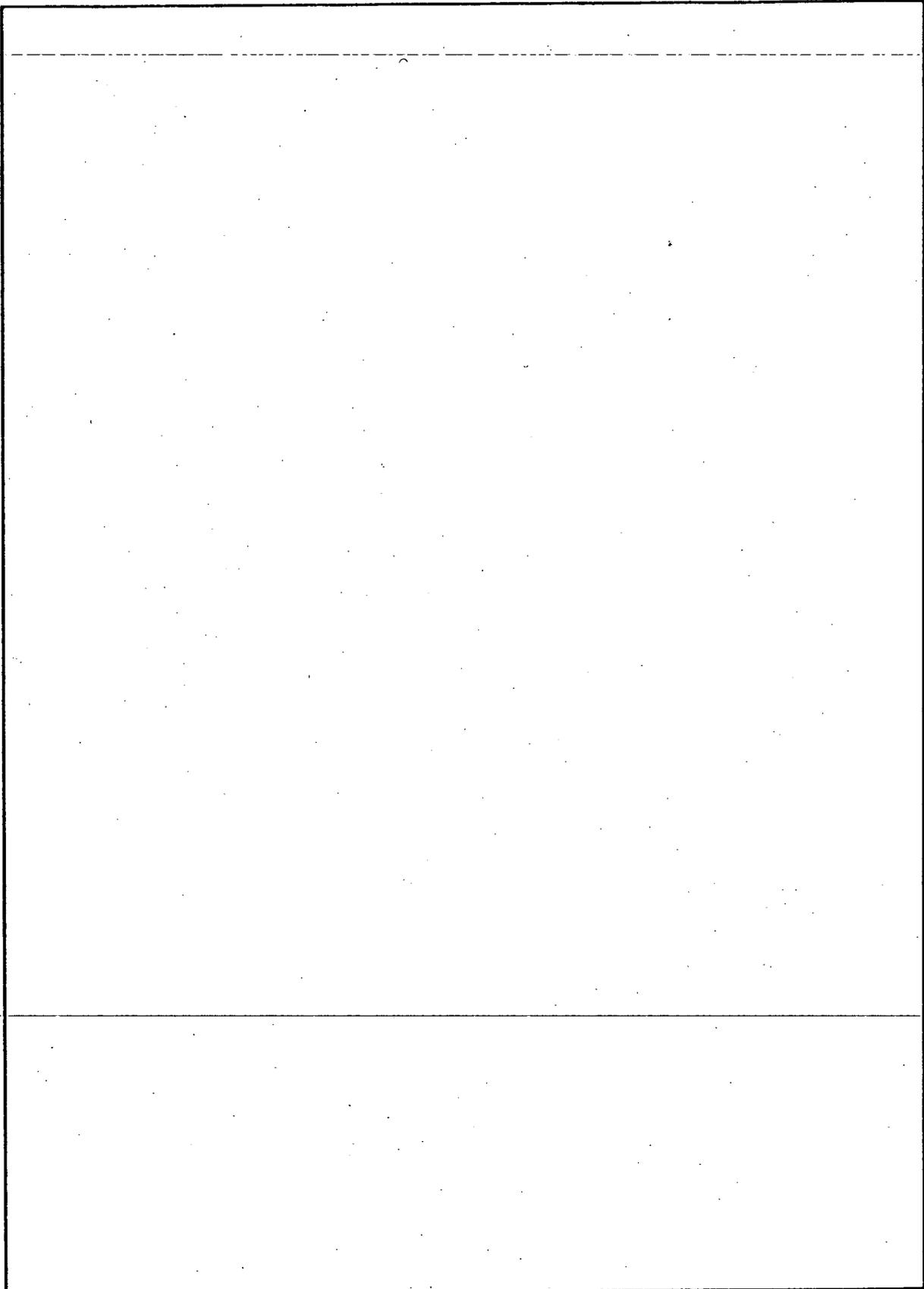


Figure C-9 Offsite MEF

A. GENERATOR/WASTE STREAM IDENTIFICATION:

1. MEF #: _____	Revision No.: _____	2. Date Submitted: _____	3. FEMP Generator SRC ID: _____
Generator Name: _____		5. Generator USEPA ID: _____	6. Generator State ID: _____
7. Facility Address: _____	8. Technical Contact Name: _____		10. Technical Contact Phone Number(s): _____
	9. Technical Contact Title: _____		

B. GENERATION INFORMATION:

1. Provide best descriptive name for material: _____

2. Describe how the material is generated: _____

[Documentation attached: additional narrative; SOP; Manufacturing Spec; MSDS; AEDO Log excerpt; release report; other: _____]

3. Waste Quantity: _____ Number of Containers: _____ Container Type: _____ Total weight and volume: _____
 estimate; actual estimate; actual

C. CROSS CHARACTERISTICS

1. Describe Color/Appearance: _____	2. Physical State: <input type="checkbox"/> Liquid <input type="checkbox"/> Solid debris/rubble <input type="checkbox"/> Semi-solid/sludge <input type="checkbox"/> Dry solid residue <input type="checkbox"/> dry powder/dusty residue <input type="checkbox"/> Other, specify: _____	3. Contains Free Liquids: based on: <input type="checkbox"/> yes <input type="checkbox"/> visual <input type="checkbox"/> no <input type="checkbox"/> PFLT results attached <input type="checkbox"/> unknown
[NOTE: Do Not Smell the Material]	5. Describe Phase/Layers: <input type="checkbox"/> single phase <input type="checkbox"/> two-layers <input type="checkbox"/> multi-layered	6. pH (specify range or "unknown"): _____ <input type="checkbox"/> estimate; <input type="radio"/> analytical results attached
4. Note Any Incidental Odor: _____		7. Flash Point (specify range or "unknown"): _____ <input type="checkbox"/> estimate; <input type="radio"/> analytical results attached

D. MATERIAL COMPOSITION

1. Composition:	Min - Max:	Basis for Identifying:	2. Does the material contain any of the following: <input type="checkbox"/> asbestos <input type="checkbox"/> polychlorinated biphenyls (PCBs) <input type="checkbox"/> cyanides <input type="checkbox"/> sulfides <input type="checkbox"/> RCRA metals, circle if suspected: (arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium) <input type="checkbox"/> based on knowledge of the material <input type="radio"/> analytical data attached
_____ %	_____ %	_____	
_____ %	_____ %	_____	
_____ %	_____ %	_____	
_____ %	_____ %	_____	
maximum must meet or exceed 100 % <input type="checkbox"/> based on knowledge of the material; <input type="radio"/> analytical data attached			
Radionuclide Contamination: <input type="checkbox"/> material is not contaminated with radionuclides <input type="checkbox"/> material contains incidental radionuclide contamination <input type="checkbox"/> radionuclide bearing material/residue <input type="checkbox"/> based on knowledge of the material; <input type="radio"/> analytical data attached		Radionuclides of Concern if any: <input type="checkbox"/> uranium <input type="checkbox"/> thorium <input type="checkbox"/> transuranics (TRU) <input type="checkbox"/> Other: _____	4. Identify any additional characteristics: <input type="checkbox"/> water reactive <input type="checkbox"/> explosive <input type="checkbox"/> pyrophoric <input type="checkbox"/> shock sensitive <input type="checkbox"/> etiological <input type="checkbox"/> other _____

Figure C-10 Waste Analysis Certification/Request for Transfer Form

WAC CERTIFICATION / REQUEST FOR TRANSFER

GENERATOR/WASTE STREAM IDENTIFICATION:				FEMP Approval Number	
Generator/Facility Name:			3. Technical Contact Title:		
2. Technical Contact Name:			4. Technical Contact Phone:		
5. Waste Stream MEF Number	6. Container Quantity	7. Container Type	8. Waste Vol. / Container	9. Weight / Container	10. Date Received:
11. Transporter			12. Carrier Type: <input type="checkbox"/> exclusive use <input type="checkbox"/> common carrier		

B. WASTE CHARACTERIZATION DOCUMENTATION:	C. SHIPPING DOCUMENTATION:
<input type="checkbox"/> FEMP MEF - Generator Section <input type="checkbox"/> FEMP MEF - Evaluation Section <input type="checkbox"/> process knowledge documentation > 1. _____ <input type="checkbox"/> sampling and analysis documentation 2. _____ <input type="checkbox"/> sampling plan 3. _____ <input type="checkbox"/> copy of sampling log book <input type="checkbox"/> chain-of-custody forms <input type="checkbox"/> analytical data report <input type="checkbox"/> QA/QC report for data <input type="checkbox"/> results of statistical treatment of data	<input type="checkbox"/> Hazardous Waste Manifest <input type="checkbox"/> LDR Notification <input type="checkbox"/> LDR Certification <input type="checkbox"/> Bill of Lading <input type="checkbox"/> Photocopy of all labels/markings on containers <input type="checkbox"/> Ohio Consent to Service Form(s)
[documentation to be provided as an attachment to this form for each waste stream in the transfer]	

D. WASTE SHIPMENT CERTIFICATION:

I certify that the waste stream and packages identified in this request for transfer meet all FEMP waste acceptance criteria (WAC) defined in the FEMP Waste Acceptance Program. All documentation supporting this certification are true and accurate to the best of my knowledge.

_____ (Authorized Signature) _____ (Name/Title) _____ (Date)

E. FEMP APPROVAL:

The specific waste stream and packages identified in this request are approved for transfer to the FEMP.

_____ (Authorized Signature) _____ (Name/Title) _____ (Date)

NO.	Distribution Following Approval	NO.	Distribution Following Receipt
1	Facilities and Materials Evaluation (characterization records)	1	Facilities and Materials Evaluation (characterization records)
2	Materials Control and Accountability (inventory)	2	Materials control and Accountability (inventory)
	Receiving/Traffic (transportation logistics)	3	Receiving/Traffic (transportation logistics)
	Site Wide Quality Assurance (verification of incoming receipts)	4	Site Wide Quality Assurance (verification of incoming receipts)
5	Facilities and Warehousing (sampling)	5	Facilities and Warehousing (sampling)
6	Analytical Lab Project Oversight (analysis, characterization records)	6	Analytical Lab Project Oversight (analysis, characterization records)
7		7	

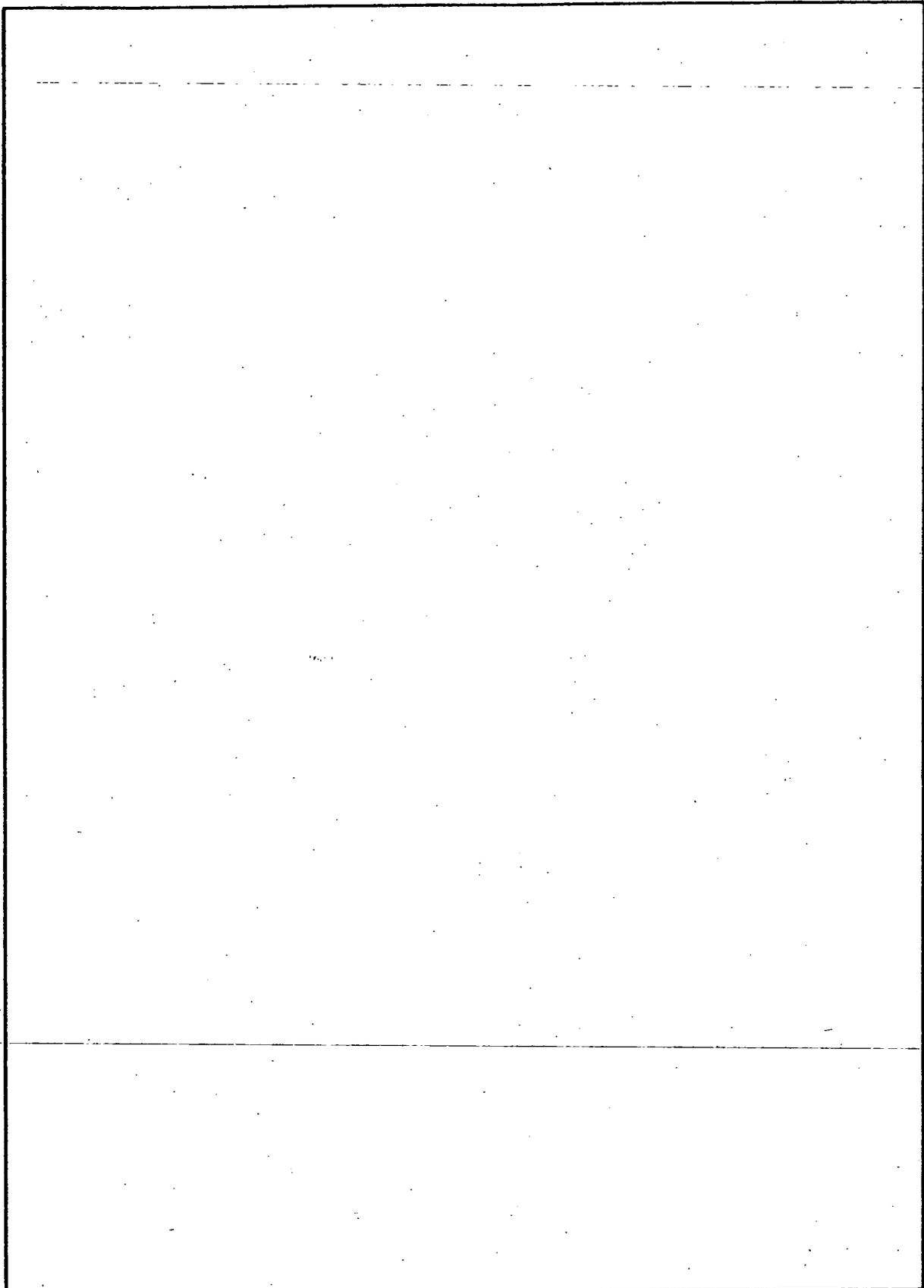
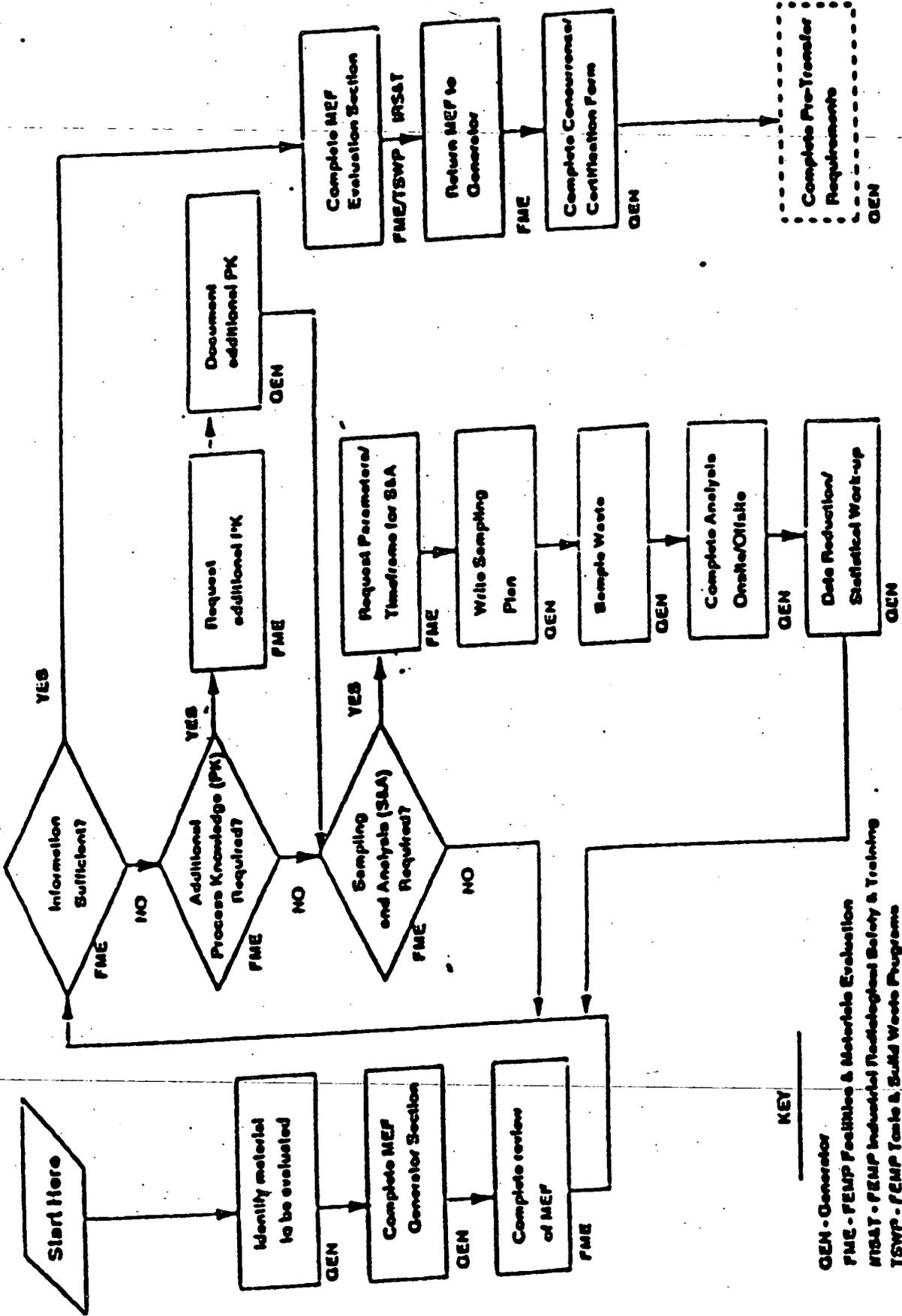


Figure C-11 Waste Characterization Process for Off-Site Receipts

FIGURE C-11

Waste Characterization Process for Off-Site Receipts



KEY

- GEN - Generator
- FME - FEMP Facilities & Materials Evaluation
- RSAT - FEMP Industrial Radiological Safety & Training
- TSWP - FEMP Toxic & Solid Waste Programs

Attachment C-1
Waste Determination Plan

Department of Energy

- 4456 -

FMPC Site Office
P. O. Box 398705
Cincinnati, Ohio 45239-8705
(513) 738-6319

SEP 25 1990
DOE-1977-90

Dr. Richard Shank, Director
Ohio Environmental Protection Agency
1800 WaterMark Drive
Columbus, OH 43266-1049

Dear Dr. Shank:

FMPC WASTE DETERMINATION PLAN

Enclosed is the Waste Determination Plan (WDP) as required by the proposed amended Consent Decree incorporating your comments. The WDP delineates procedures that will be used to determine if solid waste is also hazardous waste under 40 CFR 262.11 and OAC Section 3745-52-11.

This document defines the steps that we will follow in the determination of waste characteristics. This determination will be used in evaluating the waste for treatment, storage or disposal. Any revisions to the WDP will be submitted to OEPA for review and approval.

If you or your staff have any questions, please contact David Rast at (513) 738-6322.

Sincerely,


Gerald W. Westerbeck
FMPC Site Manager

DP-84:Rast

Enclosure: As stated

RESPONSE TO OEPA DEFICIENCY COMMENTS
FMPC WASTE DETERMINATION PLAN
SUBMITTED - AUGUST 1990

- a. OEPA comments appear in bold-type print. They are indicated as numbers 1 through 5.
- b. Each section of the Waste Determination Plan which was referenced in the OEPA comment appears beneath the comment. Revisions to the section which incorporate OEPA comments appear in bold-type, capital letters.

For example: (original) Waste Determination Strategy
 (OEPA comment) Do not use the word 'strategy.'
 (Response) Waste Determination PLAN

Original text does not change. OEPA comment appears in bold-type print. The revision appears in BOLD-TYPE, CAPITAL.

1. Section 5.2.A.2. on page 6 of the plan discusses sampling of construction/maintenance material. This discussion does not include the possibility that this material might be contaminated with a listed hazardous waste, and therefore also be a listed hazardous waste via the "contained-in" rule. This possibility must be discussed in this section.

(Waste Determination Plan Section 5.2.A.2)

2. Sampling

A project specific sampling plan is developed for determining if the construction material has a potential for being a HAZARDOUS waste. IF THE CONSTRUCTION MATERIAL IS CONTAMINATED WITH A LISTED WASTE, IT WILL BE MANAGED AS A HAZARDOUS WASTE. THE ORIGIN OF THE WASTE MUST BE KNOWN IN ORDER TO BE DETERMINED TO BE A LISTED WASTE.

IF THE ORIGIN OF THE WASTE IS UNKNOWN, THE WASTE IS EVALUATED FOR HAZARDOUS CHARACTERISTICS (IGNITABLE, CORROSIVE, REACTIVE, AND/OR TOXICITY CHARACTERISTICS). TC DETERMINATIONS SHOULD BE MADE CONSISTENT WITH THE TCLP INTEGRATION SECTION (SECTION 6.0) OF THIS PLAN. If any 'below-surface-level' sampling is required, a "FMPC Construction/Excavation Penetration Permit" must be obtained. Samples are forwarded to the laboratory with a "Request for Analysis" and "Custody Transfer Record/Lab Work Request."

2. Section 5.2.A.2. also discusses the use of a photo-ionization meter to determine if analysis for volatile organics. A photo-ionization meter can not be used as the sole indicator that analysis for organic constituents (total and/or TCLP) is unnecessary.

SEE RESPONSE TO COMMENT #1 - SECTION 6.0 "TCLP INTEGRATION" WAS REFERENCED TO INDICATE WHEN SAMPLING FOR ORGANIC CONSTITUENTS WOULD BE NECESSARY.

3. Section 5.3 on page 6 discusses underground storage tank materials. The statement that liquids contained in the tanks are not considered hazardous waste if they can be legitimately and beneficially used, reused, recycled or reclaimed is not always true. For example, if the tank contains a "spent material" that can no longer serve the purpose for which it is used, and it is destined for use as a fuel, this material would be considered a waste and is potentially a hazardous waste. Please consult OAC 3745-51-01, 51-02 (and Table 1 of 51-02) and revise the language in this section accordingly.

(Waste Determination Plan Section 5.3)

5.3 Underground Storage Tank Materials

In the course of removing the Underground Storage Tanks at the FMPC, the following types of wastes are generated:

- Liquids contained in the tanks
- Contaminated soils
- Tanks, piping, and associated materials
- Decontamination fluids
- Plastic

IF THE LIQUID IN THE TANK CAN BE USED FOR THE PURPOSE IT WAS INTENDED, IT IS NOT A HAZARDOUS WASTE. IF THE MATERIAL CONTAINED IN THE TANK IS A SOLID WASTE, IT WILL BE CONSIDERED A HAZARDOUS WASTE IF IT IS A LISTED WASTE OR EXHIBITS HAZARDOUS CHARACTERISTICS.

Petroleum-contaminated media and debris that fail TCLP are not RCRA if they are subject to underground storage tank corrective action. In addition, tanks, piping and associated material are not considered hazardous. If the tank contents are declared to be hazardous waste, however, prior to their removal, the tank and piping may be considered hazardous prior to any decontamination effort.

Decontamination fluids from cleaning of tanks, piping and other equipment associated with the tank or its removal are considered hazardous if they exhibit hazardous characteristics or the tank contents have been determined to have been a listed waste. Hazardous characteristics are determined by characteristics analyses (including TCLP).

4. Section 5.3 on pages 6 and 7 also states that if the material cannot be beneficially used, it is considered a hazardous waste if it exhibits characteristics. Again, the possibility exists that the waste is a listed hazardous waste. Revise this section so that this possibility is considered.

SEE ANSWER TO COMMENT #3: THE SECTION WAS REVISED TO INDICATE THAT TANK CONTENTS WOULD BE CONSIDERED FOR LISTED WASTES WHERE APPROPRIATE.

5. Section 5.4 on page 7, dealing with closure materials, again only mentions characteristics analysis. Revise this section to discuss listed wastes.

(Waste Determination Plan Section 5.4)

5.4 Closure Materials

During the course of partial or final closure activities or periods, waste materials regulated under RCRA may be generated. Wastes expected to be generated include the following:

- Waste inventory present at the HWMU at the time of closure
- Equipment which has been decontaminated
- Spent decontamination fluids and solutions and verification rinseates
- Contaminated equipment and appurtenances for which decontamination is not effective or compatible with good waste minimization practices
- Contaminated soils

Evaluation of each of these materials is necessary to determine proper handling, treatment, storage, and disposal methods. Solid wastes generated as a result of remediation of releases or in pursuance of closure requirements that ARE LISTED WASTES OR exhibit the TC must be handled as hazardous wastes. The TCLP rule is not used to determine whether a facility has met the requirements for "clean closure." The methods and criteria which are applied to determine whether the waste is hazardous are summarized for each material type as follows.

WASTE DETERMINATION PLAN

SEPTEMBER 1990

**Feed Materials Production Center
Cincinnati, Ohio**

**U.S. Department of Energy
Oak Ridge Operations Office
under contract DE-AC05-86OR21600**

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FIGURES
(follow text)

1. Drummed Materials Flow Diagram
2. Construction/Maintenance Materials Flow Diagram

ATTACHMENTS
(follow text)

- A. Material Evaluation Form
- B. Drum Sampling Strategy
- C. Construction Waste Identification/Disposition Form

1.0 OBJECTIVE

- 4456 -

The objective of the Waste Determination Plan is to present the step-by-step sequence used by the U. S. Department of Energy (DOE) in identifying the many varied waste streams at its Feed Materials Production Center (FMPC) near Fernald, Ohio. The Waste Determination Plan provides the Ohio Environmental Protection Agency (OEPA) and the United States Environmental Protection Agency (U.S.EPA) with a description of the procedures that are followed in determining if solid waste generated at the FMPC is also hazardous waste as defined in 40 CFR 260.10 and OAC 3745-50-10. The documentation and recordkeeping procedures associated with the determinations are also presented in this plan.

DOE and WMCO will follow the waste determination steps precisely as they are presented in this document. Revisions to this document (with the exception of any revisions to the sample forms attached to this document) will be implemented only with the prior approval of OEPA.

2.0 FACILITY DESCRIPTION

The FMPC is owned and operated by the United States Department of Energy (DOE). Operational guidance and program direction for the FMPC are administered through the DOE Oak Ridge Operations Office (ORO). The facility is located on a 1050-acre federal reservation in the Ohio counties of Hamilton and Butler. The FMPC is situated approximately 20 miles northwest of Cincinnati, Ohio, between the villages of Ross and Fernald, Ohio.

The FMPC is a large-scale integrated production facility for supplying uranium metal for the DOE defense programs. Because the FMPC operations involve uranium, most of the solid and hazardous wastes at the facility are also radioactively contaminated i.e., mixed waste. Only the hazardous component of the mixed waste is subject to the jurisdiction of the Resource Conservation and Recovery Act (RCRA) and the authorized Ohio program.

The facility stores hazardous wastes that are, or have been, generated onsite during the course of routine plant operations. In the past, the FMPC received wastes generated offsite by other DOE-related facilities. The FMPC is presently in a non-production mode. Solid and/or hazardous wastes that are currently generated result from activities such as the on-going remedial investigation, environmental response actions, new construction, and miscellaneous operations (e.g., wastewater treatment plants).

3.0 DETERMINATION OF SOLID WASTE (Under RCRA Subtitle C)

- 4456 -

The FMPC stores materials for further processing that may be intermediate products, in process materials, residue materials, source, special nuclear or by-product materials. These materials require further evaluation to determine if they are solid waste. If the FMPC determines that any of the above described materials are solid waste, then they will be further evaluated under this plan to determine if they are hazardous waste subject to regulation under Subtitle C of RCRA.

4.0 DETERMINATION OF HAZARDOUS WASTE

In accordance with 40 CFR 262.11 and OAC 3745-52-11, the FMPC as a generator of solid waste will determine if that waste is a hazardous waste. This evaluation will be made prior to any commingling or combining with other waste. The FMPC will not commingle waste streams for purposes of this evaluation.

The FMPC will then determine if the solid waste is excluded from regulation as described in the previous section. If the waste is not excluded, the FMPC, when appropriate, will then determine if the waste is listed as a hazardous waste as indicated in 40 CFR Part 261 Subpart D and OAC 3745-51-30 or is mixed with a listed hazardous waste.

If the waste is not listed as a hazardous waste, the FMPC will determine if the waste is a characteristic hazardous waste as indicated in 40 CFR Part 261 Subpart C and OAC 3745-51-10. This determination will be made by either (1) testing the waste according to methods (or equivalent approved methods) set forth in 40 CFR Part 261 Subpart C and OAC 3745-51; or (2) obtaining data necessary to determine whether the waste is hazardous. The data may be obtained from site literature, from experience with the waste, from other sources, or a combination of sources.

Adequate data for waste determination exists when materials in a process can be tracked and documented from the start of the process to the point when the waste is generated. If information is not sufficient to identify the specific origin of the waste, the process information will be considered incomplete. Sources for documentation at the FMPC include standard-operating-procedures (SOPs), manifests, shipping records, manufacturing specifications, piping and/or materials flow diagrams, minor event reports, miscellaneous operation reports, and other available technical or analytical reports.

When no information exists or can be reconstructed on the origin of a process or waste stream, the waste may be assumed not to be a listed RCRA waste (55FR 8763, 3758 March 8, 1990 and 53 FR 51445 December 21, 1988). Therefore, when historical data is incomplete or unavailable, the waste is evaluated for hazardous characteristics only.

5.0 WASTE GENERATION CATEGORIES

Methods for waste determination are in place for the following types of waste: (1) Drummed Materials, (2) Construction/Maintenance Material, (3) Underground Storage Tank Materials, (4) Closure Materials, (5) Wastewater Systems, (6) Soil and Groundwater, (7) CERCLA Response Materials, and (8) Tanks & Miscellaneous (cylinders, soils, rags, etc.). Each method ensures a thorough investigation of the waste will be conducted in a timely manner. These methods of waste determination will be used to evaluate all solid waste at the FMPC. A description of each is discussed below.

5.1 Drummed Materials

Drummed materials are those wastes which have been accumulated from activities in the production area. Historical information is available for portions of the drummed materials. It is necessary to sample those drums for which information is incomplete or unavailable.

The waste determination procedure for drummed materials includes steps to follow when information is complete, and steps to follow when information is incomplete and other actions are required. The drummed materials determination procedure is presented as a flow diagram in Figure 1.

A. Generation

[Note: For purposes of the Waste Determination Plan, the term "generator" is an internal term that refers to the party responsible for each individual waste stream identified (e.g., facility owner, lab technician, etc.). The term is not used to identify the FMPC as a "generator" as defined in 40 CFR 260.10 and OAC 3745-50-10) which is the DOE].

The waste determination procedure for drummed materials begins with the generator. Once a waste is generated at a facility (e.g., the onsite laboratory) it is the responsibility of the generator to complete the "generator" portion of the FMPC's Material Evaluation Form (Attachment A). The generator of the waste provides information on the waste stream. Complete information addresses: where the waste was generated, what equipment was utilized, the process which generated the waste, constituents of the waste (common and chemical name), the physical state of the waste, and any known or suspected hazardous constituents. Characteristic information is also requested when available. Supporting technical documentation such as manufacture specifications, laboratory data, or material safety data sheets (MSDS) is also utilized when available.

8. Determination

Information

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Based on information provided by the generator, a determination is made as to whether the material is a waste, e.g., garbage, sludge, discarded, used, by-product, etc.

If the material is a solid waste, a determination is made as to whether it is excluded under OAC 3745-51-04(A)/40 CFR 261.4(a), i.e., the material is determined not to be a solid waste.

If the material is not excluded, then it is evaluated for the following criteria:

1. Listed wastes as described in OAC 3745-51-(30-33)/40 CFR 261.30-33.
 - If the material is a listed waste or a mixture that contains a waste listed in 40 CFR 261 Subpart D
 - If not excluded, then FMPC will determine it to be a hazardous waste.
2. If the material is not listed or has been excluded from listing, then it is evaluated, pursuant to SW-846 guidelines, for the following characteristics as described in OAC 3745-51-(20-24)/40 CFR 261.20-24:
 - Ignitability
 - Corrosivity
 - Reactivity
 - Toxicity (TCLP)

If the waste is determined to be hazardous, FMPC will manage it in accordance with the appropriate regulations in OAC Chapter 3745 and 40 CFR Parts 260-270. [EPA has indicated in the Federal Register (55 FR 11832 March 29, 1990) that it is considering proposing an amendment to the definition of hazardous waste which would establish self-implementing de minimis levels for constituents found in listed waste. Listed wastes that meet these exemptions would no longer be listed wastes and would not need to be managed as hazardous waste unless it exhibited a hazardous waste characteristic. If EPA promulgates this regulation or any other regulation that relates to hazardous waste determinations, this plan will be revised to incorporate the regulatory change. In addition, any listed hazardous waste which is delisted by US EPA will be determined to be non-hazardous under this plan].

Documentation is maintained in a "Determination" file folder. Each folder contains a cover sheet which readily identifies pertinent information about the waste (analysis, determination, document updates required, etc.). In addition to the cover sheet, a "Summary Sheet for FMPC Waste RCRA Determination" is included within the information. (This information is also entered into a database.) It serves as a brief checklist to review characteristics of the waste and includes the following information: RCRA status, analytical data, exclusions, etc. When necessary, further information will be obtained through visual inspections and/or sampling.

Additional Information to be Gathered

- 4456 - 3

When additional information is needed to complete a determination, a visual inspection of the drums may be required. A Drum Inspection Plan specific to the material is prepared. The drum inspection plan requests information on 'what' the material is (i.e., rags, oil, etc.) and its state (i.e., solid, liquid, or gas).

A probe is used to determine if drum contents are consistent (i.e., drum contents are the same throughout). A photo-ionization meter will be used to scan for volatile organics when there are non-homogeneous waste streams or if historical information is unavailable. The FMPC is investigating the use of other equipment (such as an x-ray machine for determining drum consistency) which would lessen the risk of exposure to personnel sampling the drums. If visual inspection does not uncover adequate information for characterization of material, drum sampling will be implemented.

b. Sampling

A statistical sampling and analysis plan is prepared for waste streams that do not have sufficient information for waste evaluation. This sampling is conducted in accordance with the "Sampling Plan for Drummed Waste at the FMPC." The sampling plan includes information on required analyses, sampling techniques, sampling records, and quality assurance. Excerpts of the sampling plan have been included in Attachment B.

Waste streams which require sampling are sampled for analysis. The analyses are performed in accordance with OAC 3745-51-(20-24)/40 CFR 261.20-24. The FMPC laboratory is responsible for managing the use of offsite labs for analysis not performed onsite.

Sampling is also conducted to verify determinations and to determine appropriate storage information, i.e., container compatibility, location, etc.

5.2 Construction/Maintenance Materials

Construction and/or maintenance waste is generated from various construction/maintenance projects throughout the FMPC site, in the Controlled Area (Process Area) and the Uncontrolled Area (Non-Process Area). Construction waste is material or equipment (some contaminated or uncontaminated with uranium) generated during the execution of a new construction project or a maintenance repair project. Some examples of construction waste are soil, concrete, concrete blocks, demolition material, asphalt, metal, and used process equipment.

Below are the action items required to complete a determination on each individual construction and/or maintenance project. A Construction/Maintenance Materials determination flow diagram of the procedure is shown in Figure 2.

A. Generation

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A draft "Construction Waste Identification/Disposition Form (CWID)" is produced when a construction project is anticipated onsite. A sample CWID is presented in Attachment C. The CWID requests information on waste type, volume, and weight to be generated during the project.

1. Walk-Through

A walk-through of the project area is conducted prior to the construction/demolition/evaluation process. A "Rubble Characterization Information Checklist" is completed during the walk-through. The checklist includes information on the project area and site use. Suspect contaminated areas are identified for the sampling plan. This would include cracks in concrete, stained areas, expansion joints, low areas, etc.

2. Sampling

A project specific sampling is developed for determining if the construction material has a potential for being a hazardous waste. If the construction material is contaminated with a listed waste, it will be managed as a hazardous waste. The origin of the waste must be known in order to be determined to be a listed waste.

If the origin of the waste is unknown, the waste is evaluated for hazardous characteristics (ignitable, corrosive, reactive and/or toxicity characteristics). TC determinations should be made consistent with the TCLP integration section (Section 6.0) of this plan. If any 'below-surface-level' sampling is required, a "FMPC Construction/Excavation Penetration Permit" must be obtained. Samples are forwarded to the laboratory with a "Request for Analysis" and "Custody Transfer Record/Lab Work Request."

3. Determination

A project file which includes project drawings, criteria documents, sample analyses, and historical information is maintained. This information, in addition to the sampling analyses, is utilized to conduct a final determination.

5.3 Underground Storage Tank Materials

In the course of removing the Underground Storage Tanks at the FMPC, the following types of wastes are generated:

- Liquids contained in the tanks
- Contaminated soils
- Tanks, piping and associated materials
- Decontamination fluids
- Plastic

If the liquid in the tank can be used for the purpose it was intended, it is not a hazardous waste. If the material contained in the tank is a solid waste, it will be considered a hazardous waste if it is a listed waste or exhibits hazardous characteristics.

Petroleum-contaminated media and debris that fail TCLP are not RCRA if they are subject to underground storage tank corrective action. In addition, tanks, piping and associated material are not considered hazardous. If the tank contents are declared to be hazardous waste, however, prior to their removal, the tank and piping may be considered hazardous prior to any decontamination effort.

Decontamination fluids from cleaning of tanks, piping and other equipment associated with the tank or its removal are considered hazardous if they exhibit hazardous characteristics or the tank contents have been determined to have been a listed waste. Hazardous characteristics are determined by characteristic analyses (including TCLP).

5.4 Closure Materials

During the course of partial or final closure activities or periods, waste materials regulated under RCRA may be generated. Wastes expected to be generated include the following:

- Waste inventory present at the HWMU at the time of closure
- Equipment which has been decontaminated
- Spent decontamination fluids and solutions and verification rinseates
- Contaminated equipment and appurtenances for which decontamination is not effective or compatible with good waste minimization practices
- Contaminated soils

Evaluation of each of these materials is necessary to determine proper handling, treatment, storage, and disposal methods. Solid wastes generated as a result of remediation of releases or in pursuance of closure requirements that are listed wastes or exhibit the toxicity characteristics must be handled as hazardous wastes. The TCLP rule is not used to determine whether a facility has met the requirements for "clean closure." The methods and criteria which are applied to determine whether the waste is hazardous are summarized for each material type as follows.

Waste Inventory

It is not anticipated that waste inventory will require characterization as part of the closure activities. In addition, the results of waste evaluation are an integral part of the description of the HWMU operating history that must be included in the closure plan.

Equipment Which Has Been Decontaminated

Closure of RCRA units frequently requires the decontamination of tanks, piping, pumps, storage pads and other waste management equipment and structures to remove hazardous constituents that may be present on the surface of these items. Equipment used to effect the closure (e.g. sampling devices, machinery) also requires decontamination. Demonstrating that equipment and structures which comprised the HWMU and equipment used in the closure are decontaminated requires sampling and analysis.

Spent Decontamination Fluids and Solutions and Verification Rinseates

In the course of decontaminating equipment and structures as described above, spent decontamination fluid and solutions and verification rinseates are generated. No more than 1 mg/L of any listed waste may remain in the rinseate before it is considered non-hazardous. If however, drinking water standards or TCLP levels are lower than 1 mg/L for the listed waste, then the lower levels are used to determine clean standards. In addition, the rinseate must not be hazardous by characteristics specified in 40 CFR 261 and OAC 3745-51.

Contaminated Equipment not Intended to be Decontaminated

In some cases, the volume of waste generated by a specific closure may be minimized by disposing of some portions of the HWMU as hazardous waste rather than decontaminating them. An example of such a HWMU portion would be contaminated, small-diameter piping. The volume of water needed to decontaminate the piping could exceed the volume of the compacted piping. Also, it may be impractical in some cases to decontaminate an item that is part of a HWMU. Such items would include those that have absorbed contaminants.

Contaminated Soil

To determine how to manage soils, sampling and analysis are required. If soil associated with closure contains RCRA-regulated compounds at or below the clean level specified in an approved closure plan, the soil will be determined to be non-RCRA. If, however, the soil contains TCLP constituents in concentrations above the TCLP limits or exhibits other hazardous characteristics, it is managed as hazardous waste.

5.5 Wastewater System

Wastewaters are processed in the FMPC wastewater treatment facility prior to being discharged to the Great Miami River under an NPDES permit.

The FMPC will evaluate whether hazardous wastes have been introduced to the wastewater treatment system. If it is determined that hazardous wastes have been introduced to the wastewater treatment system, the wastewater mixture exclusions under OAC 3745-51-04 will be evaluated.

The following wastewaters will be determined not to be a hazardous waste unless the wastewater exhibits a hazardous characteristic:

- (a) Wastewaters with certain listed spent solvents, if the maximum weekly usage of the solvents (other than solvents that can be demonstrated not to be discharged to the wastewater) divided by the average weekly flow of wastewater does not exceed the values in OAC 3745-51-03.
- (b) Wastewater with de minimis losses of commercial chemical product.

- (c) Wastewater with listed hazardous waste resulting from laboratory operations if the annualized average flow of laboratory wastewater does not exceed one per cent of total wastewater flow or the waste combined annualized average concentration does not exceed one part per million. Waste used in laboratories that are demonstrated not to be discharged are not included in the calculations.

Any sludges that result from exempted wastewater and do not exhibit hazardous characteristics are also excluded from being a hazardous waste. Sludges from non-exempt RCRA wastewaters will be evaluated to determine if they are hazardous waste even if they are from an exempted wastewater treatment unit and do not exhibit hazardous constituents under OAC 3745-50-55.

5.6 Soil and Groundwater

Contaminated environmental media must be managed as if it were a hazardous waste if it contains a hazardous constituent. If the media is treated such that it no longer contains a hazardous waste, the media will no longer be managed as a hazardous waste. Levels for RCRA constituents in the environmental media will be determined with Ohio EPA on a case-specific basis as to when the media will no longer be considered to contain a hazardous waste. The derived-from and mixture rules do not apply to contaminated environmental media such as soil or groundwater because these rules directly apply only to mixtures of hazardous waste and solid waste. Unless the source of contamination is specifically known, soil and groundwater will be determined not to contain a listed waste.

5.7 CERCLA Response Materials

To determine whether a waste is a listed waste under RCRA, it is necessary to know the source. The FHPC will use available site information, manifests, and storage records in an effort to ascertain the source. When this documentation is not available or cannot be reconstructed, the waste will be determined not to be a listed waste.

With respect to hazardous characteristics, the FHPC will use best professional judgement to determine on a site-specific basis if testing for hazardous characteristics is necessary. Testing will be performed unless it can be determined by applying knowledge of the hazard characteristic in view of the materials or processes used that the waste does not have hazardous characteristics.

If it is determined that the waste is not listed and it is determined the waste is not a characteristic waste, RCRA would not be directly applicable to the material. If the waste exhibits hazardous characteristics, RCRA requirements are potentially applicable if the waste were either treated, stored, or disposed after the effective date of the applicable RCRA requirement or if the CERCLA actions will involve treatment, storage, or disposal.

5.8 Tanks and Miscellaneous

As a detailed inventory and remediation of the site continues, previously unidentified waste streams are expected to be generated. Particular types of waste expected to be generated during site construction/demolition include wood, laboratory glassware, general debris, etc. Wastes expected to be generated from inventory of the site include tanks, cylinders, associated piping, etc. These wastes are either handled within the limits of their respective closure plans, or within one of the above adopted procedures. An equivalent evaluation, sampling, and analysis plan for these streams will be developed as they become more defined. As revised, the plan will be submitted to OEPA.

6.0 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) INTEGRATION

TCLP determinations can be made by either testing the waste or applying knowledge of materials and processes used in its generation. Knowledge of the wastes would include any EP-Toxicity data or other available analytical data.

If process information is not sufficient to make a TCLP determination, the waste will be tested. If future regulations add additional TCLP constituents, the waste will not be resampled if TCLP determinations can be based on process information.

A TCLP determination will be made for all wastes that have not been disposed of by the effective date of rule. If a waste is determined to be a listed waste, a TCLP determination will also be made.

The following waste would not be TCLP hazardous. Disposal of PCB-containing dielectric fluid and electric equipment containing such fluid that are hazardous only because they fail the TCLP test are exempt from being a hazardous waste. Petroleum-contaminated media and debris that fail TCLP are not hazardous waste if they are subject to UST corrective action. Wastes which fail the test for characteristic of EP-Toxicity because chromium is present are not hazardous waste if they meet the exemption in OAC 3745-51-04(B)(6).

7.0 HEALTH AND SAFETY

The FMPC is not required to comply with the requirements of this plan, with regard to radioactive mixed waste, where compliance will increase the risk to human safety and health or the environment, or, with respect to hazardous or radioactive mixed waste where the requirements would be inapplicable due to the restrictions of 42 USC 6905 (a). Sampling activities where exposure exceeds 42 USC 6905 (a) will be handled on a case-specific basis.

8.0 CONCLUSION

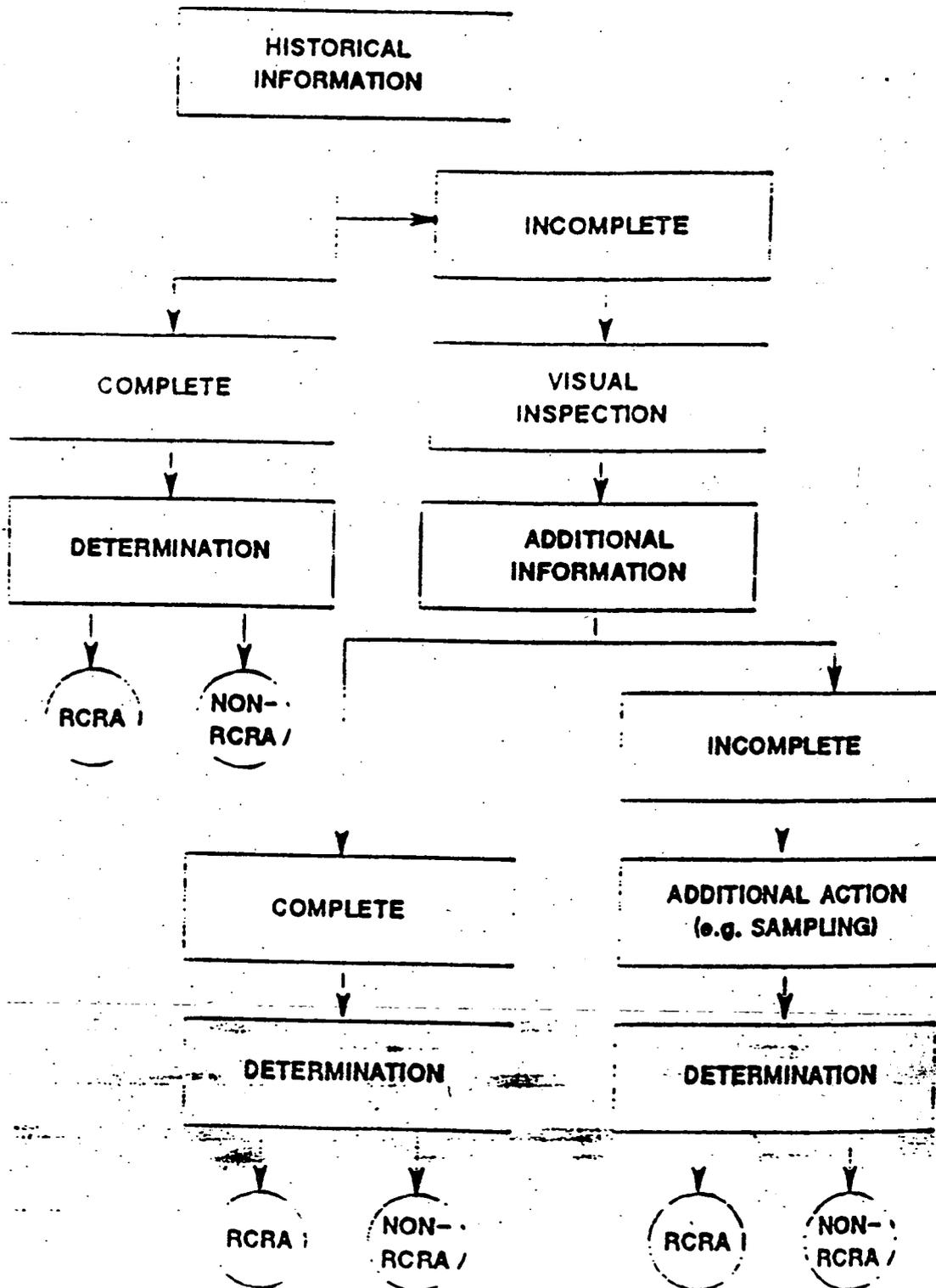
DOE and WMC0 will follow the waste determination steps as they have been presented in this document. Revisions to this document (with the exception of any revisions to the sample forms attached) will be implemented only with the prior approval of OEPA.

The following forms are included only as sample forms and are subject to modification without OEPA notification or approval.

FIGURE 1

DRUMMED NON-LISTED WASTE MATERIALS

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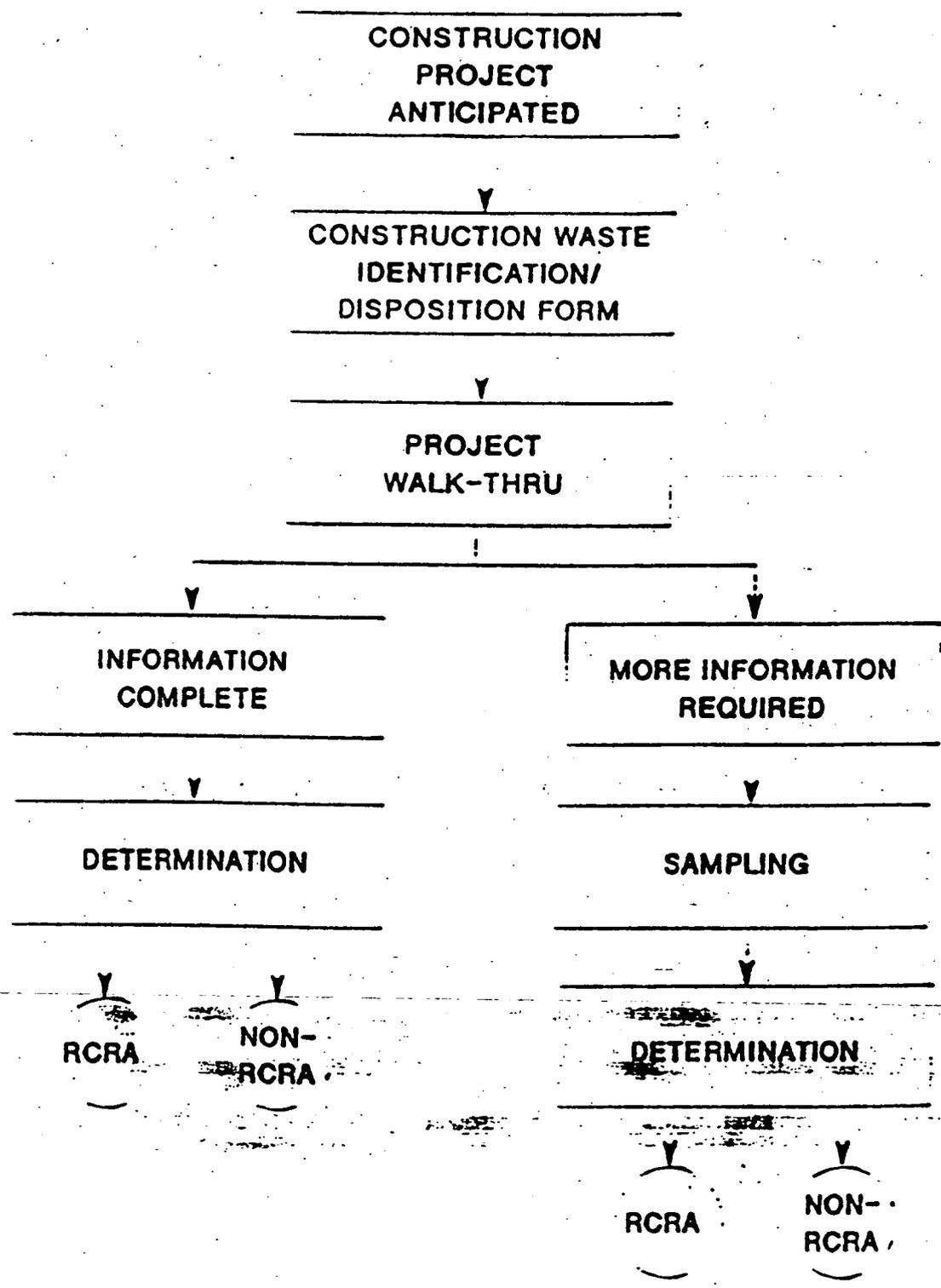
-4456 -

FIGURE 2

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CONSTRUCTION/MAINTENANCE MATERIALS

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-4456 =

THE FOLLOWING FORMS ARE INCLUDED ONLY AS SAMPLE FORMS AND ARE
SUBJECT TO MODIFICATION WITHOUT OEPA NOTIFICATION OR APPROVAL

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ATTACHMENT A

FMPC MATERIAL EVALUATION

GENERATOR

FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE. 4456 -

1. Location: Plant/Building _____
Specific location within building _____
Date of generation (if known) _____

2. FMPC Lot Code _____

Material Physical State: Dry Solid _____ Wet Solid (sludge) _____
Liquid _____ Gas _____

Estimate the net weight of the material in a drum when it becomes full:

Less than 100 lbs _____ Between 100 & 1000 lbs _____
More than 1000 lbs _____

3. Is the material a mixture of more than one substance?

Yes _____ No _____ Don't Know _____

If yes, how many separate phases are present? _____
(e.g., an oil layer floating on water would be two phases)

FMPC MATERIAL EVALUATION

GENERATOR

- 4456 -

FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

5. Common name(s) of material(s): _____

(Include brand names if known. Do not leave blank. Write "UNKNOWN" if name is unknown.)

6. Chemical name(s): _____

(Do not leave blank. Write "UNKNOWN" if name unknown.)

7. Source of information (check all that are applicable):

Container contents label _____

FMPC Lot Code _____

MSDS _____

Attach copy of MSDS or list Chem. Code No. for MSDS _____

8. List the location(s) and type(s)/name(s) of process equipment that generated the waste.

Equipment type(s)/name(s): _____

Equipment location(s): _____

FMPC MATERIAL EVALUATION

GENERATOR

FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

- 4456

9. List any other name(s) and any complete or partial lot code(s) that may be assigned to this or a similar material.

Alternate name(s): _____

Alternate code(s): _____

10. If the material is known to be similar to another material for which a characterization may already have been made, list the other material.

Similar material's name: _____

Similar lot code(s): _____

Don't know: _____

11. If you suspect that the material contains any of these toxic metals, check below.

	Silver _____	Cadmium _____
Lead _____	Arsenic _____	Chromium _____
Selenium _____	Barium _____	Mercury _____
None of the above are in the material being characterized _____		

FMPC MATERIAL EVALUATION

GENERATOR

- 4456 -

..... FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

12. Explain why you suspect any metals checked in item #11 and list any amounts, if known (document or explain).

Check all that apply: Container contents label _____

FMPC Lot Code _____

MSDS _____

Prior characterization of a similar material _____

(What material?) _____

Lot code: _____

13. If you suspect that the material contains any of these organic materials, check below.

Arsenic _____ Barium _____ Benzene _____ Cadmium _____

Carbon Tetrachloride _____ Chloroane _____ Chlorobenzene _____

Chloroform _____ Chromium _____ o-Cresol _____ m-Cresol _____

p-Cresol _____ Cresol _____ 2,4-D _____ 1,4-Dichlorobenzene _____

1,2-Dichloroethane _____ 1,1-Dichloroethylene _____

2,4-Dinitrotoluene _____ Endrin _____ Heptachlor _____

Hexachlorobenzene _____ Hexachloro-1,3-butadiene _____

Hexachloroethane _____ Lead _____ Lindane _____

Mercury _____ Methoxychlor _____ Methyl ethyl ketone _____

FMPC MATERIAL EVALUATION

GENERATOR

FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

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13. (cont.)

Nitrobenzene _____ Pentachlorophenol _____ Pyridine _____

Selenium _____ Silver _____ Tetrachloroethylene _____

Toxanene _____ Trichloroethylene _____ 2,4,5-Trichlorophenol _____

2,4,6-Trichlorophenol _____ 2,4,5-TP (Silvex) _____

Vinyl chloride _____

1,1,1-Trichloroethane _____ Paint Thinner/Mineral Spirits _____

Xylene _____ Inks _____ Methylene Chloride _____

Enamel _____ TBP/Kerosene _____ Aerosols _____

Paint Stripper _____ Coolants _____ Degreasers _____

Hydraulic Oil _____ Motor Oil _____ Synthetic Oil _____

Other organics _____ Describe: _____

FMPC MATERIAL EVALUATION

GENERATOR-4-26

FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

14. Explain why you suspect the presence of any organic materials checked in item #13.

Check all that apply: Historical records information

Container contents label FMPC Lot Code

MSDS Prior characterization of a similar material

(What material?) _____

Lot code: _____

15. Indicate values for the following properties. Attach lab results.

pH _____ (liquids only) _____ Lab results not available

If not enough waste has accumulated to sample, estimate below.

Less than 2 (very acidic) _____ between 2 and 12 _____

greater than 12 (caustic) _____

Flash point _____ °F

If not enough waste has accumulated to sample, estimate below.

Flash point < 100°F _____ Flash point < 140°F _____

Flash point < 200°F _____ Flash point > 200°F _____

Paint filter test results _____

(Indicate "SOLID" or "LIQUID". Needed for wet solids only.)

FMPC MATERIAL EVALUATION

GENERATOR

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FILL IN THE FOLLOWING INFORMATION. BE AS COMPLETE AS POSSIBLE.

15. Is there reason to believe that the material is unstable and undergoes violent reactions, reacts violently with water, forms an explosive mixture with water, generates toxic vapors when mixed with water, contains cyanide or sulfide, or is capable of detonating or exploding?

Yes No

If yes, explain. _____

17. Is there reason to believe that the material is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, would burn so vigorously and persistently that it would create a hazard?

Yes No

If yes, explain. _____

18. Document any other sources used to complete the above information. Use back of page if extra space is necessary. (i.e., phone calls, contacts, etc.)

FMPC MATERIAL EVALUATION

GENERATOR

19. Health and Safety Concerns: _____

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20. Other Information: _____

Prepared by -- Department: _____ Section: _____

Contact: _____ Extension: _____

Date: _____

PLEASE FORWARD THE REQUEST TO
SOLID WASTE COMPLIANCE

FMPC MATERIAL EVALUATION

SOLID WASTE COMPLIANCE

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22. Is this material a waste.

Yes (If yes, go to item #23.)

No (If no, material is non-RCRA, evaluation complete.)

Explain: _____

23. Is the waste excluded under 261.4(a) (e.g. CWA point source discharge, irrigation return flow, AEC source, special nuclear or by-product material, in-situ mining waste)?

Yes (If yes, material is not a RCRA solid waste.)

No (If no, material is a RCRA solid waste. Proceed to next item.)

Explain: _____

FMPC MATERIAL EVALUATION

SOLID WASTE COMPLIANCE

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24. Is the solid waste excluded from regulation under 264.1(b)?

Yes (If yes, waste is not a RCRA hazardous waste.)

No (If no, proceed to next item.)

Explain: _____

25. Is the waste listed in Part 261, Subpart D, or is it a mixture that contains a waste listed in Subpart D?

Yes (If yes, proceed to next item)

No (If no, go to item #27.)

Explain: _____

26. Which list is the waste listed under? (Check one)

K F P U

FMPC MATERIAL EVALUATION

SOLID WASTE COMPLIANCE

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27. Does the waste exhibit any of the characteristics specified in Part 261, Subpart C?

Yes (If yes, then waste is a RCRA hazardous waste.)

No (If no, then waste is not a RCRA hazardous waste.)

Explain: _____

28. Complete items A through D of item # 55.

29. Complete item # 56, copy of Hazardous Waste Label.

30. Is this material a possible RQ hazardous substance?

Yes No If yes, list RQ amount: _____ pounds

31. Material characterization applicable when material becomes waste:

(circle corresponding number)

1. RCRA Hazardous Waste
2. Non-RCRA Waste
3. Uncharacterized Waste
4. Exempt

FMPC MATERIAL EVALUATION

SOLID WASTE COMPLIANCE

- 4456 -

32. The characterization was based primarily on:

Generator's information in Pages 1 - 5: _____

Prior characterization of a similar material: _____

(What material?): _____

Other (explain): _____

33. As a waste, would this material be subject to land ban restrictions?

Yes _____ No _____ Suspect _____

34. Other than the analytical results listed in item #15, is a sample of this material required to allow determination of the proper characterization and/or land ban restrictions or as a periodic check on material consistency?

Yes _____ No _____

If yes, check any analyses which should be conducted:

Paint Filter Liquids Test _____ TCLP _____ Flash Point _____

Listed Organics _____ PCB _____ pH _____

Organics by TCLP _____ Metals from Paint Filter Liquids _____

Cyanide from Paint Filter Liquids _____

Other analyses: _____

FMPC MATERIAL EVALUATION

SOLID WASTE COMPLIANCE

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35. When determined to be a waste, this material should be transferred to:

(check one)

90-day holding area to await full characterization based on evaluation of sample analysis results

Permitted storage area (Waste Management Warehouse)

36. Document any other sources used to help make a determination of the material's characterization. Use back of page if extra space is necessary. (i.e., phone calls, contacts, etc.)

37. Prepared by -- Department: _____ Section: _____

Contact: _____ Extension: _____

Date: _____

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ATTACHMENT B

DRUMMED WASTE SAMPLING STRATEGY

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Introduction

A large quantity of process material is stored in drums at the Feed Materials Production Center (FMPC). A portion of this material is waste. Some of the waste is RCRA (Resource Conservation and Recovery Act) hazardous. Most of it is radioactively contaminated. Waste that is both RCRA hazardous and radioactively contaminated is designated as mixed waste. RCRA waste must be stored properly, in accordance with 40 CFR Subpart I. Some of the waste must be properly treated before disposal. All of the waste must eventually be properly disposed.

Responsible decisions on proper storage, treatment, and disposal of waste are based on adequate knowledge of the material. The major purpose of this document is to present a statistically sound method for obtaining representative samples from waste material stored in drums at the FMPC.

After samples have been taken and analyzed, the results must be evaluated to determine if additional samples are required. This document provides a procedure to perform this evaluation based on proven statistical methods.

2.0 Objective

The objective of this Sampling Plan is to develop a sound sampling strategy to obtain representative samples. The resulting samples will yield data for statistically characterizing materials with respect to RCRA constituents.

3.0 Scope

The Sampling Flow Chart on the following page shows the overall procedure to be followed once the decision has been made to sample a specific waste stream. The Section of this Sampling Plan that discusses each step is indicated. The group responsible for performing each step is also identified. - 4 4 5 6

Section 4.0 discusses decision criteria for those analyses which must be made for samples representing a particular waste stream. This decision is based on information currently available on the material, information required to make a RCRA determination, and information required to treat or dispose of the waste material.

Section 5.0 outlines various techniques that can be used to sample drums and how the appropriate technique is chosen. Sample preservation, chain-of-custody, and field notebook records are also discussed.

Section 6.0 discusses how representative samples are obtained from backlog waste and the various types of waste streams. It discusses how to choose the optimum number of samples to be taken and how to select the specific drums to sample.

Section 7.0 describes the RCRA Analysis Request Form and the RCRA Sampling Plan Form.

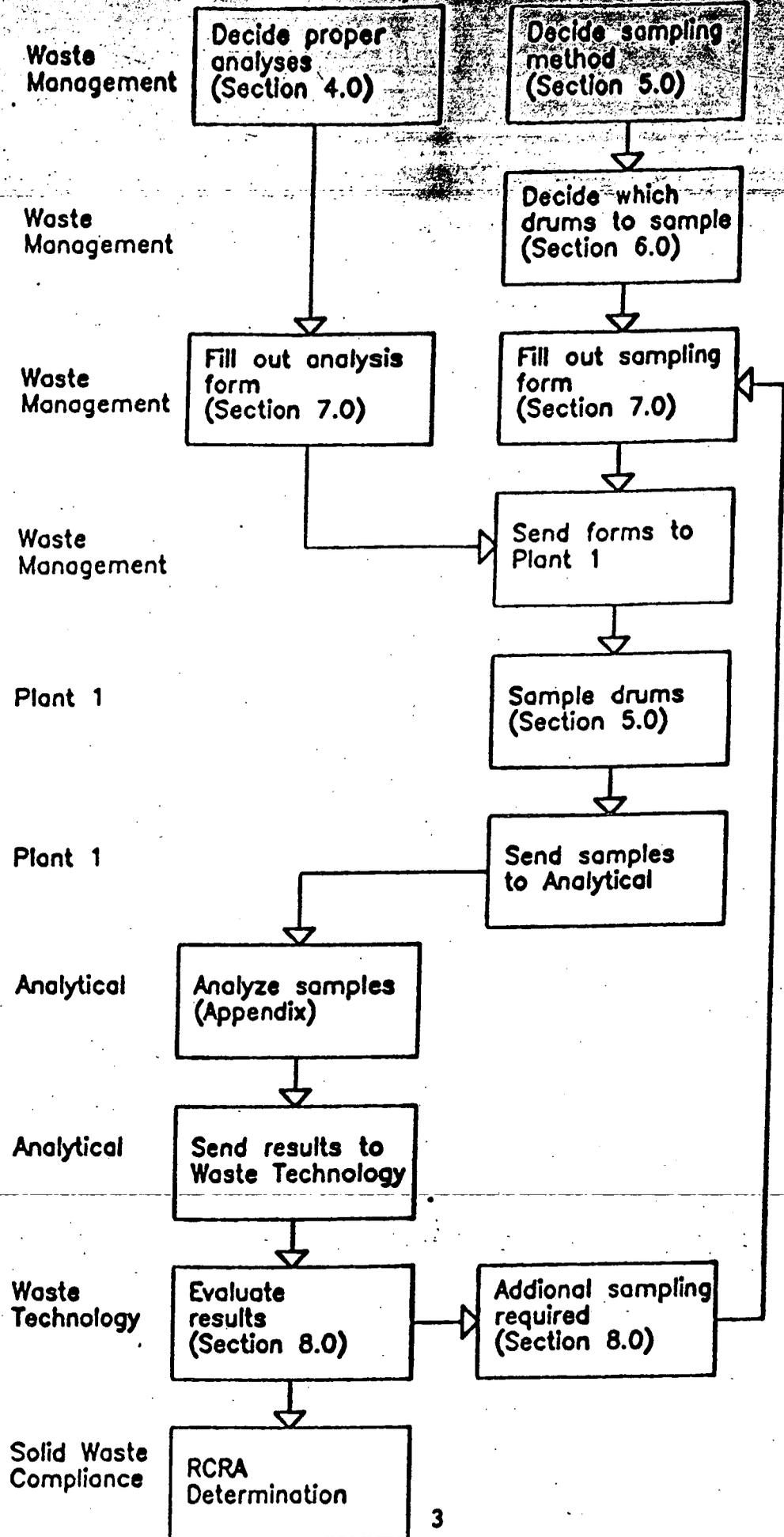
Section 8.0 discusses the statistical evaluation of the data obtained from analysis of the samples. This evaluation can be used to determine if enough samples have been taken to make a RCRA determination.

Section 9.0 summarizes the steps required to assure that the sampling quality is acceptable. It also outlines the additional sampling needed for analytical quality assurance.

Section 10.0 lists the documents that were used to develop this Plan. It also lists the pertinent reference documents.

SAMPLING FLOW CHART

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4.0 Required Analyses

4.1 Available Information

All available information must be gathered for the waste stream that will be sampled. This information may be obtained from process knowledge or from previous analytical data. Whatever the source, the information must be reliable and documented.

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4.2 Required Information

The next step is to decide in advance what information will be necessary to characterize the waste for the intended purpose. Initially, most waste streams will be tested only for hazardous (RCRA) constituents and characteristics plus total U and U-235. Analysis for U and U-235 is being performed for handling the material and is not subject to the jurisdiction of OEPA. After a RCRA determination has been made, the treatment and/or disposal of the waste stream will be decided. If off-site disposal is chosen, more sampling and analysis might be required by the receiving facility's Waste Acceptance Criteria (WAC).

4.3 RCRA Analysis Request Form

Finally, a "RCRA Analysis Request Form" shall be completed for each waste stream to inform the Analytical Lab which analyses are to be done. This form may be periodically revised based on future needs of the Analytical Laboratory and experience gained in the use of the form.

5.0 Sampling Techniques

5.1 Equipment

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Samples are removed from drums by chemical operators at Plant 1 under the direction of Waste Management or Materials Control and Accountability (MC&A) as directed in SOP 1-C-101, "Sampling Residue and Waste Materials." The following guidelines can serve as a basis for deciding which sampler to use. (The automatic closed auger sampler shall not be used unless a procedure is devised to clean it thoroughly after each lot is sampled.)

A manual auger sampler is used for dense particulate solids that are hard to penetrate. This sampler is inserted vertically through the drum contents so all locations (1-9) on Figure 1 are used.

The grain sampler is used for free-flowing particulate solids that are fairly easy to penetrate. This sampler is inserted diagonally through the drum contents so only locations 1-8 on Figure 1 are used.

The pipe sampler is used for moist or otherwise cohesive particulate solids that can be pulled out as a "core" without flowing out of the sampler. This sampler is inserted diagonally through the drum contents so only locations 1-8 on Figure 1 are used.

Composite liquid waste samplers (COLIWASAs) are used to collect full depth samples from drums of liquid waste. The plastic COLIWASA should be suitable for all liquid wastes at the FMPC. Only if the plastic is noticeably attacked (softened) by a solvent waste should a glass COLIWASA be used.

Each of the foregoing samplers requires thorough cleaning after each lot (solid or liquid) is sampled.

5.2 Sample Handling and Tracking

Special handling requirements such as the use of a preservative or the need to cool the samples will be specified in the RCRA Analysis Request Form and the RCRA Sampling Plan Form (Section 7.0). All samples must be traced by the chain-of-custody procedure detailed in SOP 1-C-101. This SOP also requires that a field notebook be kept and it details what should be recorded therein.

6.0 Representative Sampling

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A lot is a group of drums that are identified by the same 15-digit Lot Marking System Number.

A waste stream is a group of drums that contain similar material based on process knowledge.

Representative sampling techniques described herein were derived from SW-846, Chapter Nine.

6.1 Backlog Waste

It is imperative that samples taken for RCRA determinations be demonstrably representative of the waste stream being considered. This is accomplished by random sampling.

6.1.1 Random Sampling

The term "random sampling" means that all the different segments of a waste stream have an equal probability of being sampled. Since we are dealing with drums of waste, this implies that each drum has an equal chance of being sampled and all segments of each sampled drum have an equal chance of being sampled. There are two considerations: the number of samples and the location of the samples.

At least two samples must be analyzed to allow a confidence interval to be calculated. As discussed in Section 8.0, two samples tend to give a large confidence interval. For this reason, two samples are used if only one or two drums comprise the waste stream. A practical minimum is three samples from a waste stream containing three or more drums. It would be unusual to analyze more than five samples from a waste stream unless a large number of drums (over 50) is involved; in which case, a minimum of one drum in 10 must be sampled.

Extra samples are taken when the uniformity of the waste is not known and when taking the particular samples is difficult. For example, for a waste stream consisting of 10 drums, five drums would be randomly sampled: three for analysis plus two extras. Note that these extra samples are not duplicate samples; they are simply additional samples taken the same way as the samples for analysis in case the first three samples yield too wide a confidence interval (as discussed in Section 8.0). Any time limit on holding samples before analysis and special storage requirements must be considered when taking extra samples. Oversampling should not be done for its own sake since inventorying and keeping track of extra samples represent a significant effort.

The following summary is a guide for the number of samples needed based on the number of drums in a waste stream:

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<u>Number of Drums</u>	<u>Number of Samples for Analysis</u>	<u>Number of Samples for Extras*</u>
1	2	1
2	2	2
3 to 15	3	2
16 to 40	4	3
41 to 50	5	3
over 50	10%	3

* Extra samples are taken when significant drum movement is required for access to drums or extraordinary preparation such as anti-C clothing is required. Any time limit on the holding of samples before analysis and special storage requirements must be considered when taking extra samples.

After the number of samples is set, it is necessary to determine exactly where the samples are to be taken. Basically, a lot or lot group of drums containing the same waste must be sampled randomly.

In order to choose random samples, random numbers must be obtained. Tables 1 and 2 are lists of random numbers from 1 to 20 and from 1 to 100, respectively. (Random numbers can also be calculated using simple calculator or computer based programs.) To use the random number lists, go down a column and take each number less than or equal to the total number of units being randomized. For 1 to 10 units, the "one's place" digit from either list can be used (zero being interpreted as 10). Since repeat samples are not desired, repeat random numbers must be skipped. "Used" random numbers should be discarded after use and new numbers generated, although "recycling" lists like Tables 1 and 2 are acceptable if new numbers are not immediately available.

Drums are randomized by first assigning each one a consecutive number: 1, 2, 3, etc. (Many waste streams already have consecutive drum numbers which can be used.) If, for example, four drums are to be sampled, then four random numbers less than or equal to the number of drums in the waste stream are obtained. The drums chosen to be sampled are entered on the RCRA Sampling Plan Form (see Section 7.0).

TABLE 1

Random Numbers, 1-20

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11	18	11	4	9	10	1	18
1	4	6	15	14	13	16	1
20	7	2	16	9	13	20	17
8	13	6	3	15	8	10	8
17	7	17	15	5	19	20	8
15	18	18	18	13	5	15	4
15	17	19	4	14	10	4	14
12	6	17	13	1	1	20	13
13	12	14	9	4	2	2	12
7	8	20	14	2	15	15	10
13	3	20	6	4	17	15	16
3	4	17	5	9	6	14	7
8	18	13	7	8	17	10	10
20	9	9	5	1	2	17	6
5	19	4	16	9	3	15	20
11	1	4	5	13	15	8	3
14	13	6	20	20	9	16	8
16	9	18	15	17	11	17	18
16	10	19	15	13	17	4	1
17	8	15	11	12	12	8	9
18	17	18	19	8	8	6	15
14	10	14	11	14	9	20	8
3	5	20	9	13	11	12	5
8	2	10	10	7	16	11	5
1	2	2	3	18	11	4	4
9	20	7	10	15	15	19	14
0	3	8	20	17	14	14	2
5	15	4	6	5	1	9	8
3	13	9	9	9	8	9	12
3	7	10	16	14	17	13	6
2	16	20	20	3	5	14	7
9	18	14	10	18	16	7	18
0	4	18	12	7	14	3	4
7	8	4	15	7	18	14	19
0	12	7	2	16	15	4	7
3	12	2	15	2	2	17	8
9	3	19	6	4	3	20	7
4	1	10	15	8	14	9	7
9	17	1	7	5	4	17	17
0	2	20	3	3	6	5	7
1	15	2	17	18	19	13	6
3	5	12	2	4	3	15	19
3	11	5	16	19	9	15	8
3	5	7	18	14	16	5	13
9	5	15	11	11	1	6	16
1	13	7	9	12	5	10	10
6	10	17	19	7	6	2	3
9	3	11	5	6	9	10	14
2	19	10	3	1	2	9	16
4	7	2	6	7	7	16	2

TABLE 2

Random Numbers, 1-100

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88	31	46	21	47	98	73	56
95	91	80	35	46	93	92	74
12	85	38	13	23	95	56	80
87	98	35	83	72	78	48	38
35	1	84	33	86	31	53	13
28	42	16	45	81	10	87	67
29	80	25	79	25	26	79	33
60	53	64	30	53	81	16	28
20	94	74	65	85	40	26	81
30	83	59	91	7	38	34	8
31	36	95	69	74	38	56	35
12	38	87	65	70	22	14	26
86	17	53	45	95	18	65	12
97	55	63	2	98	78	12	79
76	37	10	31	52	88	59	10
31	48	18	41	61	17	43	90
80	2	99	8	15	15	14	68
23	14	39	63	84	39	79	84
53	96	37	28	46	28	5	53
8	12	74	88	58	16	87	4
64	5	20	98	76	82	70	92
68	11	96	41	97	41	30	53
7	1	58	19	57	80	23	36
96	96	31	80	63	25	85	82
64	64	84	96	62	59	99	70
65	83	36	73	55	68	16	21
11	43	15	1	49	35	42	61
73	68	45	47	48	76	80	46
41	71	80	91	85	5	34	46
69	39	76	2	98	51	74	87
44	71	1	21	33	9	62	58
56	45	9	84	7	32	29	73
43	34	35	98	91	61	27	97
68	58	19	9	48	10	29	26
11	72	85	20	100	26	93	35
1	3	49	37	45	42	86	82
91	18	55	63	6	67	71	68
65	39	63	34	22	72	46	66
93	90	83	84	85	48	52	1
26	98	45	62	4	21	35	95
19	16	16	83	26	100	71	74
12	99	46	20	81	75	49	27
40	17	64	35	77	48	16	35
80	4	6	50	45	83	82	51
48	52	93	63	11	69	80	46
31	44	37	96	66	19	94	13
56	22	98	90	89	90	42	29
4	4	72	35	23	8	18	83
33	33	24	43	58	39	100	57
68	62	62	57	34	6	9	68

The four drums indicated by the random numbers are then marked for sampling. (Note that "Extra Samples" may repeat drums for streams with few drums, but the sampling position in the drum must not repeat.)

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Large waste streams may be more easily randomized in the field. For example, a waste stream containing 2000 drums might be stored on 500 pallets stacked two-high in a configuration that is 10 pallets wide and 25 pallets deep. If 10% random sampling is specified, a list with at least 2000 random numbers from 1 to 10 (0 to 9, 1 to 100, or 0 to 999, etc.) is obtained. Then a digit (for instance, "1") is picked and the random number list is checked to ensure that 200 "1's" are included on it. With this list in hand, the drums are worked through in a predetermined pattern. For instance, in this example, from left to right starting with the top row. As each drum is passed, a random number is checked off the list. Whenever a "1" is encountered, that drum is removed or marked for sampling. In this manner, only 10% of the drums need to be pulled for sampling.

If sampling is being done because the statistical evaluation (Section 8.0) indicates that more samples are needed, the samples must be taken randomly from unsampled drums.

The sampling position within each solid waste drum is determined in the field just prior to taking each sample. The sampling position must be randomized (liquid waste drums are assumed to be radially uniform; i.e., only horizontal layers can be present). Since all drum samples will be taken from top to bottom, only the boring location on the top surface needs to be randomized. For our purpose, the top surface of each drum to be sampled is divided into an imaginary grid with nine sections of equal area as shown in Figure 1. To be consistent, the drum should always be faced at its vertical seam. The section to be sampled is determined by obtaining a random number from 1 to 9.

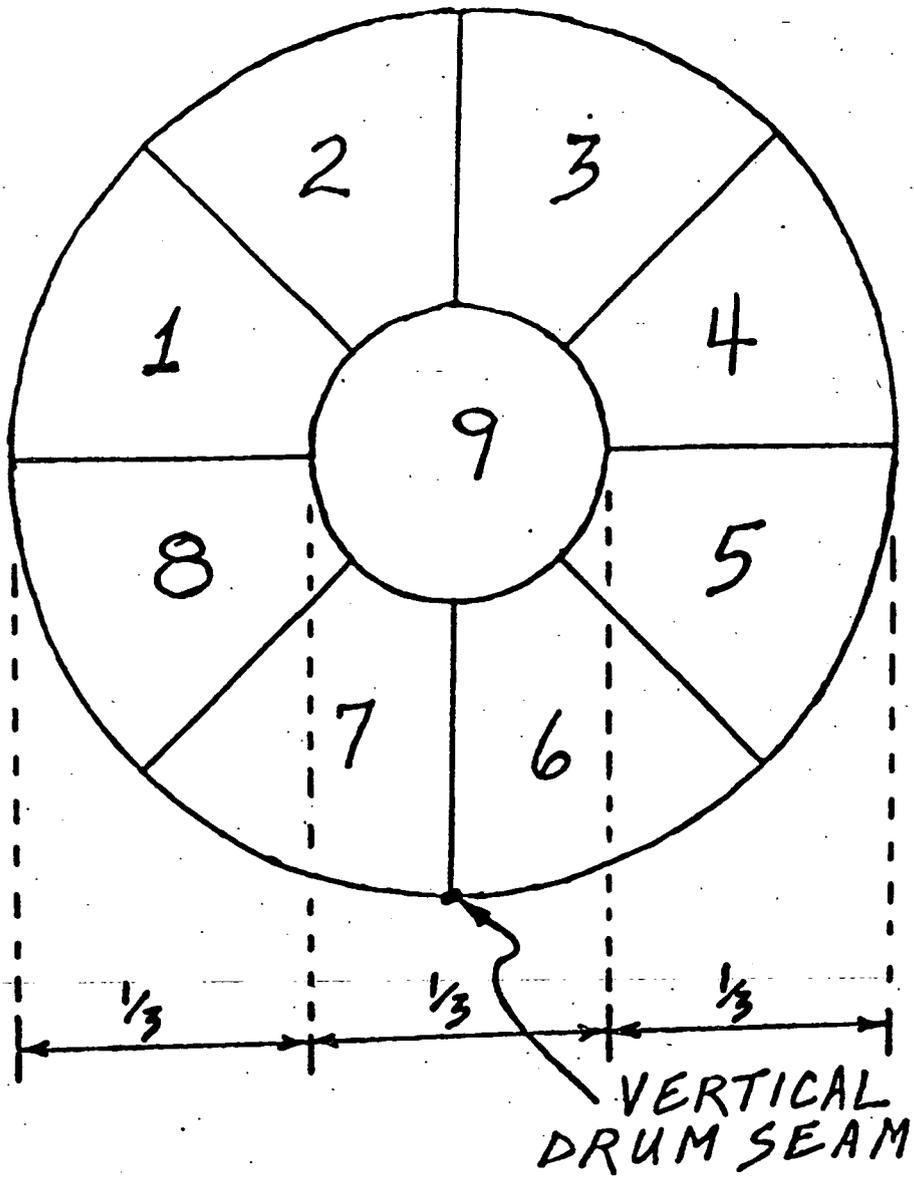
The following example should help clarify the preceding paragraphs:

A specific waste stream consists of only 12 drums of presumably the same type of solid waste. The drums are in a difficult to reach location so it is decided to take three samples for analysis plus two extra samples. The drums are consecutively numbered 1, 2, 3, ..., 12. The first column in Table 1 is used to get five random numbers from 1 to 12 which are: 11, 1, 8, 12, 7. (Mark "7" as the last number used from the list.) Drums 11, 1, and 8 are sampled for analysis and drums 12 and 7 are sampled as extras. (Drums are sampled per SOP 1-C-101.) The drums can be sampled in any order. Say drum 11 is

FIGURE 1

SOLID WASTE DRUM SAMPLING GRID

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chosen for sampling. Face drum 11 at its vertical seam. Get the next random number from 1 to 9 from Table 1. The next number after "7" is "13"; use "3" from this number. Figure 1 indicates that the sample must be taken from an outer section between 12:00 and 1:30. Take a full depth sample at this location. Repeat this procedure for all five samples.

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While the foregoing randomizing technique may seem unwieldy, it is absolutely necessary in order to minimize possible bias when taking samples.

6.1.2 Composite Sampling

MC&A specifies which waste streams require Nuclear Material Accountability (NMA) sampling. For these streams, two different sampling schemes are performed concurrently: lot composite sampling to satisfy the requirements of NMA and random sampling to satisfy the requirements of this Plan. A lot composite is prepared by taking one sample from every drum in a lot and combining these samples in one container. A sample from this composite is then analyzed for uranium and U-235.

Compositing of random samples may be done to reduce the analytical costs of large waste streams. Compositing of random samples is the preparation of several samples obtained by combining equal numbers of random samples from the same waste stream. For example, a stream contains 1200 drums of waste. 120 random samples are taken. Groups of 12 random samples are combined to produce 10 composite samples for analysis.

Compositing of random samples can be used for large waste streams to reduce analytical costs. It may be done if the waste stream contains a large number of drums and knowledge of compositional ranges is not a concern. In no case shall less than five composite samples be analyzed. Compositing of random samples is unique in a given situation; therefore, a specific plan will be prepared for each waste stream where compositing of random samples is deemed appropriate.

6.2 Currently Generated RCRA Waste

RCRA waste streams that are currently being produced must be sampled at a frequency which assures that accurate, current data are available for timely dispositioning of the waste. Sampling strategy depends on the rate of waste production and the inherent stream variability. Drums should be sampled before being transported to a warehouse to minimize drum handling.

At a minimum, every RCRA waste stream must be sampled at a frequency of every 10th drum or one drum every three months, whichever occurs first. (Composite sampling of large waste streams may be specified to reduce analytical effort.) The only exception is for waste streams accumulating less than one drum in three months, in which case every drum is sampled and analyzed when full. Each new analysis must not vary outside a set range for each variable. This range is determined by the planned ultimate disposition of the waste. For example, a waste oil stream may be allowed a given range of 1,1,1-TCE, which would not affect the final disposition (presumably incineration).

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When a waste stream is found to vary outside its allowed range, sampling and analysis of the offending variable for all subsequent drums shall commence in order to determine if the deviation is a perturbation or a real shift in waste stream properties. A "t test", as described in Section 8.0, shall be used on at least three consecutive drums to determine the significance of any perceived shift in variable mean.

6.3 Currently Generated non-RCRA Waste Streams

The sampling requirements for non-RCRA waste streams that through process knowledge and analysis have little or no potential of becoming RCRA shall be determined by internal record keeping and/or the off-site receiver of such waste. These sampling requirements vary widely and will not be detailed here.

Non-RCRA waste streams judged to have a reasonable potential of becoming RCRA must be sampled and analyzed frequently enough to maintain up-to-date 80% confidence intervals that are below RCRA limits. (Confidence interval calculations are covered in Section 8.0.) These are streams with one or more constituents pushing the RCRA limit. The minimum sampling frequency shall be every 10th drum or one drum every three months, whichever occurs first. Composite sampling of large waste streams may be specified to reduce analytical effort. An 80% confidence interval will be calculated after each sample is analyzed, using the current and previous two analytical results.

If the upper end of the 80% confidence interval exceeds the RCRA limit, the group of drums collected since the last "clean" result shall be considered "suspect" and treated as described in Section 6.1, Backlog Waste. Subsequently filled drums shall be individually sampled and a confidence interval calculated on the first five drums filled. Also, an investigation will begin as to the cause of the deviation. If sampling every drum and averaging over five drums narrow the confidence interval enough for a finding of non-RCRA, the waste stream shall continue to be considered as non-RCRA. Sampling all drums and averaging every five drums shall continue until it is reasonably certain that the waste stream will remain non-RCRA. The

sampling frequency can then be reduced. These judgements shall be made by Waste Management in consultation with Solid Waste Compliance.

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6.4 Duplicate Sampling

For certain situations, duplicate samples are required. These may be requested for QA purposes or for use by an off-site analytical, treatment, or storage facility. The need for duplicate samples shall be stated on the RCRA Sampling Plan Form for each waste stream as discussed in the next section.

7.0 Sampling Forms

A "RCRA Sampling Plan Form" shall be filled out for each waste stream to delineate how many and what size samples are to be taken. Other information on this form includes sample container sizes and types, required holding times, and whether composite sampling is required. This form may be periodically revised based on future needs and experience gained in its use.

8.0 Statistical Evaluation

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Statistics are used to determine a confidence interval for the true average or mean waste composition. Statistically, the analytical results for one parameter are collectively called the "sample". If the sample consists of X_1, X_2, \dots, X_n the sample mean (\bar{X}) is:

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_n}{n}$$

where n = number of samples taken.

For RCRA determinations, we must establish an 80% confidence interval (CI) for the true mean; i.e., we want to establish a range around \bar{X} in which we can be 80 % certain that the true mean lies. First we must obtain a measure of the variability of X . This is called the sample standard deviation (s) and is defined as:

$$s = \frac{(X-X_1)^2 + (X-X_2)^2 + \dots + (X-X_n)^2}{n-1}$$

An equivalent form of this equation which simplifies the calculation is:

$$s = \frac{n(X_1^2 + X_2^2 + \dots + X_n^2) - (X_1 + X_2 + \dots + X_n)^2}{n(n-1)}$$

Note that these calculations are internal functions on many calculators (MEAN and SDEV in the HP41CV, \bar{x} and s_{n-1} on many TI calculators) and are included in any statistics package for personal computers. (When using a calculator or computer, it is important to input a simple example problem, such as given later, to assure the user that the correct procedure is being followed. For example, it is important that the "sample standard deviation" is used and not the "population standard deviation". The latter replaces $(n-1)$ with (n) in the above equations.)

For this statistical evaluation to be valid, s^2 must be less than \bar{X} . If s^2 is not less than \bar{X} , a judgement must be made on the need for more sampling or a different statistical treatment. This situation is most likely to occur when analytical results are near the detection limit and significantly lower than the RCRA limit. In such cases, a summary judgement of "non-RCRA" can be made with no further statistical analysis.

The last variable needed to calculate the confidence interval is "t". This variable is a function of the number of samples (n) and serves to widen the confidence interval as the number of samples decreases and confidence is reduced. (The statistical treatment described here is commonly called a "t test".) Values of t for a given number of samples are listed in Table 3.

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Finally, the confidence interval (CI) is calculated from the following equation:

$$CI = \bar{X} \pm \frac{(t)(s)}{n}$$

It can be seen that increasing n (which also decreases t) has the effect of narrowing the confidence interval.

The following is a simple example of how to use these equations. Five representative samples were taken and analyzed for a RCRA component having a limit of 5.0 ppm. The analysis results were 6, 2, 4, 3, and 3 ppm. Does the data justify a finding of non-RCRA?

Statistical Treatment:

\bar{X}	\bar{X}^2
6	36
2	4
4	16
3	9
3	9
<u>18</u>	<u>74</u>

$$n = 5$$

$$\bar{X} = 18/5 = 3.60$$

$$t = 1.533$$

$$s = \frac{(5)(74) - 18^2}{(5)(4)} = 1.517$$

$$CI = 3.60 \pm \frac{(1.533)(1.517)}{5} = 3.60 \pm 1.04$$

So the 80% confidence interval is 2.56 to 4.64 ppm.

TABLE 3

Values of "t"

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<u>Number of Samples, n</u>	<u>Value of "t"</u>
2	3.078
3	1.886
4	1.638
5	1.533
6	1.476
7	1.440
8	1.415
9	1.397
10	1.393
11	1.372
12	1.363
13	1.356
14	1.350
15	1.345
16	1.341
17	1.337
18	1.333
19	1.330
20	1.328
21	1.325
22	1.323
23	1.321
24	1.319
25	1.318
26	1.316
27	1.315
28	1.314
29	1.313
30 (or more)	1.311

All statistical results shall be legibly recorded, signed, and dated by the person making the calculations. All calculations shall be checked by another individual. All calculations shall be kept in the appropriate Waste Management file. Any additional statistical evaluation required by off-site waste treatment or storage facilities shall also be included in these files.

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9.0 Quality Assurance

9.1 Sample Identification

All samples taken at the FMPC shall be identified using the "FMPC LOT MARKING and COLOR CODING SYSTEM" (FMPC 2178), which is an internal document maintained by the staff of the Materials Control and Accountability section. The labeling of samples will be performed according to FMPC SOP 1-C-101, section on records requirements.

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9.2 Sample Control and Chain-of-Custody

Transfer of all RCRA and RCRA-suspect samples shall be documented following the procedure in FMPC SOP 1-C-101 on chain-of-custody. The chain-of-custody record is used to track the movement of all samples and as a sample logging source document for the Analytical Laboratories at the FMPC.

9.3 Maintenance of Field Notebook

The FMPC personnel supervising the taking of RCRA samples shall maintain the field notebook. This notebook will include all pertinent field data as listed in SOP 1-C-101.

All entries in the field notebook shall be dated, be legible, and contain accurate and inclusive documentation of the sampling campaign. Since field notebook records are the basis for subsequent written reports, language should be objective and factual. Once completed, these field notebooks become accountable documents and shall be maintained by Waste Management as part of the RCRA sampling files.

9.4 Recording of Information

All sample identification, field notebook, and chain-of-custody records shall be recorded in waterproof non-erasable ink. If errors are made in any of these documents, correction is made by simply crossing a single line through the error and entering the correct information. All corrections shall be initialed and dated.

9.5 Laboratory QA

The FMPC Analytical Laboratory or an off-site laboratory under subcontract shall follow their internal QA plans regarding split sample or spiked sample checks. Liquid sample blanks shall be submitted at least once per calendar quarter. Duplicate sampling may be requested by Waste Management, Analytical, or the QA Department at any time if results become suspect. (The use of multiple random sampling minimizes the need for duplicate samples.)

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9.6 Equipment Cleaning

To avoid cross contamination, sampling equipment shall be cleaned thoroughly. The cleaning shall be documented as specified in SOP 1-C-101. Equipment shall be visually inspected for contamination before each use.

9.7 Rinse Water

The clean distilled rinse water to be used for final rinsing of the sampler shall be sampled at the start of each waste stream sampling campaign. This sample will be analyzed for all metals and organics of interest in the waste stream.

9.8 COLIWASA Blank Sample

Before sampling a liquid waste stream, the clean COLIWASA shall be used to take a sample from the clean rinse water container. This sample will be analyzed for all metals and organics of interest in the waste stream.

9.9 Training

Waste Management shall train Plant 1 chemical operators on the correct handling of the sampling equipment and on the filling of sample containers.

9.10 Auditing

The QA Department shall verify the implementation of this sampling plan by field surveillance.

10.0 References

Code of Federal Regulations (CFR) Title 40, Protection of Environment, Part 261, "Identification and Listing of Hazardous Waste"

Title 49 CFR, Transportation, Subchapter C "Hazardous Materials Regulations", Parts 171-177

Test Methods for Evaluating Solid Waste, USEPA document SW-846, Volume II, Field Manual, Physical/Chemical Methods, Chapter Nine, "Sampling Plans", United States Environmental Protection Agency (USEPA), Office of Solid Waste and Emergency Response

Samplers and Sampling Procedures for Hazardous Waste Streams, USEPA document EPA-600/2-80-018, USEPA, dated January 1980

Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual", USEPA, dated April 1, 1986 (Document available in Waste Technology and MC&A)

National Guidance Package for Compliance with Department of Transportation Regulations in the Shipment of Environmental Laboratory Samples, David Weitzman, Office of Occupational Health and Safety (PM-273), USEPA, dated April 13, 1981

Nevada Test Site Defense Waste Acceptance Criteria, Certification, and Transfer Requirements, NVO-325, dated October 1988

Waste Acceptance Plan and Analytical Protocol for the K-1435 Toxic Substances Control Act (TSCA) Incinerator, Oak Ridge Gaseous Diffusion Plant (ORGDP), Oak Ridge, Tennessee, K/HS-252, dated January 1989 (Document available in Waste Technology)

Waste Acceptance Criteria for Off-Site Waste Processing in the Waste Experimental Reduction Facility (WERF) Incinerator located at the Idaho National Engineering Laboratory (INEL), Draft (Document available in Waste Technology)

FMPC Standard Operating Procedure SOP 1-C-101, "Sampling Residue and Waste Materials"

FMPC Standard Operating Procedure SOP 20-C-605, "Hazardous Waste Satellite Accumulation Areas"

FMPC Standard Operating Procedure SOP 1-C-605, "Storage of Hazardous Waste"

Analytical Laboratory Quality Assurance Plan AnL-QAP

FMPC-2083, MC&A Manual, Section VIII "Sampling", Section XIV "Statistics".

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WMCO:CO(MCA):89-155, D. L. Dunaway to P. J. Levine, "Sampling Requirements For RCRA Waste", dated April 14, 1989

FMPC-2178, Lot Marking and Color Coding System.

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ATTACHMENT C

PART I - PROJECT DESCRIPTION

Date 7 / 25 / 89

Project title Controlled Storage Pad - Plant 1 Phases A & B

UNCO Project No. 00-502

Project description Covered controlled storage pad - description attached

Project location (include location drawing if possible) Plant 1 drawing attached

Project Engineer R. J. Skelka phone 6757 construction dates start 10 / 2 / 89 end 1 / 14 / 89

PART II - CONSTRUCTION WASTE DETAILS

WASTE TYPE	UNCONTAMINATED WASTE		CONTAMINATED WASTE	
	VOLUME Cu. Ft.	WEIGHT Pounds	VOLUME Cu. Ft.	WEIGHT Pounds
Soil				
Suble (concrete, metal, etc.)			86,000	9,504,000
Metal				
Process Equipment				
Mixed Solid/Liquid				
Asbestos				
Liquid				
PCBs				
Metals/Radioactive Mixed				
Toxic/Radioactive Mixed				
Mud				
Other (specify)				

Boxed for shipment to Nevada

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* Also complete PART III - SOILS AND MATERIAL CHARACTERIZATION AND DISTRIBUTION FORMS 100-1 (1/78) (1/78)

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RCRA Compliance Schedules For Hazardous Waste Streams

**COMPLIANCE SCHEDULE FOR
NEWLY DETERMINED WASTE STREAMS**

- 4 4 5 6

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On August 29, 1990 and September 28, 1990, DOE reported to OEPA nine and seventeen additional waste streams respectively, identified in the attached list, determined to be hazardous waste and subject to requirements of Section 3.12 and Section 3.8 of the PACD.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the characterized waste streams, which supersedes the previous submittal on November 1, 1990, will be implemented to comply with applicable hazardous waste

1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1(f)).

COMPLETION DATE: Completed on December 28, 1990 for drums identified in the list of 1800

Completed on January 26, 1991 for drums identified in the list of 8000 not affected by the HWMUR

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32). - 4456 -

COMPLETION DATE: Completed

4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed

6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and 3745-66-76).

COMPLETION DATE: Completed

8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

COMPLETION DATE: Completed

- 12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

- 13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

- 14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

- 15. Perform a hazardous waste management unit evaluation of the storage area(s) where hazardous wastes are stored (Proposed Amended Consent Decree).

COMPLETION DATE: Completed

- 16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMU (PACD Section 3.11).

COMPLETION DATE: Completed

- 17. Report newly identified waste streams/HWMUs in quarterly reports to OEPA as required by OAC 3745-65-13.

COMPLETION DATE: Completed

- 18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

- 19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

- 20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

- 21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable

<u>MATERIAL DESCRIPTION</u>	<u>SOURCE CODE</u>	<u>MATERIAL TYPE</u>	<u>DRUM COUNT</u>
1. Contaminated Solvents	YAQ	013	280
2. Wet sump or filter cake, Oil Contaminated	HXA	068	313
3. Contaminated oil, insoluble	137	015	16
4. Contaminated oil, insoluble	351	015	10
5. Contaminated oil, insoluble	100	015	10
6. Discard process residues, etc.	620	001	5
7. Contaminated oil, insoluble	301	015	4
8. Samples, non-metallic, misc.	FTA	047	3
9. Contaminated TBP & Kerosene	732	022	3
10. Samples, non-metallic, misc.	731	047	2
11. Contaminated solvent	530	013	1
12. Contaminated oil, insoluble	300	015	1
13. Oily semi-solids, highfree metal	260	041	2
14. Scrap salts, low fluoride	341	066	1
15. Dust collector bags	927	029	27
16. Dust collector bags	140	029	1
17. Dust collector bags	143	029	1
18. Discard process residues	375	001	9
19. Non-recoverable trash	745	003	6
20. Non-recoverable trash	200	003	19
21. Semi-solid, salt & chloride	FTA	011	148
22. Contaminated solvent (methanol)	732	013	3
23. Used oil	901	015	2
24. Grit Blast	700	028	860
25. Oily semi-solid	800	039	10
26. Solvent semi-solids (1, 1, 1-trichloroethane)	YAQ	043	46

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**COMPLIANCE SCHEDULE FOR
8000 NOT AFFECTED BY HWMUR DRUM POPULATION
DETERMINED TO BE HAZARDOUS BY SAMPLING AND ANALYSIS**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On November 26, 1991, DOE reported that the thirty-four waste streams identified by the attached list have been determined to be hazardous waste and are subject to requirements of Section 3.12 and Section 3.8 of the PACD.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the characterized waste streams, which supersedes the previous submittal on January 24, 1992, will be implemented to comply with applicable hazardous waste requirements.

1. Transfer any drummed waste to a RCRA Storage Area, identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: The waste drums are currently stored at Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse, Plant 9 Warehouse and KC-2, which are identified in the FEMP Part A Permit Application.

COMPLETION DATE: Completed January 24, 1992

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed March 15, 1992

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32).

COMPLETION DATE: Completed February 21, 1992 ~~1991~~ 4 5 6

4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

5. Store all drums and other containers holding hazardous waste and/or mixed waste in a manner which complies with the containment storage system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed

6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and OAC 3745-66-76).

COMPLETION DATE: Completed

8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse, Plant 9 Warehouse and KC-2, which are listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering these areas must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37)

COMPLETION DATE: Completed

15. Perform a hazardous waste management unit evaluation of the Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse, Plant 9 Warehouse and KC-2 where hazardous wastes are currently present (Proposed Amended Consent Decree).

Comments: The evaluation was performed at the time the units were included in Part A Permit Application.

COMPLETION DATE: Completed June 28, 1991

16. ~~Modify RCRA Permit Application to incorporate newly identified waste streams/HWMU (PACD Section 3.11).~~

COMPLETION DATE: Completed

17. Report newly identified waste streams/HWMUs in quarterly reports to OEPA as required by PACD Section 4.13.

COMPLETION DATE: Completed

18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

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MATERIAL/ SOURCE	DESCRIPTION	EPA ID. NO.	LOCATION
011-530	Contaminated rocks, soil, etc.	D004, D008, D011	Plant 1 Pad
013-VAQ	Contaminated solvent	F001, F003, F005, D001, D019, D022, D028, D029, D038, D039, D040	KC-2
068-VXB	Wet Sump or filter cake oil contd.	F002	Bldg. 79 Bldg. 81
068-HXA	Wet sump or filter cake oil contd.	D011	Plant 1 Pad Bldg. 79, 80, 81
068-HXA	Wet sump or filter cake oil contd.	D002, D007	Plant 1 Pad
066-643	Scrap salts, low fluoride	D007	Plant 1 Pad
015-137	Contaminated oil, insoluble	F001, D019, D029, D039, D040	Bldg. 79
065- FYC	Scrap salts, high fluoride	D007, D008	Plant 1 Pad Plant 8 East Pad
062-732	Dust Collector residues High F	D004, D011	Plant 1 Pad
015-351	Contaminated oil, insoluble	F001, D009, D040	Bldg. 79
015-100	Contaminated oil, insoluble	F002, D018, D019, D028, D029, D039, D040	Bldg. 79
001-020	Discard process redidue, etc.	D008	Bldg. 79

1 Building 79 - Plant 6 Warehouse
 Building 80 - Plant 8 Warehouse
 Building 81 - Plant 9 Warehouse

2 Location of drums prior to October, 1991

Material / Source	Description	EPA ID No.	Location
062-111	Dust collector residues, High F	D007	Plant 1 Pad
066-660	Scrap Salts, low fluoride	D001	Plant 1 Pad
001-900	Discard process residues, etc.	D029	Plant 1 Pad
018-301	Contaminated oil, insoluble	F002, F005, F006, D006, D018, D019, D028, D029, D039, D040	Bldg. 79
047-072	Samples, non-metallic, misc.	D006	Plant 1 Pad
047-722	Contaminated TBP & Kerosene	D002, D019, D022, D039	KC-2
047-722	Contaminated TBP & Kerosene	F002, F003, D001, D019, D022, D039	KC-2
047-721	Samples, non-metallic, misc.	D007	Plant 1 Pad
066-410	Scrap salts, low fluoride	D004, D008	Plant 1 Pad
001-711	Discard process residues, etc.	F006	Plant 1 Pad
011-430	Contaminated rocks, soil, etc.	D007, D011	Plant 1 Pad
013-030	Contaminated solvent	F001, F006, D019, D022, D028, D029, D039	KC-2

1 Building 79 - Plant 6 Warehouse
 Building 80 - Plant 8 Warehouse
 Building 81 - Plant 9 Warehouse
 2 Location of drums prior to October 30, 1991

MATERIAL/ SOURCE	DESCRIPTION	EPA ID NO.	LOCATION
015-300	Contaminated oil, insoluble	F002, D029, R039	Bldg. 79
062-101	Dust collector residues, High F	D006, D008	Plant 1 Pad
027-300	Contaminated burnables	F001, F005	Plant 1 Pad
027-310	Contaminated burnables	F001, D005, D011	Plant 1 Pad
027-NXA	Contaminated burnables	F002, F005, D011D011	Plant 1 Pad Plant 8 East Pad
003-300	Contaminated non-burnables	D011	Plant 1 Pad
028-600	Contaminated non-burnables	D008	Bldg. 79, 80
029-101	Dust Collector Bags	D004, D006, D008	Plant 1 Pad
027-620	Contaminated burnables	D001	Plant 1 Pad
029-900	Dust Collector Bags	D007	Plant 1 Pad

1 Building 79 - Plant 6 Warehouse
 Building 80 - Plant 8 Warehouse
 Building 81 - Plant 9 Warehouse

2 Location of drums prior to October 30, 1991

COMPLIANCE SCHEDULE FOR
1800 DRUMS ANALYTICAL REPORT

- 4456 -

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On January 11, 1991, DOE reported to OEPA the results of the completion of sampling and analysis of the 1800 drums and identified additional wastes subject to requirements of Section 3.12 and Section 3.8 of the PACD.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the characterized waste streams, which supersedes the previous submittal on March 12, 1991, will be implemented to comply with applicable hazardous waste requirements.

Transfer of hazardous waste streams identified in the PACD Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: The waste drums are stored in a Hazardous Waste Management Unit, identified in the FEMP Part A Permit Application.

COMPLETION DATE: Not applicable

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32).

COMPLETION DATE: Completed

- 4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

- 5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment system requirements (OAC 3745-55-75, Consent Decree Section 3.3).

COMPLETION DATE: Completed

- 6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

- 7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and OAC 3745-66-76).

COMPLETION DATE: Completed

- 8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

- 9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

- 10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

- 11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

COMPLETION DATE: Completed

- 12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

- 13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

- 14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

- 15. Perform a hazardous waste management unit evaluation of the storage area where hazardous wastes were stored (Proposed Amended Consent Decree).

COMPLETION DATE: Completed

- 16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMUs (PACD Section 3.11).

COMPLETION DATE: Completed

- 17. Report newly identified waste streams/HWMUs in quarterly reports to OEPA as required by PACD Section 4.13.

COMPLETION DATE: Completed

- 18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

- 19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

- 20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

- 21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable

**COMPLIANCE SCHEDULE FOR
SAMPLING AND ANALYSIS RESULTS OF THE
8,000 AFFECTED BY THE HWMUR
AT THE FEMP**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On July 30, 1991, the DOE reported that the waste streams identified by the attached list have been determined to be hazardous waste and are subject to requirements of Section 3.12 and Section 3.8 of the PACD.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the newly characterized waste streams, which supersedes the previous schedule, September 26, 1991, will be implemented to comply with applicable hazardous waste requirements.

- 1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous. and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: The waste drums are currently stored at Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse and KC-2, which are identified in the FEMP Part A Permit Application.

COMPLETION DATE: Completed

- 2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32).

COMPLETION DATE: Completed

4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

5. Store all drums and other containers holding hazardous waste and/or mixed waste in a manner which complies with the containment system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed

6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and OAC 3745-54-18).

COMPLETION DATE: Completed

8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34). -4456-

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse and KC-2, which are listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering these areas must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

15. Perform a hazardous waste management unit evaluation of the Plant 1 Pad, Plant 8 Warehouse, Plant 6 Warehouse and KC-2 where hazardous wastes are currently present (Proposed Amended Consent Decree).

COMPLETION DATE: Completed

16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMUs (PACD Section 3.11).

COMPLETION DATE: Completed

17. Report newly identified waste streams in quarterly reports required by PACD Section 4.13.

COMPLETION DATE: Completed

18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

Newly Identified Waste Streams

Material Description	Source Code	Material Type	EPA ID No.	Drum Count	Location
Contaminated rocks, soil, etc.	211	011	D002, D004, D007, D008, D011	1	Plant 1 Pad
Wet sump or filter cake	380	069	F002, D039	4	Plant 1 Pad
Oily sludges, high free metal	655	041	D001	26	Plant 1 Pad
Cleanout semi-solids	741	042	F001, D019	10	Plant 6 Wrhs
Solvent semi-solids	732	043	D007, D011	1	KC-2 Wrhs
Samples, non-metallic, misc.	140	047	D001, D003	1	Plant 1 Pad
Discard process residues, etc.	660	001	D006, D007, D008, D018, D040, F002, F005	1	Plant 1 Pad
Wet sump or filter cake	362	068	D005	2	Plant 8 Wrhs Bldg. 67
Contaminated non-burnables	200	028	D008	31	Plant 6 Wrhs Plant 8 Wrhs Plant 1 Pad
Contaminated non-burnables	100	028	F002	4	Plant 8 Wrhs Plant 1 Pad
Contaminated non-burnables	100	028	D004, D008, F005	1	Plant 8 Wrhs Plant 1 Pad
Contaminated non-burnables	210	028	F002	1	Plant 1 Pad

NEWLY IDENTIFIED WASTE STREAMS

Material Description	Source Code	Material Type	EPA ID No.	Drum Count	Location
Incinerator Cinders	240	033	F001	536	Plant 1 Pad
Oily semi-solids	953	039	F001, F003, F005, D001, D019, D039, D040	79	Plant 6 Wrhs
Scrap salts, high fluoride	100	065	D008	51	Plant 1 Pad
Wet Sump or filter cake, oil, contd.	735	068	D002, D039, D040	55	Plant 1 Pad Plant 6 Wrhs KC-2 Wrhs
Wet sump or filter cake	381	069	F002, D039	21	Plant 1 Pad
Cleanout Semi-solids	200	042	F002, D039	29	Plant 1 Pad Plant 8 Wrhs
Contaminated rocks, soil, etc.	212	011	D004, D005, D007, D008, D010, D011	9	Plant 1 Pad
Contaminated solvent	745	013	F003, F005, D001, D039	17	Plant 6 Wrhs KC-2 Wrhs
Contaminated oil, insoluble	741	015	F001, D018	96	Plant 6 Wrhs
Dust collector residues - high fluoride	665	062	D006, D008	5	Plant 1 Pad
Discard process residues, etc.	381	001	D039, F002	4	Plant 1 Pad
Discard process residues, etc.	235	001	D002	1	Plant 1 Pad
Contaminated rocks, soil, etc.	211	011	D011	3	Plant 1 Pad

- 4 4 5 6

**COMPLIANCE SCHEDULE FOR
8000 AFFECTED BY HWMUR DRUM POPULATION
DETERMINED TO BE HAZARDOUS BY PROCESS KNOWLEDGE**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On March 22, 1991, DOE reported that the Insoluble Contaminated Oil waste stream identified by the attached list has been determined to be hazardous waste and is subject to requirements of Section 3.12 and Section 3.8 of the PACD.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the characterized waste streams, which supersedes the previous submittal on May 30, 1991, will be implemented to comply with applicable hazardous waste requirements.

1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: The waste drums are currently stored in Plant 6 Warehouse, which is identified in the FEMP Part A Permit Application.

COMPLETION DATE: Completed

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32).

COMPLETION DATE: Completed

- 4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

- 5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed

- 6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

- 7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and OAC 3745-66-76).

COMPLETION DATE: Completed

- 8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

- 9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

- 10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

- 11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Plant 6 Warehouse, which is listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering these areas must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

- 12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

- 13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

- 14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

- 15. Perform a hazardous waste management unit evaluation of the Plant 6 Warehouse where hazardous wastes are currently present (Proposed Amended Consent Decree).

COMPLETION DATE: Completed

- 16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMUs (PACD Section 3.11).

COMPLETION DATE: Completed

- 17. Report newly identified waste streams in quarterly reports required by PACD Section 4.13.

COMPLETION DATE: Completed

- 18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

- 19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

- 20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

- 21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

III. Newly Determined Waste

As a result of the process knowledge of the 8000 drums affected by the HWMUR, the following waste stream is newly determined to be a hazardous waste:

Material Description	Source Code	Material Code	EPA ID #	Drum Count	Location
Chloroform Sol, Insoluble			8001 D018	25	Plant 6 Warehouse (Bldg 79)

**COMPLIANCE SCHEDULE FOR
SAMPLING AND ANALYSIS RESULTS OF THE
10000 AFFECTED BY AND 26000 NOT AFFECTED BY THE
HAZARDOUS WASTE MANAGEMENT UNIT REVIEW (HWMUR)
AT THE FEMP**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On March 30, 1992, the DOE reported to the Ohio EPA determinations which declared sixty-four additional waste streams to be Resource conservation and Recovery Act (RCRA) hazardous waste, subject to requirements of Section 3.12 and Section 3.8 of the PACD. The determinations were based on sampling and analysis of the 10,000 affected by and 26,000 not affected by the Hazardous Waste Management Unit Review (HWMUR).

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the characterized waste streams, which supersedes the previous submittal on May 27, 1992, will be implemented to comply with applicable hazardous waste requirements.

1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: Approximately 4,000 drums of the waste have been identified which lack storage space in indoor RCRA storage areas. At this time, approximately 600 of the 4,000 drums also lack storage in indoor RCRA compliant areas because of the need to meet additional fire protection standards. Therefore, pursuant to section 3.5.1 (f) of the PACD, a short term storage plan is attached to this schedule.

COMPLETION DATE: Please see the attached Storage Plan

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07). -4456

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-34 through OAC 3745-52-32). -4456

COMPLETION DATE: Completed

4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Please see the attached Storage Plan.

6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17 and 3745-66-76).

COMPLETION DATE: Completed

8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

COMPLETION DATE: Completed

9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Plant 1 Pad, KC-2 and Building 56, which are listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering these areas must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed as of October 31, 1991.

14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37)

COMPLETION DATE: Completed

15. Perform a hazardous waste management unit evaluation of the storage areas where hazardous wastes are currently present (Proposed Amended Consent Decree).

Comments: The evaluation will be performed to determine if the current waste storage areas are HWMUs.

COMPLETION DATE: To be determined

16. ~~Modify RCRA Permit Application to incorporate newly identified waste streams/HWMU (PACD Section 3.11).~~

COMPLETION DATE: Completed

17. Report newly identified waste streams in quarterly reports required by PACD Section 4.13.

COMPLETION DATE: Completed

18. Submit Closure Plan Information and Data (OAC 3745-66).

COMPLETION DATE: Not applicable

19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: Not applicable

20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94, OAC 3745-65-15 (B)).

COMPLETION DATE: Not applicable

21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

STORAGE PLAN FOR NEWLY DETERMINED WASTES

The following actions are in progress to correct these storage deficiencies. Bay 8 of the KC-2 Warehouse will be modified to house ignitable wastes. Part of the KC-2 Warehouse (Building 63) and the CP Storage Warehouse (Building 56 - Butler Building) will also be modified to address RCRA storage requirements. As additional space becomes available in the current RCRA storage warehouses (such as the CP Storage Warehouse and KC-2 Warehouse), some or all of the approximately 4,000 containers may be moved into these areas. If some of the containers cannot be moved into the current RCRA storage warehouses, they will remain on the Plant 1 Pad until sufficient storage space is available. To the extent that space is available, containers of mixed waste on the Plant 1 Pad will be stored in covered structures (with temporary diking) in a manner as protective of human health and the environment as possible. Ignitable wastes will be stored on Plant 1 Pad in a segregated location in accordance with the Drum Management Plan and fire and safety requirements.

One of two permanent 40,000 square foot tension support structures is due to be completed by November 1992, as part of the Plant 1 Upgrade Project. Once completed, any remaining RCRA wastes (not in the KC-2 Warehouse or the CP Storage Warehouse) can be moved into the tension support structures as space becomes available. To address the remaining ignitable wastes (those not in KC-2 Warehouse, Bay 8), portable storage lockers are presently in the procurement process. Specific information regarding the procurement and availability of the portable storage lockers will be provided in a future date.

Action	Completion Date
Move RCRA hazardous containers to interim storage on Plant 1 Pad	June 15, 1992
Move containers of ignitable waste to Bay 8 of KC-2 Warehouse	November 15, 1992
Move RCRA hazardous containers to Building 56 and KC-2 Warehouse	March 15, 1993
Move RCRA hazardous containers to Tension Support Structures	

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**COMPLIANCE SCHEDULE FOR
NEWLY DETERMINED THORIUM MIXED WASTE STREAMS
AT THE FEMP**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On November 28, 1990, the FEMP reported to the Ohio EPA waste characterization results which declared eight additional waste streams to be Resource Conservation and Recovery Act (RCRA) hazardous waste. These waste streams are represented by a total of 35 drums. These drums, previously stored in Building 67, were transferred to the RCRA storage area, Building 68.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the following Compliance Schedule for the newly characterized thorium waste streams, which supersedes the previous submittal on January 8, 1991, will be implemented to comply with the applicable hazardous waste requirements.

1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1(f)).

Comments: The wastes were transferred to the RCRA storage area in Building 68, identified in the FEMP RCRA Part A Permit Application.

COMPLETION DATE: Completed

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

3. Mark containers with hazardous waste labels (OAC 3745-52-31 through 3745-52-32). **4456**

COMPLETION DATE: Completed

4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed

5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment storage system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed

6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17).

COMPLETION DATE: Completed

8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

Comments: The required signs are already posted at the new storage location, Building 68. Due to radiological exposure concerns, access to Building 68 is restricted.

COMPLETION DATE: Completed

9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: Completed

10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Building 68, which is listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering Building 68 must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

COMPLETION DATE: Completed

14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

15. Perform a hazardous waste management unit evaluation of Building 67 where newly determined wastes are currently stored (Proposed Amended Consent Decree).

COMPLETION DATE: Completed

16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMUs (PACD Section 3.11).

COMPLETION DATE: Completed

17. Report newly identified waste streams/HWMUs in quarterly reports to OEPA as required by PACD Section 4.13.

COMPLETION DATE: Completed

18. Submit Closure Plan Information and Data (OAC 3745-66).

Comments: The RCRA Part B Permit Application will be revised to address the storage of additional thorium waste in Building 68. The Closure Plan Information and Data for Building 68 will be revised as required to address the storage of free liquids.

COMPLETION DATE: March 31, 1993

19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

COMPLETION DATE: October 30, 1992 and annually thereafter

20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94).

COMPLETION DATE: Not applicable.

21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

III. NEWLY DETERMINED WASTE

The following table lists the thorium materials newly determined to be mixed wastes:

<u>MATERIAL DESCRIPTION</u>	<u>SOURCE CODE</u>	<u>MATERIAL TYPE</u>	<u>EPA ID#</u>	<u>DRUM COUNT</u>	<u>LOCATION Bldg. No.</u>
Unfired Reduction Charges	320	079	D001	1	68
Thorium Nitrate Solution	FAK	150	D001, D002, D007, D008	8	68
Thorium Nitrate Solution	FAX	150	D001, D002, D007, D008	1	68
Impure Thorium Nitrate (solid)	CBH	160	D001, D007, D008	1	68
Impure Thorium Nitrate (solid)	FZC	160	D001, D007, D008	18	68
Impure Thorium Nitrate (solid)	HYA	160	D001, D007, D008	1	68
Impure Thorium Nitrate (solid)	PZA	160	D001, D007, D008	4	68
Impure Thorium Nitrate (solid)	YQK	160	D001, D007, D008	1	68

**COMPLIANCE SCHEDULE FOR
THORIUM MIXED WASTE STREAMS
AT THE FEMP**

I. INTRODUCTION

In accordance with Section 3.12 of the Proposed Amended Consent Decree (PACD), dated December 4, 1990, et. al. (CIVIL NO. C-1-86-0217), the Department of Energy (DOE) is required within 60 days from the date of any report or revision to a permit application which identifies any additional Hazardous Waste Management Units (HWMUs) or hazardous waste not previously identified at the FEMP, to submit a proposed compliance schedule to the Ohio EPA for approval setting forth a timetable by which the hazardous waste requirements shall be implemented.

On July 1, 1992, the FEMP reported to the Ohio EPA waste characterization results which declared ten additional waste streams to be Resource Conservation and Recovery Act (RCRA) hazardous waste. These waste streams are represented by a combined total of 39 drums. Of these 39 drums, 35 are currently stored in Building 68 and 4 drums are stored in Building 64.

II. SCHEDULE

In accordance with Section 3.1 of the Consent Decree, the four drums of newly identified hazardous waste currently located in Building 64 must be transferred and stored within a RCRA storage area. Additionally, the 35 drums currently stored in Building 68 must be verified that they are stored within the RCRA storage area in Building 68. The following schedule will be implemented to comply with the applicable hazardous waste requirements.

1. Transfer any drummed waste to a RCRA Storage Area identified in the Part A/B Permit Application within 60 days from determination that the waste is hazardous and manage in accordance with PACD and RCRA requirements. If the waste cannot be transferred within 60 days, a short term storage plan must be submitted to Ohio EPA within 60 days (PACD Section 3.5.1[f]).

Comments: The wastes will be transferred to the RCRA storage area in Building 68, identified in the FEMP RCRA Part A Permit Application.

COMPLETION DATE: Completed August 30, 1992

2. Update RCRA Waste Inventory Operating Record (OAC 3745-65-73 (A) and (B)(1)(2)(3), OAC 3745-54-73 (A) and (B)(1)(2)(3), OAC 3745-59-07).

COMPLETION DATE: Completed

- 3. Mark containers with hazardous waste labels (OAC 3745-52-31 through OAC 3745-52-32).

COMPLETION DATE: Completed August 30, 1992

- 4. Contain waste in compliance with the requirements of OAC 3745-66-71 through OAC 3745-66-73.

COMPLETION DATE: Completed August 30, 1992

- 5. Store all drums and other containers (other than tank systems) holding hazardous waste and/or mixed waste in a manner which complies with the containment storage system requirements (OAC 3745-55-75, Consent Decree Section 3.3)

COMPLETION DATE: Completed August 30, 1992

- 6. Complete a written assessment of all tank systems that do not have secondary containment that meets the requirements of OAC 3745-66-93 to determine that the tank system is not leaking or is unfit for use (OAC 3745-66-91).

COMPLETION DATE: Not applicable

- 7. Segregate incompatible wastes and adhere to precautions to prevent ignition or reaction of ignitable or reactive waste (OAC 3745-65-17, OAC 3745-54-17).

COMPLETION DATE: Completed August 30, 1992

- 8. Institute access controls (OAC 3745-65-14, OAC 3745-54-14).

Comments: The required signs are already posted at the new storage location, Building 68. Due to radiological exposure concerns, access to Building 68 is restricted.

COMPLETION DATE: Completed

- 9. Maintain adequate aisle space (OAC 3745-54-35, OAC 3745-65-35).

COMPLETION DATE: August 30, 1992

- 10. Initiate inspections and maintain inspection records (OAC 3745-65-15, OAC 3745-54-15: general inspection requirements, Consent Decree Section 3.4, OAC 3745-66-74 inspections for container storage areas).

COMPLETION DATE: Completed

11. Assure that access to required communications equipment is available (OAC 3745-65-34, OAC 3745-54-34).

Comments: Access to emergency communication equipment (emergency evacuation alarm and manual fire alarms) is already available at Building 68, which is listed in the Contingency Plan in the RCRA Part B Permit Application. In addition, personnel entering Building 68 must have portable communication equipment (i.e., two-way radios). Section G of Part B Permit Application addresses the availability of the alarms and emergency equipment.

COMPLETION DATE: Completed

12. Assure that required alarms and emergency equipment are available and operational (OAC 3745-65-32 and OAC 3745-65-33).

COMPLETION DATE: Completed

13. Update Contingency Plan (OAC 3745-54-50 through OAC 3745-54-56).

Comments: Section G-1 of the Contingency Plan for Building 68 must be revised to account for the storage of the drums of thorium waste with free liquids. Specifically, the Spill Prevention Control and Countermeasures Plan information for Building 68 should address the storage of free liquids in addition to solid material storage.

COMPLETION DATE: March 31, 1993

14. Establish arrangements/agreements with local authorities (OAC 3745-54-37, OAC 3745-65-37).

COMPLETION DATE: Completed

15. Perform a hazardous waste management unit evaluation of Building 64 where newly determined wastes are currently stored (Proposed Amended Consent Decree).

COMPLETION DATE: Completed October 15, 1992

16. Modify RCRA Permit Application to incorporate newly identified waste streams/HWMUs (PACD Section 3.11).

COMPLETION DATE: March 31, 1993

17. Report newly identified waste streams/HWMUs in quarterly reports to OEPA as required by PACD Section 4.13.

COMPLETION DATE: October 20, 1992

- 18. Submit Closure Plan Information and Data (OAC 3745-66).

Comments: The RCRA Part B Permit Application will be revised to address the storage of additional thorium waste in Building 68. The Closure Plan Information and Data for Building 68 will be revised as required to address the storage of free liquids.

COMPLETION DATE: March 31, 1993

- 19. Update training requirements and records (OAC 3745-54-16, OAC 3745-65-16).

Comments: One of the four thorium waste drums being transferred from Building 64 to Building 68 contains free liquids. Personnel involved at Building 68 have already received the required training for HWMU inspection and the handling of hazardous materials. Although the inspection methods for drums containing solids and free liquids are the same, personnel accessing Building 68 must adequately be trained for liquid spill response.

COMPLETION DATE: October 30, 1992 and annually thereafter

- 20. Identify groundwater monitoring requirements (OAC 3745-65-90 through OAC 3745-65-94).

COMPLETION DATE: Not applicable.

- 21. Verify that freeboard requirements are met, and if necessary, submit plans to install additional freeboard (OAC 3745-67-22).

COMPLETION DATE: Not applicable.

III. NEWLY DETERMINED WASTE

The following table lists the newly characterized thorium mixed wastes:

<u>MATERIAL DESCRIPTION</u>	<u>SOURCE CODE</u>	<u>MATERIAL TYPE</u>	<u>EPA ID#</u>	<u>DRUM COUNT</u>	<u>LOCATION Bldg. No.</u>
Thorium waste samples	732	007	D002, D005, D009	1	64
Unfired Reduction Charges	320	079	D001	1	68
Scrap ThO ₂ -high F	362	101	D005	3	64
Thorium Nitrate Solution	FAK	150	D001, D002, D007, D008	8	68
Thorium Nitrate Solution	FAX	150	D001, D002, D007, D008	1	68
Impure Thorium Nitrate (solid)	CBH	160	D001, D007, D008	1	68
Impure Thorium Nitrate (solid)	FZC	160	D001, D007, D008	18	68
Impure Thorium Nitrate (solid)	HYA	160	D001, D007, D008	1	68
Impure Thorium Nitrate (solid)	PZA	160	D001, D007, D008	4	68
Impure Thorium Nitrate (solid)	YQK	160	D001, D007, D008	1	68

Attachment C-4

Sitewide CERCLA Quality Assurance Project Plan

This document is incorporated by reference. A complete copy of the this five volume document is available for review in the FEMP Public Information Office. The latest edition of this document shall be applicable.

Attachment C-5
Compliance Checklist Cross-Reference

ATTACHMENT C-5

=4456

Outline ID No.	Description	Location in Text
C-1	Chemical and physical analyses	p. C-5, C-20
C-1a	Containerized wastes	p. C-5, C-20
C-1b	Waste in tank systems	NA
C-1c	Waste in piles	NA
C-1d	Landfilled wastes	NA
C-1e	Wastes incinerated and wastes used in performance	NA
C-1f	Wastes to be land treated	NA
C-1g	Wastes in miscellaneous treatment units	NA
C-2	Waste analysis plan	p. C-5
C-2a	Parameters and rationale	p. C-5/ Table C-3
C-2b	Test methods	p. C-6/ Table C-6
C-2c	Sampling methods	p. C-8/ Table C-8
C-2d	Frequency of analyses	p. C-15
C-2e	Additional requirements for wastes generated off-site	p. C-17
C-2f	Additional requirements for ignitable, reactive or incompatible wastes	p. C-7
C-3	Waste analysis requirements pertaining to land disposal restrictions	p. C-5
C-3a	Waste characterization	p. C-3, Attachment C-1
C-3a(1)	Waste characteristics: solvent wastes and dioxin containing wastes	p. C-10
C-3a(2)	Waste characteristics: California list wastes	p. C-11
C-3a(3)	Waste characteristics: First third wastes with treatment standards	p. C-12
C-3a(4)	Waste characteristics: second third wastes with treatment standards	p. C-13
C-3a(5)	Waste characteristics: Soft hammer wastes	NA

ATTACHMENT C-5

-4456-

Outline ID No.	Description	Location in Text
C-3a(5)(a)	Soft hammer wastes: California list wastes with treatment standards	NA
C-3a(5)(b)	Soft hammer wastes: California list wastes without treatment standards	NA
C-3b	Notification and certification requirements	p. C-23
C-3b(1)	Retention of generator notices and certifications	p. C-16 C-21
C-3b(2)	Notification and certification for wastes to be further managed	p. C-25
C-3b(3)	Notification and certification for soft hammer wastes not subject to California list prohibitions	NA
C-3b(4)	Additional notification and certification requirements for treatment facilities	NA
C-3b(4)(a)	Wastes with treatment standards expressed as concentrations	NA
C-3b(4)(b)	Wastes with treatment standards expressed as technologies	NA
C-3b(4)(c)	California list wastes not subject to treatment standards	NA
C-3b(4)(d)	Recyclable materials used in a manner constituting disposal	NA
C-3b(5)	Additional notification and certification requirements for disposal facilities	NA
C-3b(6)	Notification and certification requirements pertaining to landfill and surface impoundment disposal restrictions	NA
C-3b(6)(a)	Requirements for treatment storage, and recovery facilities	NA
C-3b(6)(b)	Requirements for treatment and recovery facilities	NA
C-3b(6)(c)	Requirements for disposal facilities	NA
C-3c	Additional requirements pertaining to storage of restricted wastes	p. C-22
C-3c(1)	Restricted wastes stored in containers	p. C-22

Outline ID No.	Description	Location in Text
C-3c(2)	Restricted wastes stored in tanks	NA
C-3c(3)	Storage of liquid PCB wastes	p. C-12
C-3d	Additional requirements for treatment facilities	NA
C-3d(1)	Wastes with treatment standards expressed as concentrations in the waste	NA
C-3d(2)	Wastes with treatment standards expressed as concentrations in the waste extract	NA
C-3d(3)	California list wastes not subject to treatment standards	NA
C-3e	Additional requirements for land disposal facilities	NA
C-3f	Exemptions from and extensions to land disposal restrictions	p. C-22
C-3f(1)	Case-by-case extensions to an effective date	NA
C-3f(2)	Exemption from a prohibition	NA
C-3f(3)	Variance from a treatment standard	NA
C-3f(4)	Additional requirements for surface impoundments exempted from land disposal restrictions	NA
C-3f(4)(a)	Treatment of wastes	NA
C-3f(4)(b)	Sampling and testing	NA
C-3f(4)(c)	Annual removal of residues	NA
C-3f(4)(d)	Design requirements	NA
C-3g	Requirements for land disposal facilities with an approved exemption or extension	NA