RCRA PART B PERMIT APPLICATION SECTION C: WASTE CHARACTERISTICS VOLUME 2 OF 11 SEPTEMBER 22, 1990

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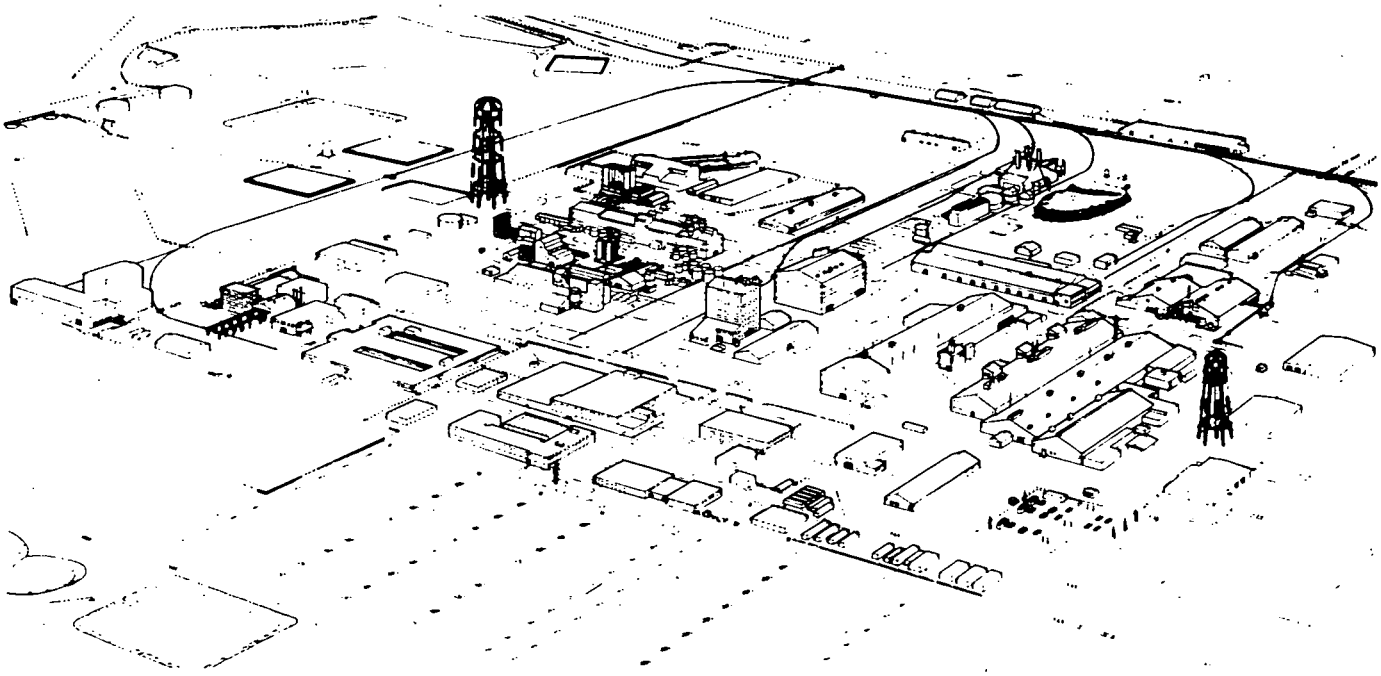

SEPTEMBER 22, 1989

SECTION C: WASTE CHARACTERISTICS

(Volume 2 of 11)

FEED MATERIALS PRODUCTION CENTER
U.S. DEPARTMENT OF ENERGY
CINCINNATI, OHIO 45239-8705

U.S. EPA IDENTIFICATION NO. 0H6890008976
OHIO EPA PERMIT NO. 05-31-0681

RCRA PART B
PERMIT APPLICATION

SECTION C - WASTE CHARACTERISTICS

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SECTION C - WASTE CHARACTERISTICS

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SECTION C - WASTE CHARACTERISTICS

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SECTION C - WASTE CHARACTERISTICS

Part B Permit Application
Feed Materials Production Center
Fernald, Ohio

This section describes the chemical and physical characteristics of the RCRA regulated hazardous wastes stored at the Feed Materials Production Center (FMPC), Fernald, Ohio site. The WASTE ANALYSIS PLAN, used to ensure that sufficient information is available for the proper handling and storage of the wastes, is also included.

C-1 Chemical and Physical Analysis

The RCRA-regulated hazardous wastes stored at the FMPC facility are listed in the revised HAZARDOUS WASTE PERMIT APPLICATION, EPA Form 3510-3 (6-80) included as Part A of this Permit Application. A list of these wastes is also provided, for purposes of this section, in Table C-1.

The FMPC facility stores hazardous wastes that are or have been generated on-site during the course of routine plant operations. In addition to on-site generation, the FMPC facility receives or has received and stores RCRA regulated wastes generated off-site by other facilities [RMI Company, Ashtabula, OH, and DOE, Richland, WA].

As Table C-1 demonstrates, there are currently a total of 61 waste streams stored at the FMPC facility. Of the total, 50 are or have been generated on-site at FMPC and 11 are or have been generated off-site at RMI or Hanford.

FMPC is currently pursuing an aggressive waste characterization program to confirm suspect RCRA waste streams and to further identify their physical and chemical properties. Table C-1 lists 17 suspect waste streams for which analytical data and process knowledge are inconclusive

or inconsistent. Complete characterization of these wastes will be completed in accordance with the procedures of the Waste Analysis Plan. As characterization proceeds, any newly identified or newly generated waste streams will be added to Table C-1 and the Waste Analysis Plan will be updated.

As delineated in Table C-1, the waste streams managed at the FMPC facility carry the RCRA hazard codes D001, D002, D004, D005, D006, D007, D008, D009, D010, F001, F002, F003, F005, P015, P119, P120, U188, U227, and U228. The basis for this hazard ranking and details pertaining to the physical and chemical composition of representative samples of each waste stream are provided in laboratory reports as Appendix C-1. For those waste streams suspected to be RCRA regulated waste, if analytical data is not yet available, Appendix C-1 includes process knowledge documentation forms indicating the source and probable composition of the waste.

Table C-1 also indicates those waste streams that are subject to land disposal restrictions under 40 CFR Part 268. Applicability of land ban regulations is determined using a flow chart, a sample of which is included as Appendix C-2.

C-1a Containerized Wastes

All RCRA regulated hazardous wastes managed at the FMPC facility are stored in 5-, 30-, and 55-gallon containers, as well as 85- and 110-gallon overpacks. The majority of these containers are carbon steel 55-gallon drums, DOT specification 17E and 17H, but stainless steel and polypropylene containers are also used for specific waste types. All waste materials are known to be compatible with the containers in which they are stored. Compatibility determinations are based on waste stream analytical data and/or process knowledge relative to generation of the stream.

Containerized wastes are stored in designated areas of the facility. The RCRA regulated hazardous wastes stored at the FMPC facility are assigned to a specific storage location, following standard operating procedures for waste storage. Waste locations are based on available storage capacity, and on waste characteristics including, but not limited to, the physical and chemical nature of the waste, compatibility with other wastes stored in the same area, and physical state.

Those wastes known or observed to contain free liquids are stored only in those areas having appropriate secondary containment. The absence of free liquids is confirmed based on visual inspection of the waste and both current and historical knowledge of the physical and chemical composition of plant waste streams as generated and stored. Should visual inspection or known composition fail to clearly define the physical state of any particular waste stream to be stored, the Paint Filter Liquids Test (U. S. EPA Publication SW-846, Test Methods For Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, November 1986, Method 9095) is employed to determine the presence or absence of free liquids.

C-1b Waste in Tank Systems

No RCRA regulated hazardous wastes are currently stored in tank systems at the FMPC facility. Therefore, this section is not applicable to this Permit Application.

In the past, waste solvents had been stored in two 10,000 gallon stainless steel tanks designated T5 and T6. These tanks are located west of and at the southwest corner of the Pilot Plant. However, T5 and T6 were emptied and taken out of service in 1989 and are no longer used for the storage of hazardous wastes. A Closure Plan has been developed for establishing final closure of these two storage tanks, and a revised Part A Permit Application has been included as Section

A of this Permit Application to reflect the fact that tank storage units are no longer in use for the storage of hazardous waste at the FMPC facility.

C-1c Waste in Piles

FMPC does not store waste in piles nor is it requesting a waiver from the waste pile requirements, therefore, this section is not applicable to this Permit Application.

C-1d Landfilled Wastes

No RCRA regulated hazardous wastes are currently landfilled at the FMPC facility, therefore, this section is not applicable to this Permit Application.

The FMPC facility has, in the past, operated a hazardous waste landfill unit, addressed in greater detail within Section D of this Permit Application, designated Waste Pit No. 4. This Waste Pit was operational from approximately 1960 through early 1985 and was placed on inactive status in June 1986. It is currently not used for waste disposal. A Closure Plan has been developed for establishing final closure of Waste Pit No. 4 pursuant to 40 CFR 265 Subpart G, Ohio Administrative Code (OAC) 3745-66 as well as 40 CFR 265.310 and OAC 3745-68-10. The Closure Plan was also developed to supplement the Plan contained in Section I of the Part B Permit Application pertaining to that unit and to meet the permitting requirements of 40 CFR 264 Subpart G; OAC 3745-55 and 40 CFR 264.310; OAC 3745-57-10 and 40 CFR 270.14(b)(13); and OAC 3745-50-44(A)(13).

C-1e Waste Incinerated and Wastes Used in Performance Tests

No hazardous wastes are currently incinerated on-site at the FMPC facility. Therefore, this section is not applicable to this Permit Application.

Historically, a Trane Liquid Waste Incinerator was located and operated at FMPC Building 3a. As Section D of this Permit Application details, incinerator operations were discontinued in May 1986. A Closure Plan has been developed to address the decontamination and decommissioning of the Trane incinerator pursuant to the requirements of 40 CFR 265 Subpart G; OAC 3745-66 and 40 CFR 265.351; and OAC 3745-68-51. The Closure Plan was also developed to supplement the Plan contained in Section I of the Part B Permit Application pertaining to that particular unit and to meet the requirements of 40 CFR 264 Subpart G; OAC 3745-55; 40 CFR 264.351 and 270.14(b)(13); and OAC 3745-50-44(A)(13).

C-1f Wastes to be Land Treated

No RCRA regulated hazardous wastes are land treated on-site at the FMPC facility. Therefore, this section is not applicable to this Permit Application.

C-2 Waste Analysis Plan

The Waste Analysis Plan is used to ensure that sufficient information is available for the proper handling and storage of RCRA regulated hazardous wastes.

C-2a Parameters and Rationale

The purpose of the FMPC hazardous waste analysis plan is essentially five-fold:

1. To accurately characterize the physical and chemical composition of each waste stream

2. To confirm the accuracy of the declared RCRA hazard code

3. To establish the most effective waste management alternative, e.g., heat of combustion data for incineration

4. To establish the safest container and shipment handling methods

5. To establish potential land disposal restrictions for each waste stream

Each waste stream is analyzed for those parameters most likely to yield the maximum amount of chemical and physical descriptive information specific to the stream and satisfy the five program objectives. Moreover, specific analyses are selected based on existing knowledge of the generating process and waste stream itself, and consequently, what is known to likely be present in the waste. On that basis, Table C-2 presents a summary of the waste analysis parameters that have been established for appropriate waste streams.

Waste analysis will be performed by the on-site FMPC laboratory and, when necessary, by outside contract laboratories. Analytical work performed on-site will be subject to standard FMPC Quality Assurance (QA) and Quality Control (QC) programs. Any outside testing laboratory used will be certified under U.S. EPA's Contract Lab Program for RCRA analyses. The outside laboratory's QA/QC plan will be reviewed and approved by the FMPC Plant Engineer prior to analysis.

C-2b Test Methods

The test methods employed for the analytical parameters chosen to characterize and monitor the FMPC waste streams are listed in Table C-3. All methods reference U.S. EPA Publication SW-846, Test Methods For Evaluating Solid Waste, Physical/Chemical Methods, Third Edition, November 1986 (SW-846), unless otherwise noted.

Atomic absorption, direct aspiration is the method 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 will be employed. These methods are also provided in SW-846, and method numbers are listed in parentheses in Table C-3. Where such testing analogs are not available in SW-846, parenthetical listings remain blank.

Likewise, should the gas chromatography methods listed in Table C-3 not provide definitive results for the characterization and recertification of waste analyses, an alternative gas chromatographic/mass spectroscopic method (Method 8240) for volatile organics will be substituted.

The testing laboratory is required to notify FMPC prior to deviations from the test methods listed in Table C-3. With this notification, FMPC is required to give approval for the procedural change and document such deviation in the waste stream file. Laboratory reports are issued documenting the specific SW-846 method or its analog employed to analyze for each constituent.

For those constituent analyses not available in SW-846, American Society of Testing Materials (ASTM) Standards have been adopted as appropriate. Moreover, STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER (SM), prepared and published jointly by American Public Health Association, American Water Works Association, and Water

Pollution Control Federation, 15th Edition, 1980, has also been referenced.

All waste streams designated by an F001, F002, F003, or F005 Hazardous Waste Number will be analyzed using the Toxicity Characteristic Leaching Procedure (TCLP), referenced in Table C-3. The TCLP extract will be analyzed for those organic constituents listed in Table C-2, to determine the applicability of Land Disposal Restriction regulations under 40 CFR 268.

C-2c Sampling Methods

RCRA regulated hazardous wastes stored at the FMPC facility are sampled in accordance with FMPC procedures, which are based in part on the U. S. EPA Document EPA-600 2-80-018, Samplers And Sampling Procedures For Hazardous Waste Streams. Sections 3.1 and 4.1 (Sampling Considerations), Chapter Nine (Sampling Plan) and Chapter Ten (Sampling Methods) of U. S. EPA Publication SW-846 were also referenced during development of this sampling procedure.

The FMPC sampling procedures establish a uniform method for collecting representative samples of residues and wastes. The procedures, as developed, are applicable to the methods and equipment used to collect and prepare representative samples of solids, liquids, and sludges. The procedures contain the following considerations and include FMPC checklists and forms where appropriate:

- Industrial health and safety requireents for sampling
- Preparation of the waste container for sampling (examining, weighing, opening)
- Chain-of-custody requirements and procedures
- Completion of proper paperwork instructions
- Instructions on the proper use of the automatic closed auger sampler
- Instructions on the proper use of the grain sampler
- Instructions on the proper use of the pipe sampler

- Instructions on the proper use of the composite liquid waste sampler (COLIWASA)
- Instructions on the proper collection of secondary samples of dry materials
- Instructions on the proper collection of secondary samples of moist or sticky materials
- Instructions on the proper cleaning of sampling equipment
- Instructions on the proper storage of sampling equipment
- Recordkeeping (documentation) requirements

C-2d Frequency of Analysis

Representative samples of the actively generated waste streams are collected and analyzed for the appropriate parameters (Table C-2) on an annual basis. This annual testing serves to confirm the previously established waste characterization data and to meet the five program objectives noted in Section C-2a. Analyses may be more frequent if a generating process, use of raw materials, or other indicators would suggest a significant change of the waste characteristics.

For those waste streams representing accumulated inventories of wastes formerly generated at or shipped to the FMPC for storage, it is not expected that additional or repeat analyses will be required to maintain proper and safe storage of these wastes. As with all waste streams managed at FMPC, these wastes have previously been characterized and classified for RCRA purposes. If FMPC has reason to suspect that a stored waste has changed significantly in physical and/or chemical composition, representative samples of these waste streams will be collected and repeat analyses performed.

Any waste stream FMPC plans to ship to that is a fully permitted, off-site Treatment, Storage or Disposal Facility (TSDF) will be sampled and tested as part of TSDF's waste preacceptance procedures. The TSDF laboratory analyses are routinely used to confirm the information

provided by FMPC relative to the specific waste stream and to determine the most efficient and effective method for the disposal or reclamation of the waste material. It is expected that the preacceptance analytical parameters are the same as those listed in Table C-2, and are also repeated annually as part of the waste recertification process.

C-2e Additional Requirements for Wastes Generated Off-Site

Currently, the only off-site waste streams that are being generated and shipped to the FMPC or may be shipped in the future are the wastes from RMI extrusion and machining operations. Acceptance of these or any off-site generated waste is contingent upon the shipment meeting the stipulations of FMPC procedures.

Descriptively, the certification process, as developed, ensures that the hazardous waste shipments received at the FMPC comply with policies and procedures governing such matters, as well as all applicable State and Federal hazardous waste regulations.

Procedurally, RMI has provided the FMPC with RCRA characterization data for each waste stream shipped from the Ashtabula facility to the FMPC. In addition RMI provides the FMPC with analytical results from fingerprint analyses of the waste streams, designed to confirm the original RCRA characterization. This fingerprint data precedes the actual waste shipment so FMPC personnel may review the data and verify that the waste intended for shipment is correctly identified and has retained its original physical and chemical composition.

FMPC procedures provide instructions and checklists for FMPC Certification Specialists to review all documentation, including hazardous waste manifests, accompanying each waste shipment for accuracy and completeness. Certification Specialists additionally maintain responsibility and are trained to examine waste containers for

acceptability, including proper labeling, integrity, and general appearance. These specialists also examine the contents of the containers to verify that the physical description of the waste matches that of the original characterization.

FMPC procedures include a statistical sampling scheme, based on those modeled in SW-846, for obtaining representative samples of the off-site generated waste streams as received. A minimum of 10% of the containers received are sampled based on this scheme. The samples are subsequently submitted to the FMPC Analytical Laboratories for fingerprint analyses that will further confirm the original RCRA characterizations. Provisions for resolving discrepancies identified during the review and examination of the characterization data, shipping documentation, physical description of the waste, and container acceptability are included in FMPC procedures.

Basis for Rejection:

All shipments involving discrepancies or non-conforming conditions are documented and processed by the Certification Specialist. However, should an acceptable solution not be defined, the requirements in 40 CFR 264.72 and OAC 3745-54-72 shall be followed.

The criteria used as the basis for rejection of a waste shipment are as follows:

1. Absent or incomplete receiving/shipment documentation:

   Uniform Hazardous Waste Manifest
   U. S. EPA Form 8700-22 (Revised 9/86)

2. Unacceptable waste container condition:

A breach (any opening)
A dent or bulge compromising container integrity
A dent or bulge compromising the integrity of the bottom rim and/or rolling hoop
A dent of such magnitude that it detracts from the cosmetic appearance of the container, i.e., >1" deep, >6" extent
A dent or similar condition adversely impacting the integrity of the sealing surface
Exfoliation (scale), severe pitting, or similar conditions minimizing the serviceability of the container
Rust causing exfoliation
Any deformity or out of round condition of the top or bottom of the container
Container lids lacking a domed appearance
Liquid waste containers lacking a bung in the lid
Solid waste containers having a bung in the lid
Containers having less than a minimum 5/8" bolt
A ring in which one flange is not properly welded
Flanges not securely welded to the ring
Containers absent a chain-of-custody seal

3. Improper waste container labeling:

- Containers labeled with a Hazardous Waste Label containing information different than that recorded on the Uniform Hazardous Waste Manifest
- Containers not clearly labeled with the proper Hazard Class label and other appropriate hazard communication labels

4. Visual inspection identifies non-conforming wastes:

If the color or physical state (solid, liquid, sludge) differs from the original RCRA waste characterization data, receipt of the shipment will halt until such time as the Certification Specialist in conjunction with the FMPC Analytical Laboratories can satisfactorily resolve the discrepancies. If such a discrepancy cannot be resolved, the requirements in 40 CFR 264.72 and OAC 3745-54-72 shall be followed.

5. Analyses identify non-conforming waste:

If the samples submitted to the FMPC Analytical Laboratories for fingerprint analyses show discrepancies or non-conformance with the fingerprint analyses submitted by RMI, receipt of shipment will halt. If the discrepancy cannot be resolved, the requirements in 40 CFR 264.72 and OAC 3745-54-72 shall be followed.

C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes

The majority of RCRA regulated solid wastes managed at the FMPC facility are hazardous only in that they exhibit the RCRA characteristics of ignitability, corrosivity, or EP Toxicity or are listed solid wastes from non-specific sources (F wastes). The waste container storage areas are in locations that meet National Fire Protection Association (NFPA) standards and local codes for storage of flammable and combustible liquids.

As detailed in Section D of this Permit Application, both the existing and proposed waste container storage areas are or will be divided into separate storage bays by continuous concrete curbing or diking. Potentially incompatible wastes are or will be stored in separate bays. The bases for segregating the wastes are the known and observed

physical and chemical properties of the wastes, as well as the processes from which they are generated. This information is supplemented by the data accumulated for each waste stream and confirmed by preacceptance and pre-shipment screening analyses.

No reactive wastes are stored at this facility.

TABLE C-1

RCRA REGULATED HAZARDOUS WASTE STORAGE
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

WASTE NAME	U.S. EPA HAZARD WASTE NO.	BASIS FOR HAZARD LISTING *	WASTE SOURCE	QUANTITY MANAGED (LB/YEAR)	LAND BAN
ON-SITE GENERATION					
USED OIL	F002	T	PLANTS 5,6,9	61,000	Y
USED OIL	D008,F002	E,T	PLANTS 2/3,8 & MAINTENANCE	30,000	Y
USED OIL	D010**,F002,F005	E,T	GARAGE	37,000	Y
CHROMIC ACID	D001,D002,D007	E,I	LABORATORY	40	Y
OILY SLUDGE	F002	T	PLANT 6	175,000	Y
SPENT 1,1,1 - TRICHLOROETHANE	D001,F001	I,T	DEGREASING	33,000	Y
PAINT THINNER	D001,F002	I,T	PAINT SPRAY BOOTHS	6,000	Y
OILY HILCO FILTER CAKE	D001	I	PLANT 5, PLANT 1 DRUM BALER	11,000	N
SAND BLAST PAINT RESIDUES	D008	E	SAND BLASTING	235,000	N
TANK 8 CLEANOUT RESIDUES	D007	E	CLEAN UP ACTIVITIES	16,000	N
SPENT TBP/KEROSENE	D001,D002,D007	C,I,E	PLANT 2/3, LABORATORY	5,000	N
DRUM DECONTAMINATION RESIDUES	D006	E	DRUM RECONDITIONING	10,000	N
ROASTED MAGNESIUM FLUORIDE	D008	E	PLANT 1 MILLING	270,000	N
CLEANOUT SLUDGES	F002	T	PLANT 8	3,300	Y
FURNACE SALT	D005	E	PLANT 6	16,000	N
FURNACE SALT	D004,D006,D008,D010**	E	PLANT 9	637,000	N
DUST COLLECTOR RESIDUES	D008	E	PILOT PLANT	500	N
BARIUM SULFATE FILTER CAKE	D001,D005,D007	E	PILOT PLANT	19,000	N
SOLVENT CONTAMINATED PALLET WOOD	F002	T	SITE CLEANUP	500	Y
SPENT ENAMEL	D001	I	DRUM PAINTING	500	Y
BARIUM CHLORIDE CHROME RESIDUE	D007	E	BARIUM CHLORIDE TREATMENT PROCESS	33,000	N
MERCURY SPILL RESIDUE	D009	E	INSTRUMENT SHOP	4,500	N
SPENT TETRACHLOROETHYLENE	F002	T	LAUNDRY OPERATIONS	17,000	Y
UNUSED CAUSTIC CRYSTALS	D002	C	DECONTAMINATION BUILDING	1,500	N
SPENT XYLENE	D001,F003	I	PAINT SPRAY BOOTHS	920	Y
BERYLLIUM	P015	H	MOLD AND CRUCIBLE COATING	5	Y
CAUSTIC SODA, SPENT	D001	I	DECONTAMINATION RESIDUE	300	N
AMMONIUM VANADATE	P119	H	LABORATORY	2	N

*IGNITABLE (I), CORROSIVE(C), REACTIVE(R), EP TOXIC(E), ACUTE HAZARDOUS(H), TOXIC(T) WASTES
** POSSIBLE SAMPLE MATRIX INTERFERENCE; WILL BE RE-ANALYZED

TABLE C-1

RCRA REGULATED HAZARDOUS WASTE STORAGE
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO

(CONTINUED)

WASTE NAME	U.S. EPA HAZARD WASTE NO.	BASIS FOR HAZARD LISTING *	WASTE SOURCE	QUANTITY MANAGED (LB/YEAR)	LAND BAN
ON-SITE GENERATION					
PHENOL	U188	T	LABORATORY	3	Y
VANADIUM PENTOXIDE	P120	H	LABORATORY	1	Y
1,1,2-TRICHLOROETHANE	U227	T	LABORATORY	3	Y
TRICHLOROETHYLENE	U228	T	LABORATORY	3	Y
MERCURY-CONTAINING COMPOUNDS	D009	E	LABORATORY	3	N
LABORATORY ACIDS	D002	C	LABORATORY	18	N
BARIUM HYDROXIDE	D005	E	LABORATORY	1	N
OXIDIZING CHEMICALS	D001	I	LABORATORY	21	N
OFF-SITE GENERATION					
INCINERATOR CINDERS	D008	E	RESIDUES FROM OFF-SITE GENERATION & BURNING	3,500	N
OILY SLUDGE	D005,D008	E	EXTRUSION & MACHINING OPERATIONS	7,800	N
BARIUM CHLORIDE SALT	D005	E	METAL HEATING TREATING	98,000	N
WET SUMP CAKE	D004,D006,D008	E	SUMP CLEANOUT	37,000	N
SPENT 1,1,1-TRICHLOROETHANE	D001,F001	I,T	DEGREASING OPERATIONS	117,000	Y
1,1,1-TRICHLOROETHANE STILL BOTTOMS	D001,F001	I,T	SOLVENT DISTILLATION	35,072	Y
SPENT METHYLENE CHLORIDE & TETRACHLOROETHYLENE	F001	T	DEGREASING OPERATIONS	1,300	Y
CONTAMINATED ALUMINA-SODA LIME	D005	E	HEXAFLUORIDE PROCESSING	20,000	N

*IGNITABLE (I), CORROSIVE(C), REACTIVE(R), EP TOXIC(E), ACUTE HAZARDOUS(H), TOXIC(T) WASTES
** POSSIBLE SAMPLE MATRIX INTERFERENCE; WILL BE RE-ANALYZED

TABLE C-1

RCRA REGULATED HAZARDOUS WASTE STORAGE
FEED MATERIALS PRODUCTION CENTER
FERNALD, OHIO
SUSPECT WASTE STREAMS

WASTE NAME	U.S. EPA HAZARD WASTE NO.	BASIS FOR HAZARD LISTING *	WASTE SOURCE	QUANTITY MANAGED (LB/YEAR)	LAND BAN
ON-SITE GENERATION SUSPECT WASTE STREAMS					
OILY SLUDGE	F002	T	PLT. 9 CASTING, PLANTS 6 & 9 WATER TREATMENT	1,400	Y
OILY SLUDGE	D008,F002	E,T	PLANT 8	38,000	Y
NON-OILY SLUDGE	F002	T	GARAGE, PLANT 6	12,000	Y
NON-OILY SLUDGE	D006,D007,D008	E	PLANT 9	1,400	N
NON-OILY SLUDGE	F001	T	PLANT 5	41,000	Y
WET SUMP FILTER CAKE, NON-OILY	D002	E	PLANT 6	953,000	N
DUST COLLECTOR RESIDUES	D006,D008	E	PLANT 5	5,200	N
SOLVENT SLUDGES	D001,F002	E,T	LABORATORY & MAINTENANCE	200	Y
USED OIL	F002	T	PLANT 1	17,000	Y
MAGNESIUM FLUORIDE, GROUND	F002	T	PLANT 1 MILLING	1,429,000	Y
OILY HILCO FILTER CAKE	F002	T	PILOT PLANT	500	Y
MERCURY & NICKEL-CADMIUM BATTERIES	D006,D009	E	VARIOUS SITE USES	1,000	N
UNRECYCLED SLAG	F002	T	PLANT 5	32,000	Y
MAGNESIUM ZIRCONATE	D005	E	CRUCIBLE CLEANOUT	59,000	N
OFF-SITE GENERATION SUSPECT WASTE STREAMS					
WET SUMP CAKE	F001	T	CLEANING AREAS	9,500	Y
WET SUMP CAKE	D005	E	SALT BATH TREATMENT	35,000	N
USED OIL	F001	T	LUBRICANT/COOLING USE	130,000	Y

*IGNITABLE (I), CORROSIVE(C), REACTIVE(R), EP TOXIC(E), ACUTE HAZARDOUS(H), TOXIC(T) WASTES
** POSSIBLE SAMPLE MATRIX INTERFERENCE; WILL BE RE-ANALYZED

TABLE C-2

TYPICAL WASTE ANALYSIS PARAMETERS
AND
RATIONALE FOR THEIR SELECTION
(continued)

ORGANIC COMPOUND CONCENTRATIONS:

Organic constituent concentrations are measured for each waste stream that is known or suspected, through prior analysis or by process knowledge, to contain organic compounds. The rationale for this analysis is to confirm the RCRA hazard code, determine the waste's acceptability for reclamation or a chemical fuels program, and to establish whether or not land ban disposal restrictions apply to the waste stream.

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
n-Butanol
2-Butanone
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Cresols
Cyclohexanone
Dibromochloromethane
1,2-Dichlorobenzene
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
1,2-Dichloroethene
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethyl acetate
Ethyl benzene
Ethyl ether
2-Hexanone
Isobutanol
Methanol
Methylene chloride
4-Methyl-2-pentanone
Nitrobenzene
Pyridine
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
1,1,2-Trichloro-1,2,2-trifluoroethane
Vinyl acetate
Vinyl chloride
Xylene

TABLE C-2

TYPICAL WASTE ANALYSIS PARAMETERS AND RATIONALE FOR THEIR SELECTION

PHYSICAL CHARACTERISTICS:

Parameter	Rationale
Visual appearance	Conformance to process knowledge Waste shipment acceptance criteria
Particle size	Confirm pumpability
pH	Confirm RCRA hazard code
Specific gravity	Handling considerations
Density	Handling considerations
Viscosity	Handling considerations
Flash point	Confirm RCRA hazard code (where ignitability is known or suspected)
Liquid content	Determine containment requirements (where visual appearance and process knowledge are unclear)

METALLIC ELEMENT CONCENTRATIONS:

Metal analyses are performed to confirm the declared RCRA hazard code, to establish land ban restrictions, and to provide complete characterization of waste composition.

Aluminum	Magnesium
Antimony	Manganese
*Arsenic	*Mercury
*Barium	Nickel
Beryllium	Potassium
*Cadmium	*Selenium
*Chromium	*Silver
Copper	Sodium
Iron	Thallium
*Lead	Titanium
Lithium	Uranium
	Zinc

*EP toxicity metals; analyzed for every waste stream

ANALYSES REQUIRED FOR THERMAL TREATMENT:

Parameter	Rationale
Ash content	Determine suitability for burning
Heat of combustion	Determine suitability for burning
Water content	Determine suitability for burning

TABLE C-3

WASTE ANALYSIS PARAMETERS AND TEST METHODS

PHYSICAL CHARACTERISTICS:

Parameter	Test Method
Visual inspection	None
Flash point	1010
Particle size	Microscopy
pH	9040
Specific gravity	ASTM D 1217
Density	Gravimetric
Viscosity	ASTM D 2161
Liquid content	9095

METALLIC ELEMENT CONCENTRATIONS:

Parameter	Test Method
Aluminum	7020
Antimony	7040 (7041)
*Arsenic	7060 (7061[1], revised 12/87)
*Barium	7080
Beryllium	7090 (7091)
*Cadmium	7030 (7131)
*Chromium	7190 (7191)
Copper	7210
Iron	7380
*Lead	7420 (7421)
Lithium	SM 303A
Magnesium	7450
Manganese	7460
*Mercury	7470[2]
Nickel	7520
Potassium	7610
*Selenium	7740 (7741[1])
*Silver	7760 (revised 12/87)
Sodium	7770
Thallium	7840 (7841)
Titanium	SM 303C
Zinc	7950

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[1] Gaseous hydride method
[2] Manual cold-vapor technique

*Preparation by Extraction Procedure (EP) for RCRA characterization; preparation by Toxicity Characteristic Leaching Procedure (TCLP) for land ban restriction evaluation, 53 Federal Register, Volume 53, Number 97, Page 18024, May 19, 1988

TABLE C-3

WASTE ANALYSIS PARAMETERS
AND
TEST METHODS
(continued)

ORGANIC COMPOUND CONCENTRATIONS:

As appropriate, all solvent scans and organic analyses are performed using one or more of SW-846 gas chromatography Methods 8010 (Halogenated Volatile Organics), 8015 (Nonhalogenated Volatile Organics), and 8020 (Aromatic Volatile Organics)(revised 1988).

APPENDIX C-1

RCRA HAZARDOUS WASTE CHARACTERIZATION DATA

ANALYTICAL RESULTS

USED OIL

PLANTS 5, 6, AND 9

SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
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10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 22, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 6 OF 7
Job No.: 303317

Sample Description: #10 (TCLP Extract) received December 8, 1987

Plant 5
Used Oil

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	120	1,2-dichloroethene (total)	250
benzene	12	1,2-dichloropropane	120
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	550	2-hexanone[1]	ND
carbon disulfide	ND	4-methyl-2-pentanone[1]	39
carbon tetrachloride	ND	methylene chloride	15
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	30
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	6
chloroform	12	toluene	10
chloromethane[1]	ND	1,1,1-trichloroethane	546,000
dibromochloromethane	ND	1,1,2-trichloroethane	20
1,1-dichloroethane	45	[redacted]	[redacted]
[redacted]	[redacted]	vinyl acetate[1]	ND
[redacted]	[redacted]	vinyl chloride[1]	ND
		xylenes (total)	7

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Approved by Laboratory Manager
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Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

METALS

	#1 (2/3 Do)	#3 (8 Do)	#7 (6)	#5 (Plant 5 5 Do)	#8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by
Laboratory Manager
Title

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Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Used Oil - Plant 6

METALS

	#1 2/3 Dp	#3 8Dp	#7 6	#5 5Dp	#8
senic	0.4	1.10	0.2	0.75	0.5
Barium	1.17	0.272	0.025	0.027	1.45
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federa Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by
Laboratory Manager
Title

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DATE REPORTED: February 22, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 5 OF 7
Job No.: 303317

Sample Description: #11 (TCLP Extract) received December 8, 1987

MTC 015, 059
SRC 6

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Used Oil - Plant

Compound	Concentration (µg/liter)	Compound	Concentratio (µg/liter)
acetone[1]	71	1,2-dichloroethene (total)	<5
benzene	ND	1,2-dichloropropane	5
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	42	2-hexanone[1]	ND
carbon disulfide	ND	4-methyl-2-pentanone[1]	46
carbon tetrachloride	ND	methylene chloride	5
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	5
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	<5
chloroform	ND	toluene	<5
chloromethane[1]	ND	1,1,1-trichloroethane	24,000
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	23	trichloroethene	5
1,2-dichloroethane	ND	vinyl acetate[1]	ND
1,1-dichloroethene	32	vinyl chloride[1]	ND
		xylenes (total)	<5

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Darryl D. Stagg
Approved by
Laboratory Manager
Title

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PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 4 OF 7
Job No.: 303317

Sample Description: #12 (TCLP Extract) received December 8, 1987

MTC 015
SRC 9
Used Oil - plant 9

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	18	1,2-dichloroethene (total)	ND
benzene	ND	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	<10	2-hexanone[1]	ND
carbon disulfide	ND	4-methyl-2-pentanone[1]	35
carbon tetrachloride	ND	methylene chloride	<5
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	ND
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	ND
chloroform	<5	toluene	<5
chloromethane[1]	ND	1,1,1-trichloroethane	7,600
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	ND	trichloroethene	<5
1,2-dichloroethane	ND	vinyl acetate[1]	ND
1,1-dichloroethene	ND	vinyl chloride[1]	ND
		xylenes (total)	ND

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

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Title

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DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Used Oil-plant 9

METALS

	MTC 015 SRC 2/3 #1	MTC 015 SRC 8 #3	MTC 015 039 SRC 9 #7	MTC 015 SRC 5 #5	MTC 015 SRC 9 #8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

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Approved by
Laboratory Manager
Title

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USED OIL

PLANTS 2/3, 8, AND MAINTENANCE

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DATE REPORTED February 22, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 1 OF 7
Job No.: 303317

Sample Description: #2, (TCLP Extract) received December 8, 1987
Contaminated Oil - Insoluble
VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

MTC 015
SRC 2/3
Plant 2/3

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	100	1,2-dichloroethene (total)	100
benzene	9	1,2-dichloropropane	38
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	290	2-hexanone[1]	60.
carbon disulfide	ND	4-methyl-2-pentanone[1]	180
carbon tetrachloride	ND	methylene chloride	10.
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	10.
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	5
chloroform	5	toluene	150
chloromethane[1]	ND	1,1,1-trichloroethane	200,000
dibromochloromethane	ND	1,1,2-trichloroethane	6
1,1-dichloroethane	41	trichloroethene	22
1,2-dichloroethane	48	vinyl acetate[1]	ND
1,1-dichloroethene	300	vinyl chloride[1]	ND
		xylenes (total)	22

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Darryl D Stagg 35
Approved by
Laboratory Manager
Title

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10-4-85

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DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Contaminated Oil-Insoluble

Plant 2/3

METALS

	MTC 015 SRC 2/3 #1	MTC 015 SRC 5 #3	MTC 015 SRC 5 #7	MTC 015 SRC 5 #5	MTC 015 SRC 5 #8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

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Approved by
Laboratory Manager
Title

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DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Plant 2/3

METALS

	#1 (2/3 Do)	#3 (8Dp)	#7 (6)	#5 (5Dp)	#8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.000

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Feder Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

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Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Plant 3

METALS

	#1 2/3 Do	#3 8D	#7 6	#5 5D	#8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

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Laboratory Manager
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CERTIFICATE OF ANALYSIS

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DATE REPORTED: February 22, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 7 OF 7
Job No.: 303317

Sample Description: #4 (TCLP Extract) received December 8, 1987

Used Oil
Plant 2

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	900	1,2-dichloroethene (total)	150
benzene	<5	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
[illegible]one[1]	85	2-hexanone[1]	ND
[illegible] disulfide	ND	4-methyl-2-pentanone[1]	48
carbon tetrachloride	ND	methylene chloride	5,000
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	ND
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	<5
chloroform	6	toluene	46
chloromethane[1]	ND	1,1,1-trichloroethane	380,000
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	120	trichloroethene	46
1,2-dichloroethane	1,800	vinyl acetate[1]	ND
1,1-dichloroethene	400	vinyl chloride[1]	ND
		xylenes (total)	7

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Approved by: Darryl W. Stagg 39
Laboratory Manager
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USED OIL

GARAGE

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Ross, OH 45061

DATE REPORTED March 18, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 1 OF 5
Job No.: 303317

Sample Description: One (1) liquid sample received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Used Oil
Garage

METALS

	#9, Oil Layer
Arsenic	0.6
Barium	3.94
Cadmium	<0.005
Chromium	0.42
Lead	<0.05
Selenium	<0.2
Silver	<0.01
Mercury	<0.0002

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager 41

Title

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INTERNATIONAL TECHNOLOGY CORPORATION

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 18, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 2 OF 5
Job No.: 303317

Sample Description: One (1) liquid sample received December 3, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

METALS

Used Oil Garage

	#9, Water Layer
Arsenic	2.4
Barium	0.050
Cadmium	1.00
Chromium	0.22
Lead	0.6
Selenium	1.2*
Silver	<0.1
Mercury	<0.0008

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Sample analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by: Deryl D Stagg 42
Laboratory Manager
Title

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CERTIFICATE OF ANALYSIS

Garage

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 22, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 3 OF 7
Job No.: 303317

Sample Description: #13 (TCLP Extract) received December 8, 1987

Used Oil Garage

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	900	1,2-dichloroethene (total)	ND
benzene	1,100	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	1,200
2-butanone[1]	1,100	2-hexanone[1]	200
carbon disulfide	ND	4-methyl-2-pentanone[1]	300
carbon tetrachloride	ND	methylene chloride	ND
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	ND
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	ND
chloroform	8	toluene	13,000
chloromethane[1]	ND	1,1,1-trichloroethane	11,000
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	<5	trichloroethene	ND
1,2-dichloroethane	ND	vinyl acetate[1]	ND
1,1-dichloroethene	19	vinyl chloride[1]	ND
		xylenes (total)	9,800

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Darryl D. Stagg 43
Approved by
Laboratory Manager
Title

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93-8-41

CHROMIC ACID

LABORATORY

INTERNATIONAL TECHNOLOGY CORPORATION

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CERTIFICATE OF ANALYSIS

TO: ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED January 16, 1989
PROJECT CODE ITEP 35261
ORDER NUMBER 602.09.07
PAGE 1 OF 13
464042.14

Sample Description: One waste sample received October 31, 1988.
FMPC Custody Transfer Record WO:0010

	1/Chromic Acid
Viscosity (cps)	35.5
Specific Gravity	1.669
Total Suspended Solids (mg/l)	<5
Particle Size (wt % > 20 mesh)	0.00
Heating Value (BTU/lb)	<500
Moisture (% w/w)	43.7
Ash (% w/w)	2.87
pH	<0.0
Chlorine (% w/w)	<0.025
Sulfur (% w/w)	22.9
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	<0.5
Ignitability (F°)	132*
Vapor Pressure	ND

ND = Not Determined

*Received December 14, 1987; FMPC Custody Transfer Record 12-10-87

Approved by

Title Laboratory Manager

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing

OILY SLUDGE

PLANT 6

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35093
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: 4-54 (TCLP Extract) received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Oily Sludges ~~Oily~~ ~~For Oxidizers, High Fe metal~~

MTC 041
SRC 642

VOLATILE ORGANIC ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acrolein[1]	ND	1,1-dichloroethene	ND
acrylonitrile[1]	ND	trans-1,2-dichloroethene	ND
benzene	ND	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
carbon tetrachloride	ND	methylene chloride	21,000
chlorobenzene	ND	1,1,2,2-tetrachloroethane	ND
chloroethane[1]	ND	tetrachloroethene	ND
2-chloroethylvinyl ether[1]	ND	toluene	ND
chloroform	ND	1,1,1-trichloroethane	ND
chloromethane[1]	ND	1,1,2-trichloroethane	ND
dibromochloromethane	ND	trichloroethene	ND
1,1-dichloroethane	ND	vinyl chloride[1]	ND
1,2-dichloroethane	ND		

Remarks: 500 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

47

Kenny Pat Stage
Approved by Laboratory Manager

Title

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RECEIVED 3-21-88

856

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ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35093
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Two (2) solid samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

City Sludges

	Ignitability	
4-52	135° F	MTC 642 SRC 865
4-54	143° F	MTC 691 SRC 642

Analyzed by EPA Method 1010.

Denzel D Stagg 48

Approved by Laboratory Manager

Title

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Ross, OH 45061

DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35093
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Four (4) TCLP extract samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Concentration units are mg/liter (ppm)

City Sludges ~~Dry, Low Oxidation, High Reduction~~

	MTC 042 SRC 643 9-53	METALS MTC 041 SRC 642 8-54	MTC 066 SRC 643 1-55	MTC 044 SRC 643 5-57
Arsenic	0.36	3.3	0.8	1.2
Barium	0.747	0.467	0.602	0.905
Cadmium	0.008	0.020	0.053	0.016
Chromium	<0.02	0.32†	0.11	1.33
Lead	<0.05	2.47	0.54	<0.05
Selenium	<0.2*	<0.2*	<0.2*	<0.2*
Silver	0.20	1.13	0.33	0.14
Mercury	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

†Sample analyzed by Standard Addition, Flame Atomic Absorption.

49

Approved by Laboratory Manager
Title

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
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Ross, OH 45061

DATE REPORTED: February 22, 1988
PROJECT CODE: ITEP 35072
ORDER NUMBER: 602.09.02
PAGE 5 OF 7
Job No.: 303317

MTC C 039
SRC

Sample Description: #11 (TCLP Extract) received December 8, 1987

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	71	1,2-dichloroethene (total)	<5
benzene	ND	1,2-dichloropropane	5
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
romoform	ND	trans-1,3-dichloropropene	ND
romomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	42	2-hexanone[1]	ND
carbon disulfide	ND	4-methyl-2-pentanone[1]	46
carbon tetrachloride	ND	methylene chloride	5
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	5
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	<5
chloroform	ND	toluene	<5
chloromethane[1]	ND	1,1,1-trichloroethane	24,000
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	23	trichloroethene	5
1,2-dichloroethane	ND	vinyl acetate[1]	ND
1,1-dichloroethene	32	vinyl chloride[1]	ND
		xylenes (total)	<5

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Approved by: Darryl D. Stagg 50
Title: Laboratory Manager

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SPENT 1,1,1-TRICHLOROETHANE DEGREASING

INTERNATIONAL TECHNOLOGY CORPORATION

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013 742
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577-580, 584-586, 354, 355

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) TCLP extract sample received January 22, 1988
FMPC Custody Transfer Record 1-15-88

Concentration units are mg/liter (ppm)

METALS

spent 1,1,1-TCA

	#2
Arsenic	<0.2
Barium	0.633
Cadmium	<0.005
Chromium	<0.02
Lead	<0.05
Selenium	<0.2
Silver	<0.01
Mercury	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager 52

Title

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TO ASI-Fernald//WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED: January 17, 1989
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.07
PAGE 3 OF 4

Sample Description: One (1) liquid sample received January 22, 1988
FMPC Custody Transfer Record 1-15-88

	Ignitability
Solvent #1/#2 (Degree F)	95

Spent 1,1,1-TCA

Analyzed by EPA Method 1010.

53

Approved by

Laboratory Manager

Title

Date: 2/02/89 Revision No. 013 743

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) liquid sample received January 12, 1988
FMPC Custody Transfer Record 1-15-88

Spent 1,1,1-TCA

	Ignitability
#1	95° F

Analyzed by EPA Method 1010.

54

Approved by Laboratory Manager

Title

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 18, 1988
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) TCLP extract sample received January 22, 1988
FMPC Custody Transfer Record 1-15-88

Concentration units are mg/liter (ppm)

Spent 1,1,1-TA

	#2
Aluminum	0.05
Antimony	0.41
Beryllium	<0.001
Copper	0.12
Iron	0.486
Lithium	<0.03
Magnesium	0.13
Manganese	0.017
Nickel	<0.02
Thallium	<0.3
Titanium	<0.003
Zinc	11.3

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

55

Approved by Laboratory Manager

Title

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TO: ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED January 17, 1989
PROJECT CODE ITEP 35091
ORDER NUMBER 602.09.07
PAGE 2 OF 4
464042.14

Sample Description: One solvent sample received January 22, 1988 FMPC Custody Transfer Record 1-15-88. Analyzed as TCLP Extract

Client Sample ID: Solvent #1/#2 Spent 1,1,-TCA

Concentration units are mg/liter

Element	TCLP ICP	GFAA/CV	Detection Limits ICP	GFAA/CV
Aluminum	0.05		<0.05	
Antimony	0.41		<0.05	
Arsenic	<0.2		<0.2	
Barium	0.633		<0.002	
Beryllium	<0.001		<0.001	
Cadmium	<0.005		<0.002	
Chromium	<0.02		<0.02	
Copper	0.12		<0.01	
Iron	0.486		<0.005	
Lead	<0.05		<0.05	
Lithium	<0.03		<0.03	
Magnesium	0.13		<0.005	
Manganese	0.017		<0.001	
Mercury		<0.0002		<0.0002
Nickel	<0.02		<0.02	
Selenium	<0.2		<0.2	
Silver	<0.01		<0.01	
Sodium	*		<0.05	
Thallium	<0.3		<0.3	
Titanium	<0.003		<0.003	
Zinc	11.3		<0.01	

* Not Applicable

56

Approved by Scott A. McCall

Title Laboratory Manager

Accredited by the American Association for Laboratory Accreditation in the chemical

Date: 2/02/89 Revision No.: 013 743

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
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Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) solvent sample received January 22, 1988
FMPC Custody Transfer Record 1-15-88

Concentration units are percent by weight

VOLATILE ORGANIC ANALYSIS

	Methylene Chloride	Tetrachloroethene	1,1,1-Trichloroetha
Sample #1	ND	ND	12.4

Spent 1,1,1-TCA

Remarks: 0.05% = Quantitation limit
ND = Not detected
< = Detected but at a level less than the quantitation limit

Analyzed by EPA Method 624.

57

Approved by Laboratory Manager

Title

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PAINT THINNER

PAINT SPRAY BOOTHS

Date: 2/02/89 Revision No. 4

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
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Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 1 OF 3
Job No.: 303317

Sample Description: Four (4) liquid samples received January 8, 1988
FMPC Custody Transfer Record 12-29-87

	Ignitability	
#1	<68° F	Paint Thinner
#3	<68° F	Xylene
#5	85° F	Solvent
#15	128° F	TBP & Kerosene

Analyzed by EPA Method 1010.

59

Approved by

Laboratory Manager
Title

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TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) solvent samples and three (3) solid/sludge samples received January 8, 1988 - FMPC Custody Transfer Record 12-29-87

Concentration units are percent by weight

VOLATILE ORGANIC ANALYSIS

	Methylene Chloride	1,1,1-Trichloroethane	Tetrachloroethene
#1 (Paint Thinner)	0.24	0.22	ND
mple #5	ND	<0.05	ND
mple #7	ND	ND	ND
mple #9	ND	ND	ND
ple #11	<0.05	ND	ND
le #13	ND	ND	ND
le #15	ND	ND	ND

Paint Thinner Sample
Unknown Oil Solvent 333
Quantum Crystal Dn 146
Unknown Oil Dn 332
Unknown Still B Dnw. 331
Ba SO4 Dnw # 572
Tri Butyl Phos Kerosene Dnw # 71

ks: 0.05% = Quan
ND = Not
< = Detec

ne quantitation limit

60

Lloyd D Stagg
Laboratory Manager

OILY HILCO FILTER CAKE

PLANTS 5, 1, AND DRUM BALER

INTERNATIONAL TECHNOLOGY CORPORATION

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 25, 1988
PROJECT CODE ITEP 35097
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Six (6) TCLP extract samples received February 4, 1988
Custody Transfer Record 12-15-87

Concentration units are mg/liter (ppm)

	MTC 058 SRC 827 31-105	MTC 082 SRC 440 3-106	METALS MTC 082 SRC 400 1-107	MTC 077 SRC 518 4-108	Oily Ithico Filter Cake MTC 022 SRC 510 3-109	MTC 15 SRC 100 1-11
Arsenic	<0.2	1.5	1.4	0.7	<0.2	<0.2
Barium	0.28	0.27	0.18	0.03	0.36	0.1
Cadmium	<0.005	0.020	0.017	0.006	0.044	0.0
Chromium	0.06	0.23	<0.02	<0.02	0.04	0.0
Lead	<0.05	<0.05*	<0.05*	<0.05*	<0.05	0.0
Selenium	<0.2*	<0.2*	<0.2*	<0.2*	<0.2	<0.2
Silver	<0.01	0.55	0.44	0.148	<0.01	1.1
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by Laboratory Manager
Title

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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256

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35097
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No. 303317

Sample Description: 3-109, TCLP Extract (Water) received February 4, 1988
FMPC Custody Transfer Record 12-15-87

Oily Filter Cake

MTC 020
SRC 510

VOLATILE ORGANIC ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acrolein[1]	ND	1,1-dichloroethene	ND
acrylonitrile[1]	ND	trans-1,2-dichloroethene	ND
benzene	ND	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
carbon tetrachloride	ND	methylene chloride	ND
chlorobenzene	ND	1,1,2,2-tetrachloroethane	ND
chloroethane[1]	ND	tetrachloroethene	<5
2-chloroethylvinyl ether[1]	ND	toluene	ND
chloroform	ND	1,1,1-trichloroethane	<5
chloromethane[1]	ND	1,1,2-trichloroethane	ND
dibromochloromethane	ND	trichloroethene	ND
1,1-dichloroethane	ND	vinyl chloride[1]	ND
1,2-dichloroethane	ND		

Remarks: 5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Analyzed by EPA Method 624.

63

Approved by Denzel A. Stagg
Laboratory Manager
Title

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35097
ORDER NUMBER 602.09.02
PAGE 2 OF 2
Job No. 303317

Sample Description: Three (3) solid samples received February 4, 1988
FMPC Custody Transfer Record 12-15-87

Oily Filter
Filter Cake

		Ignitability
3-109	MTC 020 SRC 510	128° F
3-114	MTC 046, SRC 510	150° F
1-115	MTC 084, SRC 518	162° F

Analyzed by EPA Method 1010.

64

Approved by Laboratory Manager

Title

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 25, 1988
PROJECT CODE ITEP 35097
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Six (6) TCLP extract samples received February 4, 1988
Custody Transfer Record 12-15-87

Concentration units are mg/liter (ppm)

Only filter Filter Cake

	MTC 058 SRC 827 31-105	MTC 082 SRC 440 3-106	METALS MTC 082 SRC 400 1-107	MTC 077 SRC 518 4-108	MTC 020 SRC 410 3-109	MTC 157 SRC 100 1-110
Arsenic	<0.2	1.5	1.4	0.7	<0.2	<0.2*
Barium	0.28	0.27	0.18	0.03	0.36	0.14
Cadmium	<0.005	0.020	0.017	0.006	0.044	0.09
Chromium	0.06	0.23	<0.02	<0.02	0.04	0.07
Lead	<0.05	<0.05*	<0.05*	<0.05*	<0.05	0.06
Selenium	<0.2*	<0.2*	<0.2*	<0.2*	<0.2	<0.2*
Silver	<0.01	0.55	0.44	0.148	<0.01	1.15
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.000

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Feder Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by Laboratory Manager
Title

SAND BLAST PAINT RESIDUES

SAND BLASTING

FMPC

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly — Part 4 must be legible.)

FMPC-T-200 (REV. 5/8/86)

Lab. Nos. 12 - 1365-71

Lot No.

Analyses Requested

EP Toxicity - Lead only

MATERIAL:

Grit Blasting Matgerial

from East Water Tower

ACCOUNT NO.:

LAB 14

DATE SAMPLED:

11-7-88

SUBMITTED BY: (Environmental

L. Lovex Jr. Compliance)

REMARKS:

Samples taken from 55 gal

drums and the ground

LAB. NO.	IDENTIFICATION		ANALYTICAL DATA mg / L Pb mg x k				
12-1365	EWT DS #1	D	52.2				
12-1366	EWT DS #2		75.0				
12-1367	EWT DS #3		52.4				
12-1368	EWT GS #4		94.0				
12-1369	EWT GS #5		76.2				
12-1370	EWT GS #6		100				
12-1371	EWT GS #7		57.7				

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Approved By John

Date of Report 12-6-88

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67

FMPC

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly — Part 4 must be legible.)

Lab. Nos. 12-1205-1

Analyses Requested EP Tox (Pb)

FMPC-T-200 (REV. 5/8/86)

Lot No.

MATERIAL: Residue from Blasting at West Water Tower

ACCOUNT NO.: LAB-14

DATE SAMPLED: 10-10-88

SUBMITTED BY: L Love Jr. (Environmental Compliance)

REMARKS: samples were taken from 55 gal drums containing sand, paint, & a grit blasting material

LAB. NO.	IDENTIFICATION	ANALYTICAL DATA Pb	mg/L
12-1205	W.W.T. #1	10.0	
06	2	7.44	
07	3	8.96	
08	4	5.70	
09	5	13.6	
10	6	9.97	
11	7	3.92	
12	8	12.8	
13	9	13.8	
14	10	12.8	

EP Toxicity limit for Pb is 5.0 mg/L Most of these samples fail. AH desk 6521

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Approved By: AH 10/17/88

TANK 8 CLEANOUT RESIDUES

CLEANUP ACTIVITIES

Date: 2/02/89 Revision No. 4

256

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ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED January 17, 1989
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.027
PAGE 3 OF 13
464042.14

Tank 8 Cleanout Residues

Sample Description: One (1) sample received December 14, 1987 FMPC Custody Transfer Record 12/10/87. Analyzed as TCLP Extract.

Client Sample ID: Tank 8 #3/ #4

Concentration units are mg/liter

Element	TCLP ICP	GFAA/CV	Detection Limits ICP	GFAA/CV
Aluminum	0.96		<0.05	
Antimony	0.70		<0.05	
Arsenic	<0.2		<0.2	
Barium	0.101		<0.002	
Beryllium	<0.001		<0.001	
Cadmium	0.465		<0.002	
Chromium		0.005		<0.002
Copper	15.5		<0.01	
Iron	9890		<0.005	
Lead	0.90		<0.05	
Lithium	2.09		<0.03	
Magnesium	6.80		<0.005	
Manganese	28.5		<0.001	
Mercury		<0.0002		<0.0002
Nickel	12.2		<0.02	
Selenium		<0.2	<0.2	
Silver	<0.01		<0.01	
Sodium	*		<0.05	
Thallium	<0.3		<0.3	
Titanium	0.088		<0.003	
Zinc	0.74		<0.01	

70

* Not Applicable

Scott A. Miles
Approved by

Laboratory Manager
Title

INVENTORY Nos. 291-330

256 of 400

{Sample No. 2}

Tank & Cleanout Residues

FMPC
REPORT OF CHEMICAL ANALYSES
(NOTE. Write Firmly — Part 4 must be legible.)

FMPC-T-200 (REV 5/81)

Lab. Nos. 12-9116-27

Lot No.

Analyses Requested Specific Gravity, PH, Viscosity

MATERIAL	LAB. NO.	IDENTIFICATION	SPG	PH	*Vssc.	g/ml Bulk Density	
	12-9116	1	N/D	4.4	N/D*	0.41	* SOLID AT
Inventory Nos. 291-330 →	17	2	N/D	3.3	N/D*	0.90	ROOM TEMP
	18	3	N/D	10.0	N/D*	0.53	pH DETERMINED BY MIXING 100 ml
	19	4	1.69	<1	100	N/D	50 ml OF H_2O FOR MINUTES. pH OF
	20	5	N/D	N/D	N/D*	0.75	SUPERNATANT LIQ. REPORTED.
	21	6	~~0.98~~ 0.89	68**	120	N/D	
	22	7	"RESULTS ON SEPARATE CARD."				
	23	8	1.00	6.6**	50	N/D	** 50 ml OF SAM
	24	9	N/D	13.9	N/D***	0.98	MIXED WITH 50 H_2O. pH OF H_2O REPORTED.
	25	10	"RESULTS ON SEPARATE CARD."				
	26	11	1.13	9.2**	415	N/D	*** NOT ENOUGH SAMPLE TO RUN
	27	12	N/D	9.3	N/D*	0.64	VISCOUS

Approved By [signature] Date of Report 1-28

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ANALYTICAL SERVICES

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256 RECEIVED 3-21-88

951 400

CERTIFICATE OF ANALYSIS

Inventory No. 271-
{Sample = 3)

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Three (3) soil/sludge samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

Tank 8 Cleanout Residues

		Ignitability	
	#1	132° F	Lauter Soda
→	#3	140° F	Tank 8
	#5	128° F	Tetrachler

Analyzed by EPA Method 1010.

Dennis H Stagg 72
Approved by

Laboratory Manager
Title

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Inventory No 2

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 18, 1988
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

Concentration units are mg/liter (ppm)

Tank & Cleancut Residues

Inventory No: 291-33

	#1	#5	#3
Arsenic	<0.2	<0.2	<0.2
Barium	0.370	0.175	0.101
Cadmium	<0.005	0.057	0.465
Chromium	0.12	0.05	5.1**
Lead	0.22	0.58	0.90
Selenium	<0.2	<0.2	<0.2*
Silver	<0.01	<0.01	<0.01
Mercury	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede- Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Sample analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.
**Sample analyzed by Standard Addition, Flame Atomic Absorption, EPA Method 7000 Series

Approved by Laboratory Manager 73

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ANALYTICAL SERVICES

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Inv. Nos. 291-3

CERTIFICATE OF ANALYSIS

{Sample #3}

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 21, 1988
PROJECT CODE: ITEP 35085
ORDER NUMBER: 602.09.02
PAGE: 1 OF 1
Job No.: 303317

Sample Description: Two (2) TCLP extract samples received January 11, 1988
FMPC Custody Transfer Record 12-10-87

Concentration units are mg/liter (ppm)

Tank 8 Cleanout Residues

	Hexavalent Chromium
#5	<0.01
#3 (Inv. Nos. 291-32)	0.02

Approved by Laboratory Manager

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SPENT TRIBUTYL PHOSPHATE/KEROSENE

PLANT 2/3 LABORATORY

INTERNATIONAL TECHNOLOGY CORPORATION

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 26, 1988
PROJECT CODE ITEP 35098
ORDER NUMBER 602.09.02
PAGE 3 OF 3
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received February 4, 1988
FMPC Custody Transfer Record 10-15-87

Concentration units are mg/liter (ppm)

Contaminated TBP and/or Kerosene mixtures and Sludges

	MTC 067 SRC FTA 4-78	METALS	MTC 069 SRC 765 21-80	MTC 092 SRC 221 4-81
Arsenic	0.8		<0.2	0.4
Barium	22.4		<0.2	0.77
Cadmium	0.031		<0.005	<0.005
Chromium	0.15		<0.02	<0.02
Lead	0.64		<0.05	<0.05
Selenium	<0.2*		<0.2	<0.2
Silver	0.24		<0.01	0.09
Mercury	<0.0002		<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by Laboratory Manager 76
Title

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filed in MTC 022 256
SRC 221
Inventory Nos 6[illegible]

(Sample No. 14)

Contaminated TBP + for Kerosene Mixtures + Sludges

:MPC

REPORT OF CHEMICAL ANALYSES

Lab. Nos. 12-9128-29

NOTE: Write Firmly — Part 4 must be legible)

FMPC-T-300 (REV 6/88)

Lot No.

Analyses Requested Specific Gravity, PH, Viscosity

MATERIAL	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA					
			SPG	PH	* (CPS) Visc.	g/ml Bulk Density		
372 Ba Sol-	12-9128	13	N/D	7.8	N/D*	1.85	* SOLID AT	
71 - TBP, kerosene	29	14	1.02	1.2**	50	N/D	ROOM TEMP.	
							pH DETERMINED BY MIXING 10g WITH 50 ML OF H_2O. pH OF SUPERNATANT LIQUID REPORTED.	
							** 50 ML OF SAMPLE MIXED WITH 50 ML H_2O. pH OF H_2O REPORTED.	
							(CPS) - CENTIPOISE	

Approved By [signature] Date of Report 1-28-88

Revision No.

SRC 221

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35101
ORDER NUMBER 602.09.02
PAGE 1 OF 3
Job No.: 303317

Sample Description: Four (4) liquid samples received January 8, 1988
FMPC Custody Transfer Record 12-29-87

Contaminated TBP + Kerosene Mixtures + Sludges

	Ignitability	
#1	<68° F	Paint thinner
#3	<68° F	Xylene
#5	85° F	Solvent
#15	128° F	TBP & Kerosene

Analyzed by EPA Method 1010.

Approved by

Laboratory Manager
Title

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CERTIFICATE OF ANALYSIS

TO: ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED ITEP 35261
PROJECT CODE 602.09.07
ORDER NUMBER 13 13
PAGE ~~4642 OF~~ 14

Sample Description: One waste sample received October 31, 1988.
FMPC Custody Transfr Record WO:0010

Contaminated TBP + for Kerosene
Mixtures + Sludges

	15/TBP - Kerosene
Viscosity (cps)	4.9
Specific Gravity	1.024
Total Suspended Solids (mg/l)	6812.0
article Size (wt % > 20 mesh)	0.63
Heating Value (BTU/lb)	<500
Moisture (% w/w)	96.7
Ash (% w/w)	0.98
pH	0.58
Chlorine (% w/w)	<0.025
Sulfur (% w/w)	<0.025
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	3.7
Ignitability (F°)	125/128*
Vapor Pressure	ND

ND = Not Determined

*Received January 8, 1988; FMPC Custody Transfer Record 12-29-87

79

Approved by Laboratory Manager

Title

Date: 2/02/89 Revision No.

filed in MTC 022
SRC 221
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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 25, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 1 OF 3
Job No.: 303317

Sample Description: One (1) liquid sample received January 8, 1988
FMPC Custody Transfer Record 12-29-87

Contaminated TBP + for Kerosene Mixtures + Sludges

REPEAT ANALYSIS

	Ignitability
#15	125° F

Analyzed by EPA Method 1010.

Denny D Stagg 80
Approved by
Laboratory Manager
Title

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filed in MTC022 SRC221

Inventory No. 63-

256

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CERTIFICATE OF ANALYSIS

{ Sample #15 is for TBP/kerosene

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 2 OF 2
Job No.: 303317

Sample Description: Three (3) solvent samples received February 5, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are mg/liter (ppm)

Contaminated TBP +/or Kerosene mixtures + Sludges

TOTAL METALS ANALYSIS

Inv. Nos. 63-71

	#3	#5	#15
Arsenic	<0.2	<0.2	<0.2
Barium	0.004	0.015	2.89
Cadmium	<0.005	<0.005	0.037
Chromium	<0.02	<0.02	5.32*
Lead	<0.05	<0.05	1.35
Selenium	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01
Mercury	<0.0004	0.0123	0.0008

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Analyzed by Standard Additions, Flame Atomic Absorption, EPA Method 7000 Series.

Dennis D Stagg 81
Approved by

Laboratory Manager
Title

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ANALYTICAL SERVICES

filed in MTC 022
SRC 221

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 18, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE: 3 OF 3
Job No.: 303317

Sample Description: Three (3) solvent samples received February 5, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are mg/liter (ppm)

Contaminated TBP w/ Kerosene Mixture and Sludges

TBP/Kerosene

METALS - TOTAL

	#3	#5	#15
Aluminum	<0.05	<0.05	18.5
Antimony	<0.05	<0.05	<0.05
Beryllium	<0.001	<0.001	0.015
Copper	0.07	0.03	1.04
Iron	0.063	1.25	889
Magnesium	<0.005	5.89	131
Manganese	0.005	0.738	77.5
Nickel	<0.02	<0.02	2.49
Thallium	<0.3	<0.3	<0.3
Titanium	<0.003	<0.003	1.75
Zinc	0.01	0.02	1.25

Analyzed by EPA Method 6010.

Denis D. Stagg 82
Approved by Laboratory Manager
Title

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ANALYTICAL SERVICES

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filed in NTC 022
SRC 221
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CERTIFICATE OF ANALYSIS

{Sample No. 1 is for TBP}

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35101
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) solvent samples and three (3) solid/sludge samples rece January 8, 1988 - FMPC Custody Transfer Record 12-29-87

Concentration units are percent by weight

Contaminated TBP + or Kerosene Mixtures and Sludges

VOLATILE ORGANIC ANALYSIS

	Methylene Chloride	1,1,1-Trichloroethane	Tetrachloroet
Sample #1	0.24	0.22	ND
Sample #5	ND	<0.05	ND
Sample #7	ND	ND	ND
Sample #9	ND	ND	ND
Sample #11	<0.05	ND	ND
Sample #13	ND	ND	ND
Sample #15 (Inv. 63-71)	ND	ND	ND

Remarks: 0.05% = Quantitation limit
ND = Not detected
< = Detected but at a level less than the quantitation limit

Denny D Stagg 83
Approved by
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

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ANALYTICAL SERVICES

filed in MTC022 SRC 221

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 21, 1988
PROJECT CODE ITEP 35101
ORDER NUMBER 602.09.02
PAGE 3 OF 3

Sample Description: One (1) liquid sample received January 8, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are mg/kg (ppm)

Contaminated TBP + Kerosene Mixtures and Sludges

	Tributyl Phosphate	Quantitation Limit
#15	760	230

Approved by Darryl D. Stagg 84
Laboratory Manager
Title

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33 1-85

DRUM DECONTAMINATION RESIDUES

DRUM RECONDITIONING

Lot # H093-132-D021-0288

Description: Drum Contamination Residues, WET MgF_2
Drum decontamination residues, wet MgF2

Source: Plant 1 drum reconditioning wheelabrator shot blast unit

Parameter: Cadmium

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Lisa Stone

REPORT DATE: December 17, 1998

PROJECT NO.: 0220-00471

METHOD USED:

Drum Contamination Residues: WETTING fluid

PARAMETER	UNITS	0021-0286	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20	99
BARIUM	(MG/L)	0.408	100
CADMIUM	(MG/L)	32.4	97
CHROMIUM	(MG/L)	< 0.10	107
LEAD	(MG/L)	< 0.10	102
MERCURY	(UG/L)	0.26	87
SELENIUM	(MG/L)	< 0.20	113
SILVER	(MG/L)	0.025	95

ROASTED MAGNESIUM FLUORIDE

PLANT 1 MILLING

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Lucy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471

METHOD USED:

Roasted MgF_2 5067 112

PARAMETER	UNITS	0031-0375	BENCH SPIKE
ARSENIC	(MG/L)	2.55	91
BARIUM	(MG/L)	2.29	104
CADMIUM	(MG/L)	< 0.20	101
CHROMIUM	(MG/L)	< 0.10	103
LEAD	(MG/L)	5.16	167
MERCURY	(UG/L)	< 0.2	90
SELENIUM	(MG/L)	2.79	69
SILVER	(MG/L)	0.021	91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35094
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Six (6) TCLP extract samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Concentration units are mg/liter (ppm)

Roasted mg F2

	MTC 044 SRC 642 7-59	MTC 046 SRC 642 11-60	METALS MTC 050 SRC 611 10-61	MTC 052 SRC 322 4-62	MTC 031 SRC 112 66-64	MTC 033 SRC 112 11-65
Arsenic	<0.2*	<0.2*	1.0	<0.2*	<0.2*	<0.2*
Barium	2.36	3.24	12,900	0.299	7.1	0.377
Cadmium	0.022	0.024	<0.005	0.005	0.041	0.048
Chromium	1.58	0.52	<0.02	0.14*	0.13†	0.17†
Lead	<0.05	0.18*	0.32	<0.05*	1.18	<0.05*
Selenium	<0.2*	<0.2*	0.2	<0.2*	<0.2*	<0.2*
Silver	0.20	0.51	<0.01	0.59	<0.01	<0.01*
Mercury	<0.0002	0.0004	<0.0002	<0.0002	0.0004	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

†Sample analyzed by Standard Addition, Flame Atomic Absorption.

90

Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical

CLEANOUT SLUDGES

PLANT 8

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 23, 1988
PROJECT CODE ITEP 35093
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Six (6) TCLP extract samples received January 22, 1988

FMPC Chain-of-Custody received September 3, 1987

Concentration units are mg/liter (ppm) Sludges Circuit

	MTC 033 SRC 762 3-49	MTC 033 SRC 762 9-50	MTC 033 SRC 240 93-51	MTC 042 SRC 805 4-52	MTC 042 SRC 900 7-56	MTC 055 SRC 921 22-58
Arsenic	0.5	0.2	<0.2	<0.2	<0.2	<0.2
Barium	0.29	1.10	0.38	0.21	1.16	0.32
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chromium	<0.02	0.16	1.29	<0.02	<0.02	<0.02
Lead	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Feder Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager
Title

Send over Daily 7/6/79

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS
CLIENT: Weston, Inc.
3222-00471

Sludges Cleanout

VOA COMPOUND	DETECTION LIMIT (ug/l)	DISCOVERY (ug/l)
ACETONE	10	[illegible]
BENZENE	5	ND
BROMOFORM	5	ND
CARBON TETRACHLORIDE	5	ND
CHLOROBENZENE	5	ND
CHLOROETHANE	10	ND
CHLOROFORM	5	ND
1,1-DICHLOROETHANE	5	ND
1,2-DICHLOROETHANE	5	ND
1,1-DICHLOROETHYLENE	5	ND
ETHYL BENZENE	5	[illegible]
METHYLENE CHLORIDE	5	[illegible]
4-METHYL-2-PENTANONE	10	[illegible]
1,1,2,2-TETRACHLOROETHANE	5	ND
TOLUENE	5	ND
TRICHLOROETHENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND
1,1,2-TRICHLOROETHANE	5	ND
VINYL CHLORIDE	10	ND
XYLENE	5	ND

SURROGATE COMPOUNDS	PERCENT RECOVERY
1,2-DICHLOROETHANE-D4	[illegible]
TOLUENE-D8	[illegible]
p-BFB	[illegible]

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471

METHOD USED:

Sludges Cleanout

PARAMETER	UNITS	D042-0268	BENC-SPIKE
ARSENIC	(MG/L)	0.684	111
BARIUM	(MG/L)	0.574	95
CADMIUM	(MG/L)	0.056	55
CHROMIUM	(MG/L)	< 0.10	111
LEAD	(MG/L)	0.803	114
MERCURY	(UG/L)	< 0.2	105
SELENIUM	(MG/L)	< 0.20	106
SILVER	(MG/L)	0.146	91

FURNACE SALT

PLANT 6

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 2222-00471

METHOD USED:

Furnace Salt

PARAMETER	UNITS	D060-0184	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20	102
BARIUM	(MG/L)	1.860	58
CADMIUM	(MG/L)	< 0.020	110
CHROMIUM	(MG/L)	< 0.10	104
LEAD	(MG/L)	0.170	114
MERCURY	(UG/L)	< 0.2	90
SELENIUM	(MG/L)	< 0.20	99
SILVER	(MG/L)	0.178	85

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35094
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Six (6) TCLP extract samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Concentration units are mg/liter (ppm)

Furnace Salt

	MTC 044 SRC 642 7-59	MTC 040 SRC 642 11-60	METALS MTC 040 SRC 611 10-61	MTC [illegible] SRC [illegible] 4-62	MTC 031 SRC 112 66-64	MTC 033 SRC [illegible] 11-65
Arsenic	<0.2*	<0.2*	1.0	<0.2*	<0.2*	<0.2*
Barium	2.36	3.24	12,900	0.293	7.1	0.377
Cadmium	0.022	0.024	<0.005	0.006	0.041	0.048
Chromium	1.58	0.52	<0.02	0.14*	0.13†	0.17†
Lead	<0.05	0.18*	0.32	<0.05*	1.18	<0.05*
Selenium	<0.2*	<0.2*	0.2	<0.2*	<0.2*	<0.2*
Silver	0.20	0.51	<0.01	0.59	<0.01	<0.01*
Mercury	<0.0002	0.0004	<0.0002	<0.0002	0.0004	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

†Sample analyzed by Standard Addition, Flame Atomic Absorption.

Denis D Stagg 97
Approved by
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical [illegible]

FURNACE SALT

PLANT 9

ENVIRODYNE ENGINEERS

1908 Innerbelt Business Center Drive
St. Louis, Missouri 63114-5700
314/524-9990

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone
Weston, Inc.
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, PA 19353

PROJ. #: 1222-0047

REPORT DATE: December 10, 1988
SAMPLE ANALYZED: Twenty-five samples analyzed for the parameters listed below.

DATE RECEIVED: 3/19/88 &
9/19/88 &

Furnace Salt - Plant 9

PARAMETER	UNITS	3061-0269	3061-0269 DUP.	BENCH SPIKE
ARSENIC	(MG/L)	9.52		97
BARIUM	(MG/L)	2.20		93
CADMIUM	(MG/L)	1.03		57
CHROMIUM	(MG/L)	< 1.0		111
LEAD*	(MG/L)	21.8		62
MERCURY	(UG/L)	< 0.2	< 0.2	80
SELENIUM	(MG/L)	9.76		81
SILVER	(MG/L)	0.144		83

99

DLB: CB/jag

APPROVED: Lisa A. Leeby

ENVIRODYNE ENGINEERS

12161 Lackland Road,
St. Louis, Missouri 63146
(314) 434-6960

REPORT OF ANALYSIS

CLIENT: Judy Stone
Weston
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: August 9, 1988
SAMPLE ANALYZED: Eight samples analyzed for TCLP Metals.

DATE RECEIVED: June 21, 1988
P.O. #:

Furnace Salts

PARAMETER	8806-704-008 917-D061-0275
ARSENIC (MG/L)	8.13
BARIUM (MG/L)	1.16
CADMIUM (MG/L)	< 0.05
CHROMIUM (MG/L)	< 0.10
LEAD (MG/L)	13.0
MERCURY (UG/L)	< 0.02
SELENIUM (MG/L)	< 2.0
SILVER (MG/L)	0.064

DUST COLLECTOR RESIDUES

PILOT PLANT

Send over
256
July 6
1989

ENVIRODYNE ENGINEERS

12161 Lackland Road,
St. Louis, Missouri 63146
(314) 434-6960

REPORT OF ANALYSIS

CLIENT: Judy Stone
Weston
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: August 9, 1988
SAMPLE ANALYZED: Eight samples analyzed for TCLP Metals.

DATE RECEIVED: June 21, 1988
P.O. #:

Dust Collector Residues

PARAMETER	8806-704-003 H120-310-D062 -0005
ARSENIC (MG/L)	4.86
BARIUM (MG/L)	0.71
CADMIUM (MG/L)	< 0.05
CHROMIUM (MG/L)	< 0.10
LEAD (MG/L)	8.07
MERCURY (UG/L)	< 0.20
SELENIUM (MG/L)	< 2.0
SILVER (MG/L)	0.021

102

APPROVED:

FMPC Nyrma Dust Collector Residues

REPORT OF CHEMICAL ANALYSES 255 Lab. Nos. 12-932.

(NOTE: Write Firmly – Part 4 must be legible.)

Analyses Requested EP Toxicity

As, Se, Ag, Pb, Ba

Lot No. S053-PTA-DC

MATERIAL	LAB NO.	IDENTIFICATION	mg/L As	Se	Ag	Pb	Ba
NTS Waste		#11	<1.0	<0.1	<1.0	<1.0	<2
Drum #1							
ACCOUNT NO: QAC02							
DATE SAMPLED: 2-8-88							
SUBMITTED BY: J. W. Seyer							
REMARKS: Wet Sump or Filter Cake non oily & non halide							

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Approved By [signature] Date of Report 2/26

FMPC Depleted

REPORT OF CHEMICAL ANALYSES Lab. Nos. 12-1322

(NOTE: Write Firmly – Part 4 must be legible.)

Analyses Requested EP Toxicity

As, Se, Ag, Pb, Ba

Lot No. B120-310-D062-

MATERIAL	LAB NO.	IDENTIFICATION	mg/L As	Se	Ag	Pb	Ba
NTS Waste		#12	<1.0	<0.1	<1.0	<1.0	<25
Drum #2							
ACCOUNT NO: QAC02							
DATE SAMPLED: 2-8-88							
SUBMITTED BY: J. W. Seyer							
REMARKS: Dust Collector Residue High Fluoride (UF_4)						103	

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Dust Collector Residues

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ANALYTICAL SERVICES

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[illegible]

CERTIFICATE OF ANALYSIS

TO: AS:-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 19, 1988
PROJECT CODE: TEP 35035-Corrected Certific.
ORDER NUMBER: 602.09.02
PAGE 1 OF 12

Sample Description: Nine (9) TCLP extract samples received September 17, 1987

Concentration units are mg/liter (ppm)

TCLP METALS

Sample No.	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
23-4 MTC 061 SRC 916	0.108*	0.279	0.041	0.15	0.18	0.017*	1.11	<0.0002
19-5 MTC 061 SRC 913	0.053*	0.831	0.109	0.11	0.014*	**	2.99	<0.0002
3 6 MTC 062 SRC 310	0.015*	0.819	0.013	0.19	<1.0	0.051*	1.16	<0.0002
MTC 061 SRC 916	0.046*	1.78	0.028	0.05	<1.0	**	1.03	<0.0002
4-9 MTC 062 SRC 742	0.058*	0.088	0.030	0.09	<1.0	<0.2†	1.12	<0.0002
4-11 MTC 050 SRC 530	0.5	8,150	0.009	0.11	<0.2	<0.4	0.12	<0.0002
10-13 MTC 061 SRC 913	0.045*	0.789	0.175	0.15	0.015*	**	<0.01*	<0.0002
4-15 MTC 061 SRC 917	0.092*	0.424	0.140	0.15	0.012*	<0.3	<0.01*	<0.0002
15-16 MTC 061 SRC 916	0.072*	0.397	0.142	0.16	0.007*	<0.2	<0.01*	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40645.

Analyzed by EPA Method 6010 and Cold Vapor EPA Method 7471 for mercury, except for those indicated.

†Analyzed by Standard Additions, ICP EPA Method 6010.

*Analyzed by Standard Additions, Graphite Furnace EPA 7000 methods.

**See narrative

104

Approved by: Laboratory Manager
Title

BARIUM SULFATE FILTER CAKE

PILOT PLANT

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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256

CERTIFICATE OF ANALYSIS

Sample #13 is barium sulfate

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) TCLP extract samples received February 5, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are mg/liter (ppm)

$BaSO_4$ Filter Cake

Barium Sulfate

METALS ANALYSIS

	#1	#7	#11	#13
Arsenic	1.7	<0.2	<0.2	<0.2
Barium	0.264	0.020	0.344	0.110
Cadmium	<0.005	<0.005	<0.005	<0.005
Chromium	0.64	<0.02	<0.02	0.04
Lead	<0.05	<0.05	<0.05	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01
Mercury	0.0007	<0.0002	0.980	0.0022

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federa Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager 106

Title

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93-9

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

Sample #13 (barium sulfate)

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35101
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) solvent samples and three (3) solid/sludge samples receive January 8, 1988 - FMPC Custody Transfer Record 12-29-87

Concentration units are percent by weight

$BaSO_4$ Filter Cake

VOLATILE ORGANIC ANALYSIS

	Methylene Chloride	1,1,1-Trichloroethane	Tetrachloroethe
Sample #1	0.24	0.22	ND
Sample #5	ND	<0.05	ND
Sample #7	ND	ND	ND
Sample #9	ND	ND	ND
Sample #11	<0.05	ND	ND
Sample #13 (barium sulfate)	ND	ND	ND
Sample #15	ND	ND	ND

Remarks: 0.05% = Quantitation limit
ND = Not detected
< = Detected but at a level less than the quantitation limit

Denny D Stagg 107
Approved by
Laboratory Manager
Title

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Inventory No. 55P-[illegible]

256

{Sample No. 13 .. 6
Barium Sulfate.

BaSO4 Filter Cake

MPC
REPORT OF CHEMICAL ANALYSES
(NOTE: Write Firmly — Part 4 must be legible.)

Lab. Nos. 12 - 9128 - 29

Lot No.

Analyses Requested Specific Gravity, PH, Viscosity

MATERIAL	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA: SPG	PH	*(CPS) Visc.	g/ml Bulk Density		
→ 372 BaSO4	12-9128	13	N/D	7.8	N/D*	1.85	*SOLID AT	
71 - TBP/kerosene	29	14	1.02	1.2**	50	N/D	ROOM TEMP	
							pH DETERMINED	
							MIXING 10g WETA	
							50 ML OF H_2O. pH	
							SUPERNATANT LIQ.	
							REPORTED.	
							** 50 ML OF SAM	
							MIXED WITH 50 M	
							H_2O. pH OF H_2O	
							REPORTED	
							(CPS) - CENTRIFUG	

Approved By [signature] Date of Report 1-28-88

NLO-T-200 (Rev. 4/29/63)

NLO, INC.

REPORT OF CHEMICAL ANALYSES BaSO4 Filter Cake

(NOTE: Write Firmly - Part 4 must be legible.)

256

Lab. Nos. 13-2725-35

Lot No. W020-362-D002-C2

Analyses Requested %U EP Toxic Ba Cr

MATERIAL:	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA Total Uppm	Total % U	Ba mg/L		Cr mg/L
BaSO4 Filter Cake	13-2725	1	—	0.62	0.103		0.006
ACCOUNT NO.: 27500	26	2	—	0.64	0.095		0.002
DATE SAMPLED: 4.4.86	27	3	—	0.74	0.107		0.017
SUBMITTED BY: Janet Carr	28	4	—	0.46	0.368		0.012
REMARKS:	29	5	—	0.13	0.090		0.019
	30	7	158	—	0.025		0.015
	31	8	27	—	0.029		0.002
	32	11	70	—	0.044		0.025
	33	12	84	—	0.050		0.016
	34	13	35	—	0.040		0.007
	35	14	69	—	0.061		0.004

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Approved By [signature] Date of Report 4-28-86

NLO-T-200 (Rev. 4/29/63)

NLO, INC.

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly - Part 4 must be legible.)

Lab. Nos. 13-2737-44

Lot No. W020-362-[illegible]

Analyses Requested %U EP Toxic Ba, Cr

MATERIAL:	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA Total Uppm	Total % U	Cr mg/L		[illegible]
BaSO4 Filter Cake	13-2737	16	6094	0.61	0.013		[illegible]
ACCOUNT NO.: 27500	38	17	37	—	0.007		[illegible]
DATE SAMPLED: 4.4.86	39	18	25	—	0.001		[illegible]
SUBMITTED BY: Janet Carr	40	19	—	0.60	0.043		[illegible]
REMARKS:	41	20	—	0.51	<0.001		[illegible]
	42	22	—	0.05	0.005		0.044
	43	23	—	0.24	0.007		0.017
	44	24	—	0.66	0.012		0.012

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NLO-T-200 (Rev. 6/23/83)

NLO, INC.

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly – Part 1 must be legible.)

256

Baiocy Filter Cake

Lab. Nos. 13-2736

Lot No. [illegible]

es Requested [illegible]

MATERIAL:

ACCOUNT NO.: 27500

DATE SAMPLED: 4.4.86

SUBMITTED BY: Janet Carr

REMARKS:

A.A. RESULTS

13-2737

LAB. NO.	IDENTIFICATION	ANALYTICAL DATA: Pb ppm		Cr mg/l		Ba mg/l	
	1E	~~[illegible]~~					
		25		0.003		0.041	

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Approved By [illegible] Date of Report 5-6-86

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS BaSO4 Filter Cake

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 25, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Two (2) sludge samples received January 8, 1988
FMPC Custody Transfer Record 12-29-87

REPEAT ANALYSIS

		Ignitability
	#11	109° F
BaSO4 Filter Cake	#13	118° F BaSO4

Analyzed by EPA Method 1010.

Approved by Denzil Stagg
Laboratory Manager
Title

111

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707

RECEIVED 3-21-88

256

CERTIFICATE OF ANALYSIS BaSO4 Filter Cake

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Three (3) sludge samples received January 8, 1988
FMPC Custody Transfer Record 12-29-87

	Ignitability	
#7	>212° F	Decant
#11	108° F	Still Bottom
#13	115° F	BaSO4

Analyzed by EPA Method 1010.

Approved by Laboratory Manager 112

Title

BaSO4 Filter Cake

Table 2. Sample Results For PTA #504

BaSO4 Filtercake

Batch Number	EP Toxicity Test Ba (PPM)	Cr (ppm)	Limit
1	15	29	100
2	2	0.03	100
3	27	4	100
4	13	16	100
5	133	9	100
6			100
7	61	8	100

Filtrate

Batch Number	Ba (ppm)	Na (g/l)	K (g/l)	Cu (ppm)	Cr (ppm)	Cr +6 (ppm)	U (ppm)
1	4	16.4	21.7	10	0.6	0.003	5
2	* 3460	24.2	33.5	1.4	0.1	0.019	5
3	* 430	21	30.8	45.8	0.14	0.068	5
4	200	20.2	17	0.4	0.08	0.032	
5	289			18.8	0.1	0.047	
6	309			125	0.46	0.033	6
7	308			160	0.27	0.059	14

* Samples contained particles of BaSO4

Uranium Filtercake Drum #1

Sample #	Assay	EP Toxicity Test Ba (ppm)	Cr (ppm)	Na (%)	K (%)	Cu (%)	Fe (%)	Cr (%)	Ba (%)	U (%)
1	0.55	2720	1.52	1.7	13.6	3.8	12	0.2	7.8	37.8
2	0.5	5300	0.14	4.13	7.59	2.68	9.6	0.13	10.32	13.7
3		4160	0.508					0.22		10.9

SOLVENT-CONTAMINATED PALLET WOOD SITE CLEANUP

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

256

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 25, 1988
PROJECT CODE: ITEP 35099
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) TCLP extract sample received November 20, 1987
Custody Transfer Record 11-2-87

Concentration units are mg/liter (ppm)

Solvent ctd. Pallet wood

METALS

	#1, Wood
Arsenic	<0.2
Barium	0.45
Cadmium	<0.005
Chromium	<0.02
Lead	0.14
Selenium	<0.2
Silver	<0.01
Mercury	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager 114
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 23, 1988
PROJECT CODE: ITEP 35099
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: #2 Wood (TCLP extract) received November 20, 1987
Solvent ctd. Pallet wood

VOLATILE ORGANIC HAZARDOUS SUBSTANCE LIST ANALYSIS

Compound	Concentration (µg/liter)	Compound	Concentration (µg/liter)
acetone[1]	<10.	trans-1,2-dichloroethene	ND
benzene	ND	1,2-dichloropropane	ND
bromodichloromethane	ND	cis-1,3-dichloropropene	ND
bromoform	ND	trans-1,3-dichloropropene	ND
bromomethane[1]	ND	ethyl benzene	ND
2-butanone[1]	ND	2-hexanone[1]	ND
carbon disulfide	ND	4-methyl-2-pentanone[1]	<10.
carbon tetrachloride	ND	methylene chloride	12
chlorobenzene	ND	styrene	ND
chloroethane[1]	ND	1,1,2,2-tetrachloroethane	ND
2-chloroethylvinyl ether[1]	ND	tetrachloroethene	9,400
chloroform	ND	toluene	<5
chloromethane[1]	ND	1,1,1-trichloroethane	<5
dibromochloromethane	ND	1,1,2-trichloroethane	ND
1,1-dichloroethane	ND	trichloroethene	ND
1,2-dichloroethane	ND	vinyl acetate[1]	ND
1,1-dichloroethene	ND	vinyl chloride[1]	ND
		xylenes (total)	ND

Remarks:
5 = Quantitation Limit
ND = Not detected
< = Detected but at a level less than the quantitation limit.
1 = This component has a quantitation limit two (2) times that listed.

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 624.

Approved by: Daryl E. Stagg
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

SPENT ENAMEL

DRUM PAINTING

Inventory No. 159

256

MATERIAL SAFETY DATA SHEET
FOR COATINGS AND RELATED MATERIALS

Spent Enamel

FACTURER'S NAME: FOY-JOHNSTON, INC.
ADDRESS: 1776 MENTOR AVENUE
CINCINNATI, OHIO 45212

DATE OF PREPARATION: 2/17/86
EMERGENCY AND INFORMATION
TELEPHONE NUMBER: (513) 631-

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NUMBER: 38295 TRADE NAME: NOT APPLICABLE
PRODUCT NAME: BLACK W/R DRUM ENAMEL

SECTION II - HAZARDOUS INGREDIENTS

INGREDIENT	PERCENT	OCCUPATIONAL EXPOSURE LIMITS TLV(TWA)	STEL	VAPOR PRESSURE MM HG/DEG F	TOXICITY DATA
DIMETHYLETHANOLAMINE (CAS NO.-108-01-0)	< 5	NOT ESTABLISHED		4/68	———
ETHYLENE GLYCOL MONOPROPYL ETHER (CAS NO.-2807-30-9)	< 5	NOT ESTABLISHED		1.3/77	———
ETHYLENE GLYCOL MONOBUTYL ETHER NO.-111-76-2)	10	25PPM (SKIN)	N/E	0.6/68	———
METHOXYMETHYLMELAMINE	< 5	NOT ESTABLISHED		N/A	———
ISOBUTYL ALCOHOL (CAS NO.-78-83-1)	< 5	50PPM	N/E	8.8/68	———

SECTION III - PHYSICAL DATA

BOILING RANGE: 165 - 336 DEG F
EVAPORATION RATE: SLOWER THAN ETHER
VAPOR DENSITY: HEAVIER THAN AIR
PERCENT VOLATILE VOLUME 72.3
V O C: 3.00 LBS/GAL
W/GAL: 8.52 LBS/GAL

SECTION IV - FIRE AND EXPLOSION DATA

FLAMMABILITY CLASSIFICATION (OSHA): COMBUSTIBLE LIQUID - CLASS II
FLASH POINT: 133 DEG F(SETAFLASH) LEL: 1.1

EXTINGUISHING MEDIA: USE FOAM AND/OR CO2 AND/OR DRY CHEMICAL

UNUSUAL FIRE AND EXPLOSION HAZARDS: KEEP CONTAINER TIGHTLY CLOSED. ISOLATE FROM HEAT, ELECTRICAL EQUIPMENT, SPARKS AND OPEN FLAME. CLOSED CONTAINERS MAY EXPLODE WHEN EXPOSED TO EXTREME HEAT. DURING EMERGENCY CONDITIONS, OVEREXPOSURE TO DECOMPOSITION PRODUCTS MAY CAUSE A HEALTH HAZARD. SYMPTOMS MAY NOT BE IMMEDIATELY APPARENT. OBTAIN MEDICAL ATTENTION.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL ALONG THE GROUND TO POTENTIAL IGNITION SOURCES AWAY FROM THE MATERIAL HANDLING POINT

NEVER USE WELDING OR CUTTING TORCHES ON OR NEAR CONTAINER EVEN WHEN EMPTY. RESIDUAL VAPOR MAY IGNITE EXPLOSIVELY.

SPECIAL FIREFIGHTING PROCEDURES: WATER MAY BE UNSUITABLE (SEE EXTINGUISHING MEDIA). WATER MAY BE USED TO COOL CLOSED CONTAINERS TO PREVENT PRESSURE BUILD-UP AND POSSIBLE AUTOIGNITION OR EXPLOSION WHEN EXPOSED TO EXTREME HEAT. IF WATER IS USED, FOG NOZZLES ARE PREFERRED. FULL PROTECTIVE EQUIPMENT, INCLUDING SELF-CONTAINED BREATHING APPARATUS, IS NEEDED TO PROTECT FROM ANY HAZARDOUS COMBUSTION PRODUCTS.

SECTION V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: ACUTE: INHALATION: ANESTHETIC. IRRITATION OF THE RESPIRATORY TRACT OR ACUTE NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY THE FOLLOWING PROGRESSIVE STEPS:HEADACHE, DIZZINESS, STAGGERING, CONFUSION, UNCONSCIOUSNESS OR COMA.

SKIN OR EYE CONTACT: IRRITANT

LIQUID CAN BE A SEVERE IRRITANT TO THE EYES.

DIMETHYLETHANOLAMINE CAN BE ABSORBED IN TOXIC AMOUNTS, THROUGH PROLONGED OR REPEATED EXPOSURE

ETHYLENE GLYCOL MONOPROPYL ETHER CAN BE ABSORBED IN TOXIC AMOUNTS, THROUGH PROLONGED OR REPEATED EXPOSURE

ETHYLENE GLYCOL MONOBUTYL ETHER CAN BE ABSORBED IN TOXIC AMOUNTS, THROUGH PROLONGED OR REPEATED EXPOSURE

CHRONIC: OVEREXPOSURE TO ISOBUTYL ALCOHOL HAS BEEN SUGGESTED AS A CAUSE OF ANEMIA AND LIVER ABNORMALITIES IN HUMANS

Spent Enamel

OVEREXPOSURE TO ETHYLENE GLYCOL MONOBUTYL ETHER HAS APPARENTLY BEEN FOUND TO CAUSE ANEMIA LIVER ABNORMALITIES, BLOOD ABNORMALITIES AND DAMAGE TO THE KIDNEYS AND LUNGS IN TESTING OF LABORATORY ANIMALS

SEE ADDITIONAL PRECAUTIONS, SECTION IX

PRIMARY ROUTES OF ENTRY: INHALATION AND/OR DERMAL

EMERGENCY FIRST AID PROCEDURES:

INHALATION: REMOVE TO FRESH AIR. RESTORE BREATHING AS NECESSARY.

SPLASH (EYES): FLUSH IMMEDIATELY WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. TAKE TO A PHYSICIAN FOR MEDICAL TREATMENT.

SPLASH (SKIN): WASH AFFECTED AREAS WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. CONSULT A PHYSICIAN IF IRRITATION PERSISTS.

INGESTION: DO NOT INDUCE VOMITING. CONSULT A PHYSICIAN OR POISON CONTROL CENTER IMMEDIATELY. TREAT SYMPTOMATICALLY.

SECTION VI - REACTIVITY DATA

ILITY: STABLE CONDITIONS TO AVOID: UNKNOWN

INCOMPATIBILITY (MATERIALS TO AVOID): OXIDIZING AGENTS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY PRODUCE FUMES IF HEATED TO DECOMPOSITION. FUMES MAY CONTAIN CARBON MONOXIDE, CARBON DIOXIDE, METHANOL, AMMONIA, FORMALDEHYDE, NITROGEN OXIDES, NITROGEN OXIDES, SULFUR OXIDES

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

Spent Enamel

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL RELEASED OR SPILLED:	REMOVE ALL POTENTIAL SOURCES OF IGNITION (FLAMES, HOT SURFACES, ELECTRICAL, STATIC AND/OR FRICTIONAL SPARKS). AVOID BREATHING VAPORS. VENTILATE AREA. REMOVE WITH INERT ABSORBENT USING NON-SPARKING TOOLS. BEFORE BEGINNING CLEAN-UP, REFER TO HAZARD CAUTIONS IN OTHER SECTIONS OF THIS SHEET.
WASTE DISPOSAL METHOD:	DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS. DO NOT INCINERATE CLOSED CONTAINERS.

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	OUTDOOR OR OPEN AREAS - USE APPROVED MECHANICAL FILTER RESPIRATOR TO REMOVE SOLID AIRBORNE PARTICULATES OF OVERSPRAY DURING SPRAY APPLICATION. RESTRICTED VENTILATION AREAS - USE APPROVED CHEMICAL/MECHANICAL FILTERS DESIGNED TO REMOVE A COMBINATION OF VAPORS AND PARTICULATES. CONFINED AREAS - USE APPROVED AIR LINE TYPE RESPIRATORS OR HOODS.
VENTILATION:	PROVIDE SUFFICIENT VOLUME AND PATTERN TO MAINTAIN TLV-TWA BELOW ACCEPTABLE LIMITS (SEE SECTION II). ELIMINATE IGNITION SOURCE IF FLAMMABLE MIXTURES WILL BE ENCOUNTERED.
PROTECTIVE GLOVES:	REQUIRED FOR PROLONGED OR REPEATED CONTACT; USE LEATHER OR CANVAS GLOVES TO PREVENT SKIN CONTACT.
EYE PROTECTION:	USE APPROVED SAFETY EYEWARE DESIGNED TO PROTECT AGAINST SPLASH OF LIQUIDS.
OTHER PROTECTIVE EQUIPMENT:	PROTECTIVE CAP AND COVERABLES ARE RECOMMENDED. REMOVE AND WASH CONTAMINATED CLOTHING BEFORE RE-USE. WEAR CHEMICAL AND SOLVENT RESISTANT SHOES.

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING:	KEEP CLOSURE TIGHT AND CONTAINER UPRIGHT TO PREVENT LEAKING. STORE CONTAINERS OUT OF SUN AND AWAY FROM HEAT. ALL CONTAINERS SHOULD BE GROUNDED WHEN HANDLING OR TRANSFERRING CONTAINS WATER - DO NOT FREEZE.
PRECAUTIONS:	DO NOT GET IN EYES. AVOID SKIN CONTACT. PREVENT PROLONGED OR REPEATED BREATHING OF VAPOR OR SPRAY MIST. THE HEXAMETHOXYMETHYLMELAMINE RESIN EMPLOYED MAY CONTAIN 0.5% (MAX.-WEIGHT) FORMALDEHYDE. FORMALDEHYDE (CAS NO.50-00-0) HAS A TLV OF 3PPM(OSHA). FORMALDEHYDE HAS BEEN SHOWN TO CAUSE CANCER IN LABORATORY ANIMALS.

HAZARDOUS WASTE CHARACTERIZATION OR DETERMINATION

006

Waste Stream: W/R Red Drum Enamel, CVC Code #38363 — Determination: Hazardous waste

Name: W/R Red Drum Enamel — Hazardous Waste #: D001

CAS No.:

Material Safety Data Sheet: # 10724, A-331 — Options: Recycle or handle as hazardous waste

---

A. Ingredient/Component: Dimethylethanolamine, <5%

Criterion	Applicable	Determination	Rationale	Hazds. Waste #
1. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no			
2. Ignitability ------>	no			
3. Corrosivity ------->	no			
4. Reactivity -------->	no			
5. Toxicity ---------->	no	no lab analysis needed	not a contaminant	

B. Ingredient/Component: Ethylene Glycol Monopropyl Ether, (CAS NO.-2807-30-9), <5%

Criterion	Applicable	Determination	Rationale	Hazds. Waste #
1. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no	N/A	not represented as a pure product	
2. Ignitability ------>	no			
3. Corrosivity ------->	no			
4. Reactivity -------->	no			
5. Toxicity ---------->	no	no lab analysis needed	not a contaminant	

C. Ingredient/Component: Ethylene Glycol Monobutyl Ether, (CAS NO.-111-76-2), 10%

Criterion	Applicable	Determination	Rationale	Hazds. Waste #
1. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no			
2. Ignitability ------>	no			
3. Corrosivity ------->	no			
4. Reactivity -------->	no			
5. Toxicity ---------->	no	no lab analysis needed	not a contaminant	

D. Ingredient/Component: Hexamethoxymethylmelamine, <5%

Criterion	Applicable	Determination	Rationale	Hazds. Waste #
1. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no			
2. Ignitability ------>	no			
3. Corrosivity ------->	no			
4. Reactivity -------->	no			
5. Toxicity ---------->	no	no lab analysis needed	not a contaminant	

E. Ingredient/Component: Isobutyl Alcohol, (CAS NO.-78-83-1), <5%

Criterion	Applicable	Determination	Rationale	Hazds. Waste #
. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no	N/A	not represented as a pure product	
2. Ignitability ------>	no			
3. Corrosivity ------->	no			

HAZARDOUS WASTE CHARACTERIZATION OR DETERMINATION

006 page 2
Waste Stream: Anion Resin, IRA Rohm Haas
Name: W/R Red Drum Enamel
CAS No.:
Material Safety Data Sheet: # 10724, A-331

F. Ingredient/Component: Composite

Criterion	Applicable	Determination	Rationale	Hazdh. Waste #
1. Listed				
a. non-specific ->	no			
b. specific ----->	no			
c. product ------>	no			
2. Ignitability ------>	yes	hazardous waste	flash point is 133°F	D001
3. Corrosivity ------->	no			
4. Reactivity -------->	no			
5. Toxicity ---------->	no			

BARIUM CHLORIDE CHROME RESIDUE

BARIUM CHLORIDE TREATMENT PROCESS

DRAFT

ENWRIGHT LABORATORIES WORKSHEET

(Numerous Samples)

DATE SAMPLED: 5-25-89

CLIENT: ASI

DATE RECEIVED: 6-1-89

PROJECT: BaCl task 9.9

DATE COMPLETED:

LAB CERTIFICATION NO.: 23127

DATE REPORTED:

D01

LAB #	C520.08	09	10	11	12	13	14
SAMPLE ID	54982 4of4	54984 1of4	54984 2of4	54984 3of4	54984 4of4	54986 1of4	54986 2of4
			water w/ chrom				
PARAMETERS							
Ag	0.2	0.6	1.3	0.5	0.4	0.2	0.3
As	39	39	1* 90	40	30	25	22
Ba	1.0	0.7	0.8	0.7	0.7	0.7	0.7
Cd	0.2	0.2	0.3	0.2	0.2	0.2	0.2
Cr	22	21	58	22	18	13	13
		0.5	0.7	0.4	0.5	0.5	0.5
Hg	<0.2						
Pb	0.8	0.3	0.5	0.3	0.2	0.2	0.2
Se	<10	<10	2* <10	<10	<10	<10	<10
QC 1*	As dup	93	%RSD	2.3	spike	recovery	117%
2*	Se dup	<10	%RSD	0	spike	recovery	99%

NOTE:

REPORT TO

INVOICE TO

DRAFT 256

ENWRIGHT LABORATORIES WORKSHEET
(Numerous Samples)

CLIENT: ASI

PROJECT: BaCl, TASK 9.9

LAB CERTIFICATION NO.: 23127

DATE SAMPLED: 5-25-89

DATE RECEIVED: 6-1-89

DATE COMPLETED:

DATE REPORTED:

LAB #	CS20-15	16	17	18	19	20	21	22
SAMPLE ID	54986 3of4	54986 4of4	54987 1of4	54987 2of4	54987 3of4	54987 4of4	54984 River	54 Tr. Sl.
PARAMETERS			water					
Ag	0.2	0.2	0.3	0.2	0.2	0.2	*1 <0.01	0.0
As	15	17	<100	<100	<100	<100	<5	<5
Ba	0.6	0.7	<0.1	<0.1	<0.1	<0.1	*2 <0.1	<0.
Cd	0.2	0.2	<0.01	<0.01	<0.01	<0.01	*3 <0.01	<0.
Cr	7.9 0.5	10 0.6	0.1	0.1	0.1	0.1	*4 <0.05	<0.
Hg			<0.2	<0.2	<0.2	<0.2	*5 <0.2	<0.
Pb	0.2	0.1	0.1	<0.1	<0.1	0.1	*6 <0.1	<0.1
Se	<10	<10	<100	<100	<100	<100	<10	<10

QC #1	Ag dup	0.2	% RSD	0	Spike	Recovery	98%	
#2	Ba dup	0.1	% RSD	0	Spike	Recovery	78%	
#3	Cd dup	<0.01	% RSD	0	Spike	Recovery	97%	
#4	Cr dup	<0.05	% RSD	0	Spike	Recovery	92%	
#5	Hg dup	<0.2	% RSD	0	Spike	Recovery	117%	
#6	Pb dup	<0.1	% RSD	0	Spike	Recovery	93%	

NOTE:

REPORT TO

INVOICE TO

DRAFT 256

ENWRIGHT LABORATORIES WORKSHEET
(Numerous Samples)

DATE SAMPLED: 5-25-89

CLIENT: Advanced Sciences Inc

DATE RECEIVED: 6-1-89

PROJECT: Bacim Chloride TASK 9.9

DATE COMPLETED: 6-9-89

LAB CERTIFICATION NO.: 23127

DATE REPORTED:

	SM1				SM2		
LAB #	C520-01	02	03	04	05	06	07
	54980	54980	54980	54980	54982	54982	54982
SAMPLE ID	1.4	2.4	3.4	4.4	1.4	2.4	3.4
			water w/ chlorin				
PARAMETERS							
Eptox: Ag mg/l	0.5	0.4	0.3	0.3	7* 0.2	0.2	0.2
As µg/l	18	11	8	11	1* 31	37	38
Ba mg/l	0.9	0.7	0.7	0.8	2* 1.3	1.4	1.0
Cd mg/l	<0.01	<0.01	<0.01	<0.01	3* 0.2	0.2	0.2
Cr mg/l	0.4	0.3	0.3	0.3	4* 22	21	22
Hg µg/l	<0.2	<0.2	<0.2	<0.2	5* <0.2	<0.2	<0.2
Pb mg/l	2.4	1.3	1.0	1.2	6* 0.6	0.7	0.8
Se µg/l	<10	<10	<10	<10	8* <10	<10	<10

1* As dup	35	%RSD	8.6	Spike Recovery	99%
2* Ba dup	1.6	%RSD	14.6	Spike Recovery	70%
3* Cd dup	0.3	%RSD	28.3	Spike Recovery	97%
4* Cr dup	24	%RSD	6.2	Spike Recovery	88%
5* Hg dup	<0.2	%RSD	0	Spike Recovery	106%
6* Pb dup	0.6	%RSD	0	Spike Recovery	92%
7* Ag dup	0.2	%RSD	0	Spike Recovery	95%
8* Se dup	<10	%RSD	0	Spike Recovery	103%

NOTE:

REPORT TO ASI attn Ben Foard
120 S. Jefferson Cir. Suite 101
Oak Ridge TN 37830

INVOICE TO ASI
2600 San Mateo N.E Suite
Albuquerque NM 87110

126

MERCURY SPILL RESIDUE

(NO LABORATORY RESULTS AVAILABLE)

SPENT TETRACHLOROETHYLENE

LAUNDRY OPERATIONS

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

RECEIVED 3-21-88

256

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

(Sample = 5)

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35085
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Three (3) soil/sludge samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

	Ignitability	
#1	132° F	Caustic Soda
#3	140° F	Tank 8
#5	128° F	Tetrachlor

Spent Tetrachloroethylene

Analyzed by EPA Method 1010.

Denis H Stagg 129
Approved by

Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

93 9-25

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

256

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615 482 9701

CERTIFICATE OF ANALYSIS

Sample #5 Carbon tetrachloride

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 18, 1988
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

Concentration units are mg/liter (ppm)

Spent Tetrachloroethylene

	#1	#5	#3
Arsenic	<0.2	<0.2	<0.2
Barium	0.370	0.175	0.101
Cadmium	<0.005	0.057	0.465
Chromium	0.12	0.05	5.1**
Lead	0.22	0.58	0.90
Selenium	<0.2	<0.2	<0.2*
Silver	<0.01	<0.01	<0.01
Mercury	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Sample analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.
**Sample analyzed by Standard Addition, Flame Atomic Absorption, EPA Method 7000 Serie

Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical

Sample #1 tetrachloroethylene

PC
ORT OF CHEMICAL ANALYSES
E: Write Firmly — Part 4 must be legible.)

Lab. Nos. 12-9116-27

FLPC-T-200 (REV 5-78)

Lot No.

alyses Requested Specific Gravity, PH, Viscosity

ERIAL Spent Tetrachloroethylene

LAB. NO.	IDENTIFICATION	ANALYTICAL DATA				
		SPG	PH	*VISC.	g/ml BULK DENSITY	
12-9116	1	N/D	4.4	N/D*	0.41	* SOLID AT
17	2	N/D	3.3	N/D*	0.90	ROOM TEMP
18	3	N/D	10.0	N/D*	0.53	pH DETERMINED BY MIXING 100 ml
19	4	1.69	<1	100	N/D	50 ml OF H_2O FOR MINUTES. pH OF
20	5	N/D	N/D	N/D*	0.75	SUPERNATANT LIQUID REPORTED.
21	6	~~0.98~~ 0.99	6.8**	120	N/D	
22	7	"RESULTS ON SEPARATE CARD."				
23	8	1.00	6.6**	50	N/D	** 50 ml OF SAMPLE MIXED WITH 50
24	9	N/D	13.9	N/D***	0.98	H_2O. pH OF H_2O REPORTED.
25	10	"RESULTS ON SEPARATE CARD."				
26	11	1.13	9.2**	415	N/D	*** NOT ENOUGH SAMPLE TO RUN
27	12	N/D	7.3	N/D*	0.64	VISCOUS

Approved By [signature] Date of Report 1-28

UNUSED CAUSTIC CRYSTALS

DECONTAMINATION BUILDING

INVENTORY Nos 144-146

{Sample No. 9 is for INV. Nos. 144-146}

RT OF CHEMICAL ANALYSES

Write Firmly — Part 4 must be legible.)

Lab. Nos. 12-9116-27

Lot No.

ses Requested Specific Gravity, PH, Viscosity

LAB. NO.	IDENTIFICATION	ANALYTICAL DATA				
		SPG	PH	*VISC.	g/ml BULK DENSITY	
12-9116	1	N/D	4.4	N/D*	0.41	* SOLID AT
17	2	N/D	3.3	N/D*	0.50	ROOM TEMP
18	3	N/D	10.0	N/D*	0.53	pH DETERMINED BY MIXING 10g WITH
19	4	1.69	<1	100	N/D	50 ML OF H_2O FOR 5 MINUTES. pH OF
20	5	N/D	N/D	N/D*	0.75	SUPERNATANT LIQUID REPORTED.
21	6	~~0.98~~ 0.99	6.8**	120	N/D	
22	7	"RESULTS ON SEPARATE CARD."				
23	8	1.00	6.6**	50	N/D	** 50 ML OF SAMPLE MIXED WITH 50 ML
24	9	N/D	13.9	N/D***	0.98	H_2O. pH OF H_2O REPORTED.
25	10	"RESULTS ON SEPARATE CARD."				
26	11	1.13	9.2**	415	N/D	*** NOT ENOUGH SAMPLE TO RUN
27	12	N/D	7.3	N/D*	0.64	VISCOUS*

Inventory Nos. 144-146 Unused Caustic Crystals

Approved By [signature] Date of Report 1-28

TECHNOLOGY CORPORATION

SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707 256

CERTIFICATE OF ANALYSIS

{Sample #7}

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) TCLP extract samples received February 5, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are mg/liter (ppm)

METALS ANALYSIS — Unused Caustic Crystals

Inv. Nos 144-146

	#1	#7	#11	#13
Arsenic	1.7	<0.2	<0.2	<0.2
Barium	0.264	0.020	0.344	0.110
Cadmium	<0.005	<0.005	<0.005	<0.005
Chromium	0.64	<0.02	<0.02	0.04
Lead	<0.05	<0.05	<0.05	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01
Mercury	0.0007	<0.0002	0.980	0.0022

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Dennis D. Stagg 133A

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

93-9-85

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RECEIVED 3-21-88

256

CERTIFICATE OF ANALYSIS

Inventory Nos. 144-146
{Sample I.D No. 7}

TO: AS:-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Three (3) sludge samples received January 8, 1988
FMPC Custody Transfer Record 12-29-87

	Ignitability	
→ #7	>212° F	(Unused Caustic Crystals
#11	108° F	
#13	115° F	

Analyzed by EPA Method 1010.

Approved by Laboratory Manager

Title

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10-4-85

INTERNATIONAL TECHNOLOGY CORPORATION

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CERTIFICATE OF ANALYSIS

ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED ITEP 35261
PROJECT CODE 602.09.07
ORDER NUMBER 9 13
PAGE ~~4640 of 14~~

Sample Description: One waste sample received October 31, 1988; FMPC Custody Transfer Record WO:0010

Unused Caustic Crystals

	7/Decont. Crys
Viscosity (cps)	NA
Specific Gravity	1.836
Total Suspended Solids (mg/l)	NA
Particle Size (wt % > 20 mesh)	92.7
Heating Value (BTU/lb)	ND
Moisture (% w/w)	1.25
Ash (% w/w)	91.18
pH	10.68
Chlorine (% w/w)	<0.025
Sulfur (% w/w)	<0.025
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	<0.5
Ignitability (F°)	>212*
Vapor Pressure	ND

NA = Test not applicable to this sample
ND = Not determined

Received January 8, 1988; FMPC Custody Transfer Record 12-29-87

Approved by Snell A. Niel

Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical

93-9-85

SPENT XYLENE

PAINT SPRAY BOOTH

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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256

CERTIFICATE OF ANALYSIS

ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED: January 16, 1989
PROJECT CODE: ITEP 35261
ORDER NUMBER: 602.09.07
PAGE 7 OF 13
464042.14

Sample Description: One waste sample received October 31, 1988; FMPC Custody Transfer Record WO:0010

	Spl 3/Xylene
Viscosity (cps)	3.5
Specific Gravity	0.882
Total Suspended Solids (mg/l)	49.7
Particle Size (wt % > 20 mesh)	<0.01
Heating Value (BTU/lb)	14100
Moisture (% w/w)	24.5
Ash (% w/w)	0.0013
pH	7.43
Chlorine (% w/w)	0.11
Sulfur (% w/w)	0.051
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	0.6
Ignitability (F°)	<68*
Vapor Pressure	ND

ND = Not Determined

*Received January 8, 1988; FMPC Custody Transfer Record 12-29-87

Snell A. Niel 137
Approved by

Laboratory Manager
Title

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35101
ORDER NUMBER: 602.09.02
PAGE 2 OF 2
Job No.: 303317

Sample Description: One (1) solvent sample received January 8, 1988
FMPC Custody Transfer Record 12-29-87

Concentration units are percent by weight

VOLATILE ORGANIC ANALYSIS

	Methylene Chloride	1,1,1-Trichloroethane	Tetrachloroethene	Total Xylenes
Sample #3 Spent Xylene	ND	ND	ND	41.29

Remarks: 0.05% = Quantitation limit
ND = Not detected
< = Detected but at a level less than the quantitation limit

Deryl D Stagg 138
Approved by
Laboratory Manager
Title

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93-9-85

NOT FROM JMC Folder

DC

PORT OF CHEMICAL ANALYSES

TE. Write Firmly — Part 4 must be legible.)

(Spent Xylene)

TUPC-T-200 (REV 5-6-86)

Lab. Nos. 12-9125

Lot No. 256

alyses Requested Specific Gravity, pH,

4

	LAB. NO.	IDENTIFICATION	SPG	PH	(CPS) VISC.		
AL: JMC-2 WAREHOUSE		TOP ORG.	.862	7.7 **	50		
SAMPLES							
OUNT NO: RAC-Ci		BOTTOM AQUEOUS	.997	[redacted] N/A*	[redacted] N/A*		
E SAMPLED							
MITTED BY: J. Cass			* NOT ENOUGH SAMPLE.				
ARKS: Completed by			** 50 ML OF SAMPLE MIXED WITH 50ML H_2O. pH OF H_2O REPORTED				
-29-88			(CPS) - CENTIPOISE				
ata w/ 12-9116							

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Approved By [signature] Date of Report 1-28-88

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MOLD AND CRUCIBLE COATING

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CERTIFICATE OF ANALYSIS

ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED January 16, 1989
PROJECT CODE ITEP 35261
ORDER NUMBER 602.09.07
PAGE 3 OF 13
464042.14

Sample Description: One waste sample received October 31, 1988.
FMPC Custody Transfer Record WO:0010

	4/Beryllium
Viscosity (cps)	NA
Specific Gravity	2.880
Total Suspended Solids (mg/l)	NA
Particle Size (wt % > 20 mesh)	1.87
H ing Value (BTU/lb)	ND
ture (% w/w)	0.06
sh (% w/w)	99.85
pH	7.11
Chlorine (% w/w)	<0.025
Sulfur (% w/w)	0.035
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	<0.5
Ignitability (F°)	ND
Vapor Pressure	ND

NA = Test not applicable to this sample
ND = Not determined

Snell A. Hills
Approved by

Laboratory Manager
Title

141

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93-9-85

Date: 2/02/89 Revision No. 4

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CERTIFICATE OF ANALYSIS

ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED January 16, 1989
PROJECT CODE ITEP 35261
ORDER NUMBER 602.09.07
PAGE 2 OF 13
464042.14

Sample Description: One waste sample received October 31, 1988.
FMPC Custody Transfer Record WO:0010

	3/Beryllium
Viscosity (cps)	NA
Specific Gravity	2.881
Total Suspended Solids (mg/l)	NA
Particle Size (wt % > 20 mesh)	2.17
Heating Value (BTU/lb)	ND
Moisture (% w/w)	0.04
Ash (% w/w)	99.86
pH	7.98
Chlorine (% w/w)	<0.025
Sulfur (% w/w)	0.042
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	<0.5
Ignitability (F°)	140*
Vapor Pressure	ND

NA = Test not applicable to this sample
ND = Not determined

*Received December 14, 1987; FMPC Custody Transfer Record 12-10-87

142

Approved by

Laboratory Manager

Title

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge Tennessee 37831 • 615 483 9707

CERTIFICATE OF ANALYSIS

TO: ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED: January 17, 1989
PROJECT CODE: ITEP 35081
ORDER NUMBER: 602.09.02
PAGE 3 OF 11
464042.14

Sample Description: One (1) sample received December 18, 1987 FMPC Custody Transfer Record 12/14/87. Analyzed as TCLP Extract.

Client Sample ID: Beryllium #3/ #4

Concentration units are mg/liter

Element	TCLP ICP	GFAA/CV	Detection Limits ICP	GFAA/CV
Aluminum	0.62		<0.05	
Antimony	0.98		<0.05	
Arsenic	0.58		<0.2	
Barium	0.783		<0.002	
Beryllium	1.32		<0.001	
Cadmium	<0.002		<0.002	
Chromium	<0.02		<0.02	
Copper	0.27		<0.01	
Iron	0.173		<0.005	
Lead	<0.05		<0.05	
Lithium	0.26		<0.03	
Magnesium	1.08		<0.005	
Manganese	0.034		<0.001	
Mercury		0.0002		<0.0002
Nickel	0.029		<0.02	
Selenium	<0.2		<0.2	
Silver	0.012		<0.01	
Sodium	*		<0.05	
Thallium	<0.3		<0.3	
Titanium	<0.003		<0.003	
Zinc	0.76		<0.01	

* Not Applicable

Snell A. Kiel 143
Approved by

Laboratory Manager
Title

CAUSTIC SODA, SPENT DECONTAMINATION RESIDUE

256

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CERTIFICATE OF ANALYSIS

ASI Fernald/WMCO
ATTN: Janet Carr
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Fernald OH, 45030

DATE REPORTED January 16, 1989
PROJECT CODE ITEP 35261
ORDER NUMBER 602.09.07
PAGE 5 OF 13
464042.14

Sample Description: One waste sample received October 31, 1988.
FMPC Custody Transfer Record WO:0010

Caustic Soda

	2/Caustic Soda
Viscosity (cps)	NA
Specific Gravity	1.668
Total Suspended Solids (mg/l)	NA
article Size (wt % > 20 mesh)	59.0
eating Value (BTU/lb)	ND
Moisture (% w/w)	43.3
Ash (% w/w)	33.62
pH	10.25
Chlorine (% w/w)	0.30
Sulfur (% w/w)	<0.025
Phosphorus (% w/w)	<0.06
Fluorine (% w/w)	<0.025
Cyanide (mg/kg)	<0.5
Ignitability (F°)	ND
Vapor Pressure	ND

NA = Test not applicable to this sample
ND = Not determined

Snell A. Nils 145
Approved by
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation

Date: 2/02/89 Revision No. 4

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CERTIFICATE OF ANALYSIS

D: ASI Fernald/WMCO
ATTN: Janet Carr
7400 Willey Road
Fernald OH, 45030

DATE REPORTED: January 17, 1989
PROJECT CODE: ITEP 35085
ORDER NUMBER: 602.09.02
PAGE 1 OF 13
464042.14

Sample Description: One (1) sample received December 14, 1987 FMPC Custody Transfer Record 12/10/87. Analyzed as TCLP Extracts.

Client Sample ID: Caustic Soda #1/ #2

Concentration units are mg/liter

Caustic Soda

Element	TCLP ICP	GFAA/CV	Det. Limits ICP	GFAA/CV
Aluminum	2.60		<0.05	
Antimony	0.54		<0.05	
Arsenic	<0.2		<0.2	
Barium	0.37		<0.002	
Beryllium	<0.001		<0.001	
Cadmium	<0.005		<0.005	
Chromium	0.12		<0.02	
Copper	0.05		<0.01	
Iron	2.09		<0.005	
Lead	0.22		<0.05	
Lithium	<0.03		<0.03	
Magnesium	0.17		<0.005	
Manganese	0.005		<0.001	
Mercury		<0.0002		<0.0002
Nickel	<0.02		<0.02	
Selenium	<0.2		<0.2	
Silver	<0.01		<0.01	
Sodium	•		<0.05	
Thallium	<0.3		<0.3	
Titanium	0.022		<0.003	
Zinc	0.15		<0.01	

• Not Applicable

Snell A. Miles 146
Approved by

Laboratory Manager
Title

Inventory Nos. 140-141

(Sample # 3 is Caustic Soda.)

MPC
EPORT OF CHEMICAL ANALYSES
(OTE. Write Firmly — Part 4 must be legible.)

Caustic Soda

Lab. Nos. 12-9116-27

FMPC-T-200 (REV 5-8-81)

Lot No.

Analyses Requested Specific Gravity, PH, Viscosity

MATERIAL	LAB. NO.	IDENTIFICATION	ANALYTICAL DATA					
			SPG	PH	*Issc.	g/ml Bulk Density		
	12-9116	1	N/D	4.4	N/D*	0.41	* SOLID A	
	17	2	N/D	3.3	N/D*	0.90	ROOM TEMP	
Inventory Nos. 140-41 →	18	3	N/D	10.0	N/D*	0.53	pH DETERMINED BY MIXING 10g OF	
	19	4	1.69	<1	130	N/D	50 ML OF H_2O FOR MINUTES. pH OF	
	20	5	N/D	N/D	N/D*	0.75	SUPERNATANT LIQUID REPORTED.	
	21	6	~~0.98~~ 0.89	6.8**	120	N/D		
	22	7	"RESULTS ON SEPARATE CARD."					
	23	8	1.00	6.6**	50	N/D	** 50 ML OF SAMPLE MIXED WITH 50 ML H_2O. pH OF H_2O REPORTED.	
	24	9	N/D	13.9	N/D***	0.98		
	25	10	"RESULTS ON SEPARATE CARD."					
	26	11	1.13	9.2**	415	N/D	*** NOT ENOUGH SAMPLE TO RUN	
	27	12	N/D	7.3	N/D*	0.64	VISCOSE	

Approved By [signature] Date of Report 1-28

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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1550 Bear Creek Road • P.O. Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

Inventory No. 140-14 (Sample #1)

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 17, 1988
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Three (3) soil/sludge samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

Caustic Soda

	Ignitability	
#1	132° F	Caustic Soda
#3	140° F	Tank 8
#5	128° F	Tetrachlor

Analyzed by EPA Method 1010.

Denis D. Stagg
Approved by
Laboratory Manager 148
Title

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93-9-85

Inventory No. [illegible]
256

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615 482 9707

CERTIFICATE OF ANALYSIS

Sample #1 for caustic s...

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED March 18, 1988
PROJECT CODE ITEP 35085
ORDER NUMBER 602.09.02
PAGE 2 OF 3
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received December 14, 1987
FMPC Custody Transfer Record 12-10-87

Concentration units are mg/liter (ppm)

Caustic Soda

	Inventory Nos 140-141 #1	#5	#3
Arsenic	<0.2	<0.2	<0.2
Barium	0.370	0.175	0.101
Cadmium	<0.005	0.057	0.465
Chromium	0.12	0.05	5.1**
Lead	0.22	0.58	0.90
Selenium	<0.2	<0.2	<0.2*
Silver	<0.01	<0.01	<0.01
Mercury	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Sample analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.
**Sample analyzed by Standard Addition, Flame Atomic Absorption, EPA Method 7000 Serie

Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing

LABORATORY CHEMICALS

Lab Chemicals

Alphabetical Listing of Chemicals

[illegible]AL	CONTAINER Type	CONTAINER Size	DRUM	LEVEL
Acetanilide	Glass	1 lb	1	1
Ammonium molybdate	Glass	1 lb	1	1
Ammonium molybdate	Glass	1 lb	1	1
Ammonium molybdate	Glass	1 lb	1	1
Ammonium molybdate	Glass	1 lb	1	1
Calcium chloride	Plastic	1 lb	1	1
Calcium chloride	Plastic	1 lb	1	1
Calcium chloride	Plastic	1 lb	1	1
Calcium chloride	Plastic	1 lb	1	1
Iron wire #3	Steel	1 lb	1	1
Metal filings	Glass	4 oz	1	1
Metal oxylate	Glass	500 g	1	1
Metal oxylate	Glass	500 g	1	1
Sodium phosphate	Glass	1 lb	1	1
Sodium phosphate	Glass	1 lb	1	1
Unknown - solid	Glass	4 oz	1	1
Unknown - solid	Glass	4 oz	1	1
Alumina, activated	Glass	1 lb	1	2
Aluminum oxide	Glass	1 lb	1	2
Ammonium carbonate	Glass	1 lb	1	2
Ammonium meta vanadate — P119	Glass	1 lb	1	2
[illegible]ium meta vanadate —	Glass	1 lb	1	2
[illegible]ium phosphate	Glass	1 lb	1	2
[illegible]itric acid — DCC2 (potential)	Glass	1 lb	1	2
Copper metal shot	Glass	1 lb	1	2
Copper metal shot	Glass	1 lb	1	2
Cupric sulfate	Glass	1 lb	1	2
Disulfonic acid, trisodium salt	Glass	4 oz	1	2
Ferrous ammonium sulfate	Glass	1 lb	1	2
Mercuric iodine — DCC9 (pot[illegible]	Glass	4 oz	1	2
Mercurous chloride —	Glass	1 lb	1	2
Potassium chloride	Glass	1 lb	1	2
Potassium nitrate	Glass	1 lb	1	2
Potassium nitrate	Glass	1 lb	1	2
Sodium bisulfate	Glass	1 lb	1	2
Sodium sulfate	Glass	1 lb	1	2
Sodium sulfate	Glass	1 lb	1	2
Tartaric acid — DCC2 (potential)	Glass	1 lb	1	2
Tartaric acid —	Glass	1 lb	1	2
Thorin	Glass	134 g	1	2
Zinc chloride	Glass	1 lb	1	2
Ammonium bifluoride	Glass	1 lb	1	3
Barium hydroxide — DCC5	Glass	1 lb	1	3
Dextrose	Glass	1 lb	1	3
Dimethyl oxalate	Glass	500 g	1	3
Ferric nitrate	Glass	1 lb	1	3
[illegible]gnesium perchlorate	Glass	500 g	1	3
[illegible]delic acid — DCC2 (potential)	Glass	500 g	1	3
[illegible]ndelic acid —	Glass	500 g	1	3
[illegible]andelic acid —	Glass	500 g	1	3
Potassium chloride	Glass	1 lb	1	3

Alphabetical Listing of Chemicals

HE AL	CONTAINER Type	CONTAINER Size	DRUM LEVEL	
Potassium periodate	Glass	0.25 lb	1	3
Sodium borate	Glass	1 lb	1	3
Sodium meta silicate	Glass	1 lb	1	3
Titanium dioxide	Glass	1 lb	1	3
Boric acid	Steel	1 lb	1	4
Calcium carbide	Steel	1 lb	1	4
Chloroacetic acid	Steel		1	4
Dimethylaminobenzaldehyde	Glass		1	4
Magnesium dioxide	Glass	1 lb	1	4
Magnesium sterate	Glass	4 oz	1	4
Mercaptoacetic acid — D002 (potential)	Glass	100 g	1	4
Mercaptoacetic acid	Glass	100 g	1	4
Mercuric oxide — [illegible] (potential)	Glass		1	4
Phenol	Glass	1 lb	1	4
Phenol — U188	Glass	1 lb	1	4
Phenol	Glass	1 lb	1	4
Potassium sulfate	Glass	1 lb	1	4
Sodium oxylate	Glass	1 lb	1	4
Sodium oxylate	Glass	1 lb	1	4
Sodium thioglycollate	Glass		1	4
Thioglycolic acid — D002 (potential)	Glass	100 g	1	4
olphthalein	Glass	4 oz	1	4
nium sulfate	Glass	1 lb	1	4
nknown - powder	Glass		1	4
Unknown - powder	Glass		1	4
Potassium bisulfate	Glass	1 lb	2	1
Rosalic acid — D002 (potential)	Glass	100 g	2	1
Rosalic acid	Glass	100 g	2	1
Stannous chloride	Glass	1 lb	2	1
Unknown - powder	Glass	1 gal	2	1
Unknown - powder	Glass	1 gal	2	1
Vanadium pentoxide — P120	Glass	4 oz	2	1
Zinc acetate	Glass	5 lb	2	1
Calcium nitrate	Plastic	1 lb	2	2
Magnesium perchlorate	Plastic	1 lb	2	2
Molybdic acid — D002 (potential)	Glass	5 lb	2	2
Potassium hydrogen phthalate	Plastic	1 lb	2	2
Potassium permanganate	Glass	1 lb	2	2
Sodium acetate, anhydrous	Glass	1 lb	2	2
Sodium and potassium carbonate	Glass	5 lb	2	2
Sulfamic acid — D002 (potential)	Glass	1 lb	2	2
Unknown - powder	Glass	5 lb	2	2
1,1,2-Trichlorethane — U227	Glass	1 kg	3	1
Ammonium acetate	Glass	1 lb	3	1
mmonium acetate	Glass	500 g	3	1
llodion solution	Glass	15 mL	3	1
ncentrated biodegradable detergen	Glass	4 oz	3	1
lycerol	Glass	1 pt	3	1
Hydrogen peroxide	Glass	1 L	3	1

Alphabetical Listing of Chemicals

CHEMICAL	CONTAINER Type	CONTAINER Size	DRUM LEVEL	
Hydrogen peroxide	Glass	1 L	3	1
Mercaptoacetic acid	Glass	500 g	3	1
n-Butyl acetate	Glass	2 L	3	1
Pyrolidine	Glass	500 g	3	1
Trichloroethylene —11208	Glass	1 kg	3	1
Unknown - liquid	Glass	4 oz	3	1
Calcium nitrate	Plastic	1 lb	1 Oxidiz	
Cobalt nitrate	Glass	0.25 lb	1 Oxidiz	
Cobalt nitrate	Glass	0.25 lb	1 Oxidiz	
Cupric nitrate	Glass	1 lb	1 Oxidiz	
Cupric nitrate	Glass	1 lb	1 Oxidiz	
Ferric nitrate	Glass	1 lb	1 Oxidiz	
Ferric nitrate	Glass	1 lb	1 Oxidiz	
Ferric nitrate	Glass	1 lb	1 Oxidiz	
Ferric nitrate	Glass	1 lb	1 Oxidiz	
Ferric nitrate	Glass	1 lb	1 Oxidiz	
Nickel nitrate	Glass	1 lb	1 Oxidiz	
Potassium nitrate	Glass	1 lb	1 Oxidiz	
Potassium nitrate	Glass	1 lb	1 Oxidiz	
Potassium nitrate	Glass	1 lb	1 Oxidiz	
Potassium nitrate	Glass	1 lb	1 Oxidiz	
[illegible]sium nitrate	Glass	1 lb	1 Oxidiz	
[illegible]m nitrate	Glass	1 lb	1 Oxidiz	
[illegible]odium nitrate	Glass	1 lb	1 Oxidiz	
[illegible]odium nitrate	Glass	1 lb	1 Oxidiz	
Sodium nitrate	Glass	1 lb	1 Oxidiz	
Sodium peroxide	Metal	1 lb	1 Oxidiz	
Sodium peroxide	Metal	1 lb	1 Oxidiz	
Aluminum oxide	Glass	1 lb	2 ORM	
Aluminum oxide	Glass	5 lb	2 ORM	
Calcium chloride	Glass	1 lb	2 ORM	
Calcium chloride	Plastic	1 lb	2 ORM	
Calcium chloride	Glass	1 lb	2 ORM	
Calcium chloride	Glass	1 lb	2 ORM	
Calcium chloride	Glass	1 lb	2 ORM	
Ferric chloride	Glass	1.1 lb	2 ORM	
Ferric sulfate	Glass	1 lb	2 ORM	
Ferric sulfate	Glass	1 lb	2 ORM	
Ferrous ammonium sulfate	Glass	1 lb	2 ORM	
Ferrous chloride	Glass	1 lb	2 ORM	
Ferrous chloride	Glass	1 lb	2 ORM	
Ferrous sulfate	Glass	1 lb	2 ORM	
Magnesium sulfate	Glass	1 lb	2 ORM	
Magnesium sulfate	Glass	1 lb	2 ORM	
Magnesium sulfate	Glass	1 lb	2 ORM	
Magnesium sulfate	Glass	5 lb	2 ORM	
[illegible]gnesium sulfate	Glass	1 lb	2 ORM	
[illegible]gnesium sulfate	Glass	1 lb	2 ORM	
[illegible]gnesium sulfate	Glass	1 lb	2 ORM	
[illegible]odium bromide	Glass	5 lb	2 ORM	
Sodium bromide	Glass	5 lb	2 ORM	

CHEMICAL	CONTAINER Type	CONTAINER Size	DRUM LEVEL
Sodium bromide	Glass	1 lb	2 ORM
Sodium carbonate	Plastic	1 lb	2 ORM
Sodium carbonate	Plastic	1 lb	2 ORM
Sodium carbonate	Glass	5 lb	2 ORM
Sodium sulfate	Glass	1 lb	2 ORM
Sodium sulfate	Glass	1 lb	2 ORM
Sodium sulfate	Glass	1 lb	2 ORM
Sodium sulfate	Glass	1 lb	2 ORM
Sodium sulfate	Glass	5 lb	2 ORM
Sodium sulfate	Glass	1 lb	2 ORM
Sodium sulfate	Plastic	1 lb	2 ORM

INCINERATOR CINDERS

OFF-SITE

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 26, 1988
PROJECT CODE: ITEP 35098
ORDER NUMBER: 602.09.02
PAGE 1 OF 3
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received February 4, 1988
FMPC Custody Transfer Record 10-15-87

Concentration units are mg/liter (ppm)

Incinerator Cinders - Material Not Passing Through Grate or Screen

METALS

	MTC 033 SRC 240 21-68	MTC 018 SRC FYC 11-69	MTC 033 SRC 340 37-70	MTC 033 SRC FYA 1-71	MTC 034 SRC 332 3-72
Arsenic	0.3	<0.2	<0.2	0.9	<0.2*
Barium	1.65	0.20	0.17	0.48	0.23
Cadmium	0.139	<0.005	<0.005	0.122	0.23
Chromium	3.38	<0.02	1.52	0.31	0.10
Lead	0.26	<0.05	<0.05	5.22*	0.14*
Selenium	<0.2*	<0.2	<0.02	<0.2*	<0.2*
Silver	0.03	<0.01	<0.01	0.24	0.79*
Mercury	<0.0002	0.0005	<0.0002	<0.0002	<0.000

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fed. Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by: Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical

OILY SLUDGE

OFF-SITE

~~000 FTA~~

041 FTA
256

ENVIRODYNE ENGINEERS

19161 Lackland Road,
St. Louis, Missouri 63146
(314) 434-6960

REPORT OF ANALYSIS

CLIENT: Judy Stone
Weston
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: August 9, 1988
SAMPLE ANALYZED: Eight samples analyzed for TCLP Metals.

DATE RECEIVED: June 21, 1988
P.O. #:

RmI Oily Sludge

PARAMETER	8806-704-006 IFTA-D041-6651
ARSENIC (MG/L)	< 0.20
BARIUM (MG/L)	61.2
CADMIUM (MG/L)	0.031
CHROMIUM (MG/L)	< 0.010
LEAD (MG/L)	19.5
MERCURY (UG/L)	0.32
SELENIUM (MG/L)	< 0.20
SILVER (MG/L)	0.019

041 FTA

256

ENVIRODYNE ENGINEERS

12161 Lackland Road
St. Louis, Missouri 63146
(314) 434-6960

REPORT OF ANALYSIS

CLIENT: Judy Stone
Weston
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: August 9, 1988
SAMPLE ANALYSIS: Eight samples analyzed for TCLP Metals.

DATE RECEIVED: June 21, 1988
P.O. #:

RMI Oily Sludge

PARAMETER	8806-704-002 5059-2-FTA-1[illegible]
ARSENIC (MG/L)	< 0.20
BARIUM (MG/L)	79.9
CADMIUM (MG/L)	0.006
CHROMIUM (MG/L)	< 0.010
LEAD (MG/L)	127
MERCURY (UG/L)	< 0.20
SELENIUM (MG/L)	< 0.20
SILVER (MG/L)	0.019

APPROVED:

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10545 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 19, 1988
PROJECT CODE: TEP 35035-Corrected Certificate
ORDER NUMBER: 602.09.02
PAGE 12 OF 12
Job No.: 303317

RMI Oily Sludge

Sample Description: Nine (9) TCLP extract samples received September 17, 1987

Concentration units are mg/liter (ppm)

TCLP METALS

Sample No.	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
41-23 MTC 061 SRC 413	3.5	0.542	0.043	0.312	<2.0	0.52†	1.31	<0.0002
5 MTC 041 SRC FTA	0.24	66.4	0.028	[illegible]	20.[illegible]*	<0.2†	0.15	<0.0002
13-29 MTC 065 SRC 400	0.010*	0.736	0.018	0.03	[illegible]*	0.035*	0.42	0.0002
4-30 MTC 065 SRC 429	0.050*	0.732	0.239	0.50	0.013*	0.068*	<0.01*	<0.0002
24-36 MTC 101 SRC 534	0.015*	0.713	0.031	<0.02	<1.0	0.113*	1.30	<0.0002
10-37 MTC 132 SRC 535	0.050*	0.514	0.027	0.10	<1.0	0.114*	1.25	<0.0002
3-38 MTC 101 SRC FTA	0.012*	36.6	0.011	0.72	<0.5	<0.2†	0.37	<0.0002
11-45 MTC 069 SRC FTA	0.043*	[illegible]	0.017	0.17	<2.0	**	1.37	<0.0002
22-48 MTC 069 SRC FVC	1.5	0.388	0.039	0.06	<0.5	<0.2†	0.59	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40543-40653.

Analyzed by EPA Method 6010 and Cold Vapor EPA Method 7471 for mercury, except for those indicated.

†Analyzed by Furnace Atomic Emission, ICP EPA Method 6010.

Analyzed by Standard Additions, Graphite Furnace EPA 7000 methods.

*See narrative

Approved by: Laboratory Manager
Title

160

BARIUM CHLORIDE SALT

OFF-SITE

Controls for Environmental Pollution, Inc.
P.O. BOX 5351 • Santa Fe, New Mexico 87502
IN STATE 505/982-9F
OUT OF STATE 800/548-21__

REPORT OF ANALYSIS

LAB # 88-534

LE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/l EP TOX	
Bath Brick #1	not specified	Silver	<0.01	
		Arsenic	<0.01	
		Barium	901	
		Cadmium	<0.001	
		Chromium	<0.01	
		Mercury	<0.0004	
		Lead	<0.01	
		Selenium	<0.01	
		Gross Beta	32.9+/-1.6	(pCi/gram)
		Total Uranium	36	(ug/gram)
		Gamma Spectralanalysis	ND	(pCi/gram)
		Technetium-99	<0.3	(pCi/gram)
		Uranium-235	0.44+/-0.10	(pCi/gram)
		Uranium-238	12.0+/-0.48	(pCi/gram)

Barium Chloride
RMI

161A

256

Controls for Environ...
P.O. BOX 5351 • Santa Fe, New Mexico 8...

OUT OF STATE ...

LAB # ...7-334

REPORT OF ANALYSIS

E 3

PLE IDENTIFICATION	DATE COLLECTED	TYPE OF ANALYSIS	mg/l EP TOX
t Bath Brick #2	not specified	Silver	<0.01 ppm
		Arsenic	<0.01
		Barium	5002
		Cadmium	0.001
		Chromium	0.03
		Mercury	<0.0004
		Lead	<0.01
		Selenium	<0.01
		Gross Beta	1067.8+/-8.4 (pCi/gram)
		Total Uranium	308 (ug/gram)
		Gamma Spectralanalysis	ND (pCi/gram)
		Technetium-99	0.4+/-0.3 (pCi/gram)
		Uranium-235	3.85+/-0.30 (pCi/gram)
		Uranium-238	104.1+/-7.3 (pCi/gram)

Source

Screen #5

Screen 7

Screen 6

Screen 8

Inventory No. 435 496, 516, 524, 380-385, 387, 388, 390-395, 407, 408-410, 412-430, 498, 499, 511-515, 517, 522, 525, 280-282, 386, 389, 396-402, 411, 431-434, 497, 500-510, 518-521, 526-553.

256

Screen #1

MAJOR COMPOUNDS

Milled RMI Salt (NLT2317)

Component	Weight Percent
	>1%
Barium (Ba)	23.4 WT.%
Uranium (U)	20.8
Potassium (K)	9.89
Sodium (Na)	5.37
Copper (Cu)	1.72
Iron (Fe)	1.14
Carbon (C)	0.08 } <1%
Nickel (Ni)	0.02 }
Chlorine (Cl)	37.58*

Samples analyzed by FMPC Analytical Laboratory in Spring of 1986.

*Calculated value - not an analytical result

Fots 13 4

ENVIRONMENTAL TECHNOLOGY

ANALYTICAL SERVICES

[illegible] • [illegible] • [illegible] 37831 • [illegible] 9707

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 19, 1988
PROJECT CODE: TEP 35035-Corrected Certificate
ORDER NUMBER: 602.09.02
PAGE 3 OF 12
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received September 17, 1987

Concentration units are mg/liter (ppm)

$PdCl_2$ Furnace Salt - RMI

TCLP METALS

	MTC 001 SRC FTA 8-10	MTC 001 SRC 66C 3-12	MTC 002 SRC 33S 5-14
Arsenic	<0.2	0.2	0.9
Barium	0.[illegible]3	2.75	0.501
Cadmium	0.[illegible]2	0.013	0.036
Chromium	<0.02	0.03	0.05
Lead	<0.05	<0.05	<0.5
Selenium	<0.2	<0.2	<0.2
Silver	<0.01	0.07	0.56
Mercury	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Deny P. E. Stagg
Laboratory Manager
Title

164

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

93-9-65

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 15, 1988

PROJECT NO.: 3222-00360

METHOD USED:

$BaCl_2$ Furnace Salt

PARAMETER	UNITS	3060-6903	BENCH SPIKE
ARSENIC	(UG/L)	0.457	[illegible]
BARIUM	(MG/L)	9280	[illegible]
CADMIUM	(MG/L)	< 0.005	[illegible]
CHROMIUM	(MG/L)	0.641	[illegible]
LEAD	(MG/L)	0.287	[illegible]
MERCURY	(UG/L)	< 0.2	100
SILVER	(MG/L)	0.117	[illegible]
SELENIUM	(MG/L)	< 0.2	[illegible]

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35098
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received February 4, 1988
FMPC Custody Transfer Record 10-15-87

Concentration units are mg/liter (ppm)

$BaCl_2$ Furnace Salt Sludges

METALS	MTC 069 SRC FTA 5-79	MTC 044 SRC FTA 1-82	MTC 065 SRC 731 1-83
Arsenic	<0.2*	0.5	<0.2*
Barium	0.45	14,100	0.04
Cadmium	0.023	0.022	0.025
Chromium	0.27	1.28	0.03
Lead	2.62*	<0.05	1.78
Selenium	<0.2*	<0.2*	<0.2*
Silver	<0.01*	0.14	0.41
Mercury	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by: Cheryl D Stagg 166

Laboratory Manager
Title

AALA Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

WET SUMP CAKE

OFF-SITE

069 FTA

256

ENVIRODYNE ENGINEERS

12161 Lackland Road,
St. Louis, Missouri 63146
(314) 434-6960

REVISED SEPTEMBER 15, 1988

REPORT OF ANALYSIS Wet Sump or Filter Cake, (Sodium uranate) Non-Oily and Non-Halide

CLIENT: Judy Stone
Weston
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

REPORT DATE: August 9, 1988
SAMPLE ANALYZED: Eight samples analyzed for TCLP Metals.

DATE RECEIVED: June 21, 1988
P.O. #:

PROJ. #: 3222-00471

PARAMETER	8806-704-001 5053-FTA-D069
ARSENIC (MG/L)	13.1
BARIUM (MG/L)	1.95
CADMIUM (MG/L)	1.39
CHROMIUM (MG/L)	0.41
LEAD (MG/L)	19.0
MERCURY (UG/L)	< 0.20
SELENIUM (MG/L)	< 2.0
SILVER (MG/L)	0.054

See reverse side for "STANDARD CLAUSES".

disk 32/jag

APPROVED: Lisa A. Leehy

168

SPENT 1,1,1-TRICHLOROETHANE

OFF-SITE

Tank 5

256

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 22, 1988
PROJECT CODE ITEP 35080
ORDER NUMBER 602.09.02
PAGE 2 OF 2
Job No.: 303317

Sample Description: Four (4) TCLP extract samples and one (1) TCLP blank received December 17, 1987

Concentration units are mg/liter (ppm)

Screen # 5

Separate Samples of Tanks

	Sample # 1 Foot*	3 Foot	6 Foot	9 Foot	Blank
Aluminum	3.58 PPM	0.08 PPM	<0.05 PPM	<0.05 PPM	<0.05
Antimony	<0.05	0.29	0.11	<0.05	<0.05
Arsenic	0.46	0.34	0.24	<0.2	<0.2
Barium	0.20	0.765	0.612	0.789	<0.002
Beryllium	0.002	0.0029	0.009	0.008	<0.001
Cadmium	0.425	0.002	<0.002	<0.002	<0.002
Chromium	0.18	<0.02	<0.02	<0.02	<0.02
Copper	19.0	0.51	0.22	0.31	<0.01
Iron	15.8	0.32	0.29	0.29	<0.005
Lead	0.05	<0.05	<0.05	<0.05	<0.05
Lithium	0.40	<0.03	0.36	0.20	<0.03
Magnesium	49.7	0.07	0.05	0.01	<0.005
Manganese	19.1	0.03	<0.001	<0.001	<0.001
Nickel	2.31	<0.02	<0.02	<0.02	<0.02
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	0.02	<0.01	<0.01	<0.01	<0.01
Sodium	5,900	1,410	1,340	1,330	1.10
Thallium	<0.3	<0.3	<0.3	<0.3	<0.3
Titanium	0.069	<0.003	<0.003	<0.003	<0.003
Zinc	54.4	0.90	0.30	0.37	<0.01
Mercury	0.001	<0.0002	<0.0002	<0.0002	<0.0002

Sample at 1 Foot analyzed as total metals.

170

Approved by Deryl C. Stagg
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707

RECEIVED 3-21-88

25

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: March 17, 1988
PROJECT CODE: ITEP 35080
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Four (4) liquid samples received December 17, 1987
FMPC Custody Transfer Record 11-6-87

Screen #1

Seperate Samples for Tests

			Ignitability
Sample #	1 Foot	Flash point(F)	84° F
Sample #	3 Foot		<68° F
Sample #	6 Foot		68° F
Sample #	9 Foot		<68° F

Analyzed by EPA Method 1010.

Denis D. Stagg 171

Approved by Laboratory Manager

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

93-9-85

TANK 5

256

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 22, 1988
PROJECT CODE ITEP 35080
ORDER NUMBER 602.09.02
PAGE 1 OF 2
Job No.: 303317

Sample Description: Four (4) TCLP extract samples and one (1) TCLP blank received December 17, 1987

Screen # 1

MAJOR COMPOUNDS

All Sample samples of TANK 5

	Blank (µg/liter)	Sample # 1 Foot	Sample # 3 Foot	Sample # 6 Foot	Sample # 9 Foot
Methylene Chloride	<5 WT.%	ND WT.%	ND WT.%	ND WT.%	ND WT.%
1,1,1-Trichloroethane	7	9	55	61	98
Tetrachloroethene	ND	ND	ND	ND	ND

ND = Not detected.

Analyzed by EPA Method 624.

Approved by Laboratory Manager 172

Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

RCRA STORAGE AREA - PILOT PLANT BULK STORAGE TANKS
Storage capacity = 2 - 10,000 gallon stainless steel tanks
Storage tank T-5 2/20/87 measured volume = 7,954 gallons
Storage tank T-6 2/20/87 measured volume = 4,877 gallons

Storage tank T-5

Accum. Date	Number of drums added	Lot Number	Material Description
4/13/84	16	S000-YAQ-0013-0001	Bulk storage tank T-5 contains the spent solvent 1,1,1 - trichloroethane 1,1,1 - trichloroethane and mineral spirits. These materials are hazardous/radioactive mixed wastes. EPA I.D. No. F001
4/16/84	49	S000-YAQ-0013-0001	
4/17/84	15	S000-YAQ-0013-0001	
4/18/84	44	S000-YAQ-0013-0001	
4/19/84	21	S000-YAQ-0013-0001	
4/23/84	20	S000-YAQ-0013-0001	

Storage tank T-6

Accum. Date	Number of drums added	Lot Number	Material Description
1/23/84	8	S000-YAQ-0013-0001	Bulk storage tank T-5 contains the spent solvent 1,1,1 - trichloroethane 1,1,1 - trichloroethane and mineral spirits. These materials are hazardous/radioactive mixed wastes. EPA I.D. No. F001
1/24/84	26	S000-YAQ-0013-0001	
1/25/84	46	S000-YAQ-0013-0001	
1/26/84	36	S000-YAQ-0013-0001	
1/27/84	27	S000-YAQ-0013-0001	

1,1,1-TRICHLOROETHANE STILL BOTTOMS

OFF-SITE

1,1,1-TCA
Still Bottoms

DAC 5456 256

METAL ANALYSIS

Elements	µg/g	Elements	µg/g
Al	5,810	Mg	<0.119
As	6.4	Mn	4,100
Ba	<2.96	Ni	330
Be	20.0	Se	90
Ca	36,000	Ti	<1.44
Cd	9.0	Zn	260
Cr	2,500	Sb	3,290
Cu	590	Tl	<10.0
Fe	1,600		<10.0
K	60		
Na	240		
Pb	4.0		

RADIONUCLIDES

Isotope	Microcuries / gram
Te	784x10^{-6}
^{3}H	<50x10^{-6}
^{14}C	78x10^{-6}
^{36}Cl	101x10^{-6}
^{125}I	N/A
^{131}I	N/A
^{32}P	N/A
^{237}Np	<2X10^{-6}
^{238}Pu	<0.1x10^{-6}
^{239}Pu	< 0.1X10^{-6}

Inventory Nos. 71-95, 125, 359, 127-139, 358, 350-352, 362, 334.

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WASTE ANALYSIS
Parameters

DAC 5456

Major Compounds (greater than 1%)	Concentration (Wt%)
1,1,1- Trichloroethane	4.4

Specific Components		Concentration	
Chlorine (Cl)		1.3	Wt%
Sulfur (S) (Sulfate SO_4)		0.36	Wt%
Phosphorus (P)		0.0033	Wt%
Fluorine (F)		0.04	Wt%
Ash		42.0	Wt%
Water		16.0	Wt%
Cyanide		0.0004	Wt%
PCB		<0.002	Wt%
Uranium (total)	average	418	ug/g
U_{235} Assay	average	0.77	Wt%

PHYSICAL PROPERTIES

Sp.Gr.	.898
Viscosity (CP)	** N/A
Flash Point (°F)	>140
VAPOR Pressure (mm Hg)	N/A
Suspended Solids (Wt%) 103 C	N/A
Size (Wt% >20 mesh)	N/A
pH	11.5
Heating Value Btu/lb	* WNC
Number of Phases	1

* WNC - Would not combust ASTM:D230-76

** Solid at room temperature

METAL ANALYSIS

Elements	µg/g	Elements	µg/g
Ag	263.00	Mg	0.092
Al	1.4	Mn	220
As	<3.25	Mo	83
B	0.34	Ni	30
Ba	2900	Se	<1.16
Be	<1	Tl	≤ 5
Ca	6800	Zn	64700
Cd	40	Sb	<10
Co	350	Tl	<10
Cr	40		
Cu	20		
Fe	<1		

RADIONUCLIDES

Isotope	Microcuries / gram
Te	410×10^{-6}
^{3}H	$< 50 \times 10^{-6}$
^{14}C	$< 60 \times 10^{-6}$
^{36}Cl	$< 80 \times 10^{-6}$
^{125}I	N/A
^{131}I	N/A
^{32}P	N/A
^{237}Np	$< 2 \times 10^{-6}$
^{238}Pu	$< 0.1 \times 10^{-6}$
^{239}Pu	$< 0.1 \times 10^{-6}$

WASTE ANALYSIS
Parameters

DAC 5618

Major Compounds (greater than 1%)	Concentration (Wt%)
1,1,1-trichloroethane	44.0

Specific Components		Concentration	
Chlorine (Cl)		18.0	Wt%
Sulfur (S) (SO_4)		0.33	Wt%
Phosphorus (P)		0.0027	Wt%
Fluorine (F)		0.03	Wt%
Ash		3.4	Wt%
Water		21.0	Wt%
Cyanide		0.0007	Wt%
PCB		0.0019	Wt%
Uranium (total)	Average	183	ug/g
U_{235} Assay	Average	.86	Wt%

PHYSICAL PROPERTIES

Sp.Gr.	1.121
Viscosity (CP)	607
Flash Point (°F)	[illegible]
Vapor Pressure(mm Hg)	53.2
Suspended Solids (Wt%) 103 C	N/A
Size (Wt% >20 mesh)	N/A
pH	4.5
Heating Value Btu/lb	7300
Number of Phases	1

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

577-580, 15
584-586,
354, 355

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35091
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: One (1) TCLP extract sample received January 22, 1988
FMPC Custody Transfer Record 1-15-88

Concentration units are mg/liter (ppm)

1,1,1-TCA
St 1 Bottoms

METALS

	#2
Arsenic	<0.2
Barium	0.633
Cadmium	<0.005
Chromium	<0.02
Lead	<0.05
Selenium	<0.2
Silver	<0.01
Mercury	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Dennis D. Stagg 179
Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

SPENT METHYLENE CHLORIDE AND TETRACHLOROETHYLENE OFF-SITE

NUS CORPORATION

Laboratory Services Group
5350 Campbell's Run Road
Pittsburgh, PA 15205
412-788-1080

REMIT TO:
Park West Two
Cliff Mine Road
Pittsburgh, PA 15275

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Spent Methylene Chloride
+ Tetrachloroethylene

LAB ANALYSIS REPORT

NUS CLIENT NO: 909702
NUS SAMPLE NO: 17051094
VENDOR NO: 07659100
WORK ORDER NO: 55830
DATE RECEIVED: 05/20/87

CLIENT NAME: RMI TITANIUM COMPANY
ADDRESS: P.O. BOX 579
ASHTABULA, OH 44004

REPORT DATE: 07/28/87

ATTENTION: MR. RICK MASON

Sample #2

SAMPLE IDENTIFICATION: WATER SAMPLE Drum No. 83-6A WATER PHASE 83-6A

TEST	DETERMINATION	RESULTS	UNITS
M010	Aluminum (Al)	0.4	mg/l
M030	Arsenic (As)	< 0.001	mg/l
M040	Barium (Ba)	0.1	mg/l
M090	Cadmium (Cd)	< 0.005	mg/l
M140	Chromium (Cr)	0.01	mg/l
M160	Copper (Cu)	0.32	mg/l
M190	Iron (Fe)	7	mg/l
M200	Lead (Pb)	1.9	mg/l
M220	Lithium (Li)	0.06	mg/l
M230	Magnesium (Mg)	8.6	mg/l
M240	Manganese (Mn)	0.26	mg/l
M250	Mercury (Hg)	< 0.0008	mg/l
M270	Nickel (Ni)	< 0.03	mg/l
M290	Selenium (Se)	< 0.004	mg/l
M300	Silver (Ag)	< 0.01	mg/l
M310	Sodium (Na)	42	mg/l
M350	Titanium (Ti)	< 0.5	mg/l
M390	Zinc (Zn)	47	mg/l
R808	Uranium, Total	5.9	mg/l
S096	Fluoride, Total	15	mg/l
M130	Chloride (Cl)	63	mg/l
M270	Cyanide, Total (CN)	0.24	mg/l
M490	pH	1.2	
M540	Phosphorus, Total (P)	2.3	mg/l
M610	Solids, Suspended at 103 C	230	mg/l
M620	Solids, Total at 103 C	2140	mg/l
M625	Solids, Total Vol at 550 C	1750	mg/l
M765	Total Sulfur (S)-gravimetric	12	mg/l

COMMENTS:

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Reviewed and Approved by: JMC

CLIENT ORIGIN

CONTAMINATED ALUMINA-SODA LIME

OFF-SITE

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 25, 1988
PROJECT CODE: ITEP 35094
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Concentration units are mg/liter (ppm)

Contaminated Alumina-Soda Lime

METALS	MTC 018 SRC FXC 11-63	MTC 033 SRC 240 25-66	MTC 163 SRC 112 63-67
Arsenic	<0.2*	<0.2	0.4*
Barium	147	2.50	2.18
Cadmium	<0.005	0.020	<0.005
Chromium	<0.02	<0.02	0.33
Lead	<0.05*	<0.05	<0.05*
Selenium	<0.2*	<0.2	<0.3*
Silver	0.14	<0.01	0.06
Mercury	0.0985	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fe
Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

183

Approved by Laboratory Manager
Title

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INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 26, 1988
PROJECT CODE: ITEP 35098
ORDER NUMBER: 602.09.02
PAGE 1 OF 3
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received February 4, 1988
FMPC Custody Transfer Record 10-15-87

Concentration units are mg/liter (ppm)

Contaminated Alumina - Soda Lime

METALS	MTC 033 SRC 24C 21-68	MTC 018 SRC FYC 11-69	MTC 033 SRC 3-[illegible] 37-7[illegible]	MTC 033 SRC FYA 1-71	MTC 04[illegible] SRC 73[illegible] 3-72
Arsenic	0.3	<0.2	<0.2	0.9	<0.2*
Barium	1.65	0.20	0.17	0.48	0.23
Cadmium	0.139	<0.005	<0.005	0.122	0.23
Chromium	3.38	<0.02	1.50	0.31	0.10
Lead	0.26	<0.05	<0.05	5.22*	0.14*
Selenium	<0.2*	<0.2	<0.02	<0.2*	<0.2*
Silver	0.03	<0.01	<0.01	0.24	0.79*
Mercury	<0.0002	0.0005	<0.0002	<0.0002	<0.000[illegible]

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Deryl A Stagg 184
Approved by
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical

OILY SLUDGE

PLANTS 6 AND 9 CASTING AND WATER TREATMENT

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

039 0 920
MTC SRC

256

Waste: Oily sludges.

Material Type Code: 039

Source(s): 920

Material Description: Plant 9 casting; enriched %U235 not specified; Consists of material cleaned out of the ram pit. Could contain uranium oxide dust, grease, oil, water, graphite, uranium, and anything else that could have fallen into the pit.

Description of Generating Process(es): The bottom part of the casting furnace is raised and lowered using a vertical hydraulic ram. The ram pit in under the furnace floor and houses the mechanicals and ram when it is lowered.

Provide Material and Process codes where applicable:

[MTC]	---->	[SRC]	---->	[MTC]	---->	[SRC]	---->	[MTC]
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or sources which may be assigned to this material? Unknown

Is this waste chemically or physically similar to another waste for which analysis data are available? Unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Oily sludges

Will contain grease and oil.

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:
Should not exhibit any of the above characteristics.

Barbara L. Krupa August 4, 1989

Waste: Oily sludges

Material Type Code: 039

Source(s): 965

Material Description: Oily sludges separated from enriched waste water (%U^{235} not specified) in the Plant 9 Water Treating area. This can contain lubricating oils, soluble oils, hydraulic oils, and sludges of varying compositions. The composition of this material will vary depending on what additional materials are introduced into the sumps.

Description of Generating Process(es): The oily sludge is the material which separates from the waste water when the water is acidified with nitric acid.

Provide Material and Process codes where applicable:

(MTC) ---->	(SRC) ---->	(MTC) ---->	(SRC) ---->	(MTC)
Precursor(s)	Generating Process	Material	Processing/ Treatment	New Material/ Code

Are there other material codes or sources which may be assigned to this material? Unknown

Is this waste chemically or physically similar to another waste for which analysis data are available? Unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

0390965

Oily sludges

There is the possibility that some solvents/organics could enter the sump system (spills, etc.). Oils are organics. 256

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:
The oily sludge separates when the waste water is acidified with nitric acid to a pH of <1. The sludge will contain residual acid. The oily sludge is neutralized after drumming with lime.

Barbara L. Krupa August 4, 1989

OILY SLUDGE

PLANT 8

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 29, 1988
PROJECT CODE ITEP 35072
ORDER NUMBER 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Five (5) TCLP extract samples received December 8, 1987
FMPC Custody Transfer Record 11-30-87

Concentration units are mg/liter (ppm)

Sludges, oily - suspect RCRA for lead - to be re-analyzed

Plant 8

METALS

	MTC 015 SRC 2/3 #1	MTC 015 SRC 8 #3	MTC 015 039 SRC 8 #7	MTC 015 SRC 5 #5	MTC 015 SRC 9 #8
Arsenic	0.4	1.10	0.2	0.75	0.6
Barium	1.17	0.272	0.025	0.027	1.46
Cadmium	0.025	0.022	0.006	0.055	0.006
Chromium	0.07	0.52	<0.02	0.18	0.02
Lead	95.6*	27.4*	0.42	1.2	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01	0.21
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by
Laboratory Manager
Title

NON-OILY SLUDGE

GARAGE AND PLANT 6

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 29, 1988
PROJECT CODE: ITEP 35093
ORDER NUMBER: 602.09.02
PAGE 1 OF 1
Job No.: 303317

Sample Description: Four (4) TCLP extract samples received January 22, 1988
FMPC Custody Transfer Record 9-3-87

Concentration units are mg/liter (ppm)

METALS

	~~Plant 6~~ Non-City Sludge MTC 042 SRC 643 9-53	MTC 041 SRC 642 4-54	MTC 066 SRC 643 1-55	MTC 044 SRC 643 5-57
Arsenic	0.36	3.3	0.8	1.2
Barium	0.747	0.467	0.602	0.905
Cadmium	0.008	0.020	0.053	0.016
Chromium	<0.02	0.32†	0.11	1.33
Lead	<0.05	2.47	0.54	<0.05
Selenium	<0.2*	<0.2*	<0.2*	<0.2*
Silver	0.20	1.13	0.33	0.14
Mercury	<0.0002	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fed Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

†Sample analyzed by Standard Addition, Flame Atomic Absorption.

Approved by: Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

Sent over Daily 7/6/

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS - PAGE 2

CLIENT: Weston, Inc.

Lon-City Sludge Plant 6

VOA COMPOUND	DETECTION LIMIT (ug/l)	[illegible] (ug/l)
ACETONE	10	[illegible]
BENZENE	5	ND
BROMOFORM	5	ND
CARBON TETRACHLORIDE	5	ND
CHLOROBENZENE	5	ND
CHLOROETHANE	10	ND
CHLOROFORM	5	ND
1,1-DICHLOROETHANE	5	ND
1,2-DICHLOROETHANE	5	ND
1,1-DICHLOROETHYLENE	5	ND
ETHYL BENZENE	5	ND
METHYLENE CHLORIDE	5	[illegible]
4-METHYL-2-PENTANONE	10	[illegible]
1,1,2,2-TETRACHLOROETHANE	5	ND
TOLUENE	5	ND
TRICHLOROETHENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND
1,1,2-TRICHLOROETHANE	5	ND
VINYL CHLORIDE	10	ND
XYLENE	5	ND

SURROGATE COMPOUNDS	PERCENT RECOVERY
1,2-DICHLOROETHANE-D4	108
TOLUENE-D8	106
p-BFB	106

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471

METHOD USED:

Non-City Sludge
Plant 6

PARAMETER	UNITS	D042-0268	BENCH SPIKE
ARSENIC	(MG/L)	0.684	111
BARIUM	(MG/L)	0.574	95
CADMIUM	(MG/L)	0.056	59
CHROMIUM	(MG/L)	< 0.10	111
LEAD	(MG/L)	0.803	114
MERCURY	(UG/L)	< 0.2	115
SELENIUM	(MG/L)	< 0.20	10[illegible]
SILVER	(MG/L)	0.146	9[illegible]

NON-OILY SLUDGE

PLANT 9

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

042 MTC 940 SRC

Waste [illegible]

Material Type Code 042

Source(s) 940 Pit 9 Manager

Material Description [illegible]

Description of Generating Process(es) [illegible]

Provide Material and Process codes where applicable:

[MTC]	---->	[SRC]	---->	[MTC]	---->	[SRC]	---->	[MTC]
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material?

Is this waste chemically or physically similar to another waste for which analysis data are available?

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Sludges cleanout, non-oily, for roasting

Documentation....(cont.) 2 MTC 042 SRC 940

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

Name Date

NON-OILY SLUDGE

PLANT 5

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

046 530
MTC SRC

Waste Sludges, Non-oily, for oxidation, including High or Low Free

Material Type Code 046

Source(s) 530

Material Description Residues from all the Floor Sumps in Plant 5 (U_3O_8, Dirt, U-metal, Machine Tooling Coolant, Sodium nitrilotriacetate (soap), Hilco ~~oil~~ reclaimed oil).

Description of Generating Process(es) Sumps are located through out plant 5 for the purpose of collecting liquids generated in cleaning up the plant enviornment. The two major sources of liquids are from one, the end of the day water hosing down around equipment and the floor areas, the other ~~two~~ is the draining of floor scrubber spent liquids into the sumps. Other sources do exist, however I am not certain what they are. Oil leaking from equipment is dikes with pads, merco-dri, and pigs to prevent it from leaving the equipment ared. ~~Sometimes~~ Fork trucks also leak oil on to the plant floor. In both these cases it is possible for the oils (for severe leaks to be picked up by a floor scrubber & deposited into a sump

Provide Material and Process codes where applicable:

(MTC)	---->	530 (SRC)	---->	046 (MTC)	---->	(SRC)	---->	(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material?

Is this waste chemically or physically similar to another waste for which analysis data are available?

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Sludges, non-oily, for oxidation, including high or low free metals

Documentation....(cont.) 2

"MTC" "SRC"

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Attached is a list of different oils & lubricants historically used in plants.

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

C. R. Palmer 7-31-89

Name Date

WET SUMP FILTER CAKE, NON-OILY

PLANT 6

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • Oak Ridge Tennessee 37831 • 615 482 9107

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 19, 1988
PROJECT CODE ITEP 35035-Corrected Certificate
ORDER NUMBER 602.09.02
PAGE 1 OF 12
Job No.: 303317

Sample Description: Four (4) TCLP extract samples received September 17, 1987

Concentration units are mg/liter (ppm)

Wet Sumps
Filter Cake
Non-Oily

	MTC 017 SRC 516 12-31	TCLP ~~METALS~~ MTC 069 SRC 658 37-32	MTC 065 SRC FTA 15-33	MTC 065 SRC 530 3-34
Arsenic	<0.2	1.1	<0.2	2.2
Barium	0.755	0.494	0.819	0.629
Cadmium	0.002	0.020	0.012	0.037
Chromium	<0.02	0.04	0.06	0.06
Lead	<0.05	<0.5	<0.5	1.1
Selenium	<0.2	<0.2	<0.2	<0.2
Silver	0.02	0.42	0.31	0.81
Mercury	<0.0002	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

203

Approved by Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing as listed in the current AALA Directory of Accredited Laboratories

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

069 D 658
MTC SRC

Waste: Wet sump or filter cake, non-oily and non-halide

Material Type Code: 069

Source(s): 658

Material Description: Wet sump cake filtered from depleted waste water in the Plant 6 Water Treating area. This will contain uranium, flocculant, filter paper, and anything introduced into the sumps which can be precipitated out of solution. The composition of this material will vary depending on what additional materials are introduced into the sumps.

Description of Generating Process(es): Plant 6 Water Treating receives waste water from the Plant 5 and Plant 6 sumps (and formerly Plant 9). Sump cake is the precipitated materials collected when the neutralized waste water in the South 4000 Gallon Tank is filtered.

Provide Material and Process codes where applicable:

[MTC]	---->	[SRC]	---->	[MTC]	---->	[SRC]	---->	[MTC]
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or sources which may be assigned to this material? 069-0-658

Is this waste chemically or physically similar to another waste for which analysis data are available? Unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:
Acidified waste water is neutralized with 50% caustic in the South 4000 Gallon Tank. The target pH is 8-9. However, the pH occssionally exceeds 12.5 (based on Analytical results from the sump liquor).

Barbara L. Krupa August 4, 1989

Waste: Wet sump or filter cake, non-oily and non-halide

Material Type Code: 069

Source(s): 658

Material Description: Wet sump cake filtered from enriched waste water (%U^{235} not specified) in the Plant 6 Water Treating area. This will contain uranium, flocculant, filter paper, and anything introduced into the sumps which can be precipitated out of solution. The composition of this material will vary depending on what additional materials are introduced into the sumps.

Description of Generating Process(es): Plant 6 Water Treating receives waste water from the Plant 5 and Plant 6 sumps (and formerly Plant 9). Sump cake is the precipitated materials collected when the neutralized waste water in the South 4000 Gallon Tank is filtered.

Provide Material and Process codes where applicable:

	---->		---->		---->		---->	
[MTC]		[SRC]		[MTC]		[SRC]		[MTC]
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or sources which may be assigned to this material? 069-D-658

Is this waste chemically or physically similar to another waste for which analysis data are available? Unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:
Acidified waste water is neutralized with 50% caustic in the South 4000 Gallon Tank. The target pH is 8-9. However, the pH occssionally exceeds 12.5 (based on Analytical results from the sump liquor).

Barbara L. Krupa August 4, 1989

DUST COLLECTOR RESIDUES

PLANT 5

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

062 (MTC) 530 (SRC) 256

Waste Dust Collector Residues- High Fluoride

Material Type Code 062

Source(s) 530

Material Description MgF_2, U_3O_8, Minute Amounts of Magnesium Compounds Possible.

Description of Generating Process(es) Dust collector G5-260's high vacuum was used to help clean out dust collector G5A-100 which was rebagged during the July shutdown of plant operations.

NOTE: No other explanation exist for this material designation except maybe operator error.

Provide Material and Process codes where applicable:

(MTC)	---->	530 (SRC)	---->	062 (MTC)	---->	(SRC)	---->	(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material? This material could be assigned to the 535-D-132 code ~~if no~~.

Is this waste chemically or physically similar to another waste for which analysis data are available?

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Dust Collector Residues, High Fluoride

Documentation....(cont.) 2

"MTC" "SRC"

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Magnesium metal compounds ~~to~~ can certain minute amounts of some of the metals listed above. See WMCO Material Specification 20-PS-300-11.

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

Magnesium is reactive with water.

NOTE: No magnesium compounds may be present in this material.

R. Palmer 8-1-89

Name Date

SOLVENT SLUDGES

LABORATORY & MAINTENANCE

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

D043 732 256
MTC / SRC

Waste solvent sludges Sludges, solvent - trichlor, perchlor, etc.

Material Type Code D043

Source(s) FMPC Analytical Lab

Material Description Solvent sludges - Trichlor, perchlor, etc

Description of Generating Process(es)

It can only be presumed to be residual sludges from cleaning solvent usage in FMPC labs. The remaining analytical dept managers have no knowledge of its generation.

Provide Material and Process codes where applicable:

(MTC)	---->	732 (SRC)	---->	043 (MTC)	---->	(SRC)	---->	(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material? unknown

Is this waste chemically or physically similar to another waste for which analysis data are available? unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Sludges, solvent-trichlor, perchlor, etc.

Documentation....(cont.) 2 D 043 732 MTC / SRC

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals: unknown

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

~~Other solvents~~/organics

Describe: no specifics are known so there are only presumed.

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics: unknown

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

Gilbert E. Kaiser 8/18/89
Name Date

USED OIL

PLANT 1

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

0 1 5 MTC 1 3 7 SRC

Used Oil
Plant 1

Waste: Contaminated oil, insoluble - to burner

Material Type Code: 015

Source(s): 137

Material Description: Dirty hydraulic oil from the drum baler.

Description of Generating Process(es): The drum baler is used to crush scrap drums.

Provide Material and Process codes where applicable:

	---->		---->		---->		---->	
(MTC)		1 3 7 (SRC)		0 1 5 (MTC)		(SRC)		(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or sources which may be assigned to this material? No

Is this waste chemically or physically similar to another waste for which analysis data are available? It is possibly the same as oil used in other hydraulic applications on-site.

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:
The oil is probably an organic oil.

Plant 1 015 137

Contaminated oil, soluble. 256

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

Catherine A. Hill August 7, 1989

MAGNESIUM FLUORIDE, GROUND

PLANT 1 MILLING

Sent 256 037 112
Over Daley 6/1/89

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471 METHOD USED:

Magnesium Fluoride, ground. 5066-112-0037 -0547

PARAMETER	UNITS	SAMPLE 18	SAMPLE 18 DUP.	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20		111
BARIUM	(MG/L)	< 0.25		109
CADMIUM	(MG/L)	< 0.020		106
CHROMIUM	(MG/L)	< 0.10		105
LEAD	(MG/L)	0.203		108
MERCURY	(UG/L)	< 0.10	< 0.10	90
SELENIUM	(MG/L)	< 0.20		117
SILVER	(MG/L)	< 0.020		98

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone
Weston, Inc.
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: November 22, 1988
SAMPLE ANALYZED: Eleven samples analyzed for Volatiles.

DATE RECEIVED: August 19, 1988
P.O. #:

Magnesium Fluoride, ground

5066-112-0037-0547

VOA COMPOUND	DETECTION LIMIT (ug/l)	SAMPLE-18 MSD (ug/l)	% SPIKE RECOVERY
ACETONE	10	4878	
BENZENE	5	39	77
BROMOFORM	5	ND	
2-BUTANONE	10	ND	
CARBON TETRACHLORIDE	5	ND	
CHLOROBENZENE	5	49	99
CHLOROETHANE	10	ND	
CHLOROFORM	5	ND	
1,1-DICHLOROETHANE	5	14	28
1,2-DICHLOROETHANE	5	ND	
1,1-DICHLOROETHYLENE	5	ND	
ETHYL BENZENE	5	ND	
2-HEXANONE	10	ND	
METHYLENE CHLORIDE	5	15	
4-METHYL-2-PENTANONE	10	ND	
1,1,2,2-TETRACHLOROETHANE	5	44	
TOLUENE	5	49	97
TRICHLOROETHENE	5	44	89
1,1,1-TRICHLOROETHANE	5	ND	
1,1,2-TRICHLOROETHANE	5	ND	
VINYL CHLORIDE	10	ND	
XYLENE	5	ND	

SURROGATE COMPOUNDS	PERCENT RECVRY
1,2-DICHLOROETHANE-D4	93
TOLUENE-D8	107
p-BFB	84

OILY HILCO FILTER CAKE

PILOT PLANT

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. [illegible] Stone

REPORT DATE: December 13, 1988

PROJECT NO.: [illegible]

METHOD USED:

Oily Hilco Filter Cake

PARAMETER	UNITS	D020-0008	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20	119
BARIUM	(MG/L)	1.08	120
CADMIUM	(MG/L)	< 0.020	110
CHROMIUM	(MG/L)	< 0.10	107
LEAD	(MG/L)	< 0.10	105
MERCURY	(UG/L)	< 0.10	
SELENIUM	(MG/L)	< 0.20	127
SILVER	(MG/L)	0.040	100

ENVIRODYNE
ENGINEERS

REPORT OF ANALYSIS

CLIENT: [illegible]
[illegible]
[illegible]
[illegible]
[illegible]

REPORT DATE: [illegible]
SAMPLE ANALYZED: Soil Sample and [illegible] volatiles.

DATE RECEIVED: September [illegible]
P.O. #:

City Hilco Filter Cake

VOA COMPOUND	DETECTION LIMIT ug/l	SAMPLE-1 ug/l	SAMPLE-2 ug/l	SAMPLE-3 ug/l	DUPE-1 ug/l	[illegible] ug/l	[illegible] ug/l	[illegible] ug/l
ACETONE	10	22	560	45	22	224		5
BENZENE	5	ND	ND	ND	ND	ND		ND
BROMOFORM	5	ND	ND	ND	ND	ND		ND
2-BUTANONE	10	ND	ND	ND	ND	32		ND
CARBON TETRACHLORIDE	5	ND	ND	ND	ND	ND		ND
CHLOROBENZENE	5	ND	ND	ND	ND	ND		ND
CHLOROETHANE	10	ND	ND	ND	ND	ND		ND
CHLOROFORM	5	ND	ND	ND	ND	ND		ND
1,1-DICHLOROETHANE	5	ND	ND	ND	ND	ND		ND
1,2-DICHLOROETHANE	5	ND	ND	ND	ND	ND		ND
1,1-DICHLOROETHYLENE	5	ND	ND	ND	ND	ND		ND
ETHYL BENZENE	5	ND	13	ND	ND	ND		ND
2-HEXANONE	10	ND	ND	ND	ND	5		ND
METHYLENE CHLORIDE	5	21	ND	24	24	40		5
4-METHYL-2-PENTANONE	10	26	ND	22	22	22		ND
1,1,2,2-TETRACHLOROETHANE	5	ND	ND	ND	ND	ND		ND
TOLUENE	5	ND	ND	ND	ND	ND		ND
TRICHLOROETHENE	5	ND	ND	ND	ND	ND		ND
1,1,1-TRICHLOROETHANE	5	ND	ND	ND	ND	ND		ND
1,1,2-TRICHLOROETHANE	5	ND	ND	ND	ND	ND		ND
VINYL CHLORIDE	10	ND	ND	ND	ND	ND		ND
XYLENE	5	5	ND	ND	ND	ND		ND

SURROGATE COMPOUNDS	PERCENT RECOVERY	PERCENT RECOVERY	PERCENT RECOVERY	PERCENT RECOVERY	PERCENT RECOVERY	PERCENT RECOVERY	PERCENT RECOVERY
1,2-DICHLOROETHANE-D4	96	[illegible]	99	94	96		[illegible]
TOLUENE-D8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
4-BFB	96	96	97	[illegible]	96		99

ND = Not Detected

1 = Dilution of large phase [illegible] 10:1 a fraction was performed and no volatile analyses [illegible].

RECEIVED
NOV [illegible] 222 [illegible]
WESTON ANALYTICS

MERCURY AND NICKEL-CADMIUM BATTERIES

VARIOUS SITE USES

June 8, 1989

~~256~~

TSCA & RCRA MATERIAL
MOVEMENT & OVERPACK FORM

Mercury + Ni/Cad Batteries

DATE	INV NO.	WHOATS LOCATION G-R-T-N-L	NEW LOCATION A-R-S-L	REMARKS
	40	286-50=236	55 gal.	BATTERIES
	41	63-50=13	55 gal.	ABSORBED Hg SPILL RESIDUES
	39	157-50=107	55 gal.	BATTERIES
	822	217-50=167	55 gal.	ABSORBED Hg SPILL RESIDUES
	461	45-36=9	30gal	5gal can in 30gal (Hg Co HgCl2
	75	15-3=12	5 gal.	BATTERIES
	821	197-50=147	55 gal.	ABSORBED Hg SPILL RESIDUES
	16	6-3=3	5 gal.	ABSORBED Hg SPILL RESIDUES ~~BATTERIES~~
	68	36-3=33	5 gal.	BATTERIES
	69	35-3=32	5 gal.	"
		418 lbs		BATTERIES
		339 lbs		ABSORBED Hg SPILL RES.
		757 lbs		TOTAL

Westinghouse Materials Company of Ohio

256

TO: SURE LINE Coordinator P. Levine

Please answer the following question from SURE LINE on this form. Answers should be provided one week from receiving this form. Part 2 (Blue) should be kept in your files, Part 3 (Pink) should be sent to the caller, and Part 4 (Green) should be returned to Employee Communications, Mail Stop #9.

CALLER'S NAME: Barry Price		DATE CALL RECEIVED: 5-18-89
CALLER'S BADGE NUMBER: 235	CALLER'S DEPARTMENT: Technical-Analytical	CALLER'S MAIL LOCATION: 35

QUESTION OR COMMENT	ANSWER
I have a small drum containing mercury batteries and nickel-cadmium batteries. I know both of these materials are on the RCRA list and I would like to have them disposed of properly. They've been sitting in this sealed drum in our lab for awhile and it's time to get rid of them. Thank You!	
	SIGNATURE OF PERSON ANSWERING THE QUESTION: DATE:

FMPC-SAC-2722 (REV. 3/10/89)

Give this to Sue

Sue -
Please provide direction for this SURE-LINE question. Have we determined what to do with batteries?
I think SURE LINE responses are promised in ~2 weeks or so - Eric had this one.

Thanks
Gary

JANET CARR
ADVISE THIS PERSON TO REQUEST PRIOR TO RCRA SIGNAGE COMPLETE SUC FORM. SEND TO W. BUCK TO W/ REQUEST TO SHIP TO RCRA STORAGE SUSPECT - UNLESS YOU HAVE INFO TO MAKE DETERMINATION

Sgl 7/13/89
Please complete by 7/-.89

225

From: S. G. Schneider

WMCO:R(SW):89-164

256

Date: July 27, 1989

Subject: DRUM CONTAINING MERCURY AND NICKEL-CADMIUM BATTERIES

To : Wanda Burk

This is in response to a Sure-Line question regarding the RCRA status of a drum of Mercury and Nickel-Cadmium batteries located in the Technical laboratory. Please make the necessary arrangements for this drum to be placed in RCRA Storage. Enclosed is a Solid Waste Compliance form for the drum containing Mercury and Nickel-Cadmium batteries. If you have any further questions, please contact Janet Carr of my staff at extension 6453.

S. G. Schneider, Manager
Solid Waste Compliance

Attachment

JMC/sgw

c w/o: G. E. Baker
W. Benson
J. M. Carr
D. Dunaway
J. T. Grumski
J. Price
Central Files

SOLID WASTE COMPLIANCE FORM

WASTE NAME: Mercury and Nickel-Cadmium Batteries

256

MATERIAL CODE: 051

SOURCE CODE: 733

EPA ID#: SUSPECT D009, D006

LAND BAN: Not suspected Land Ban

PROPER SHIPPING NAME: Suspect RQ Hazardous Waste Solid, N.O.S. (D009,D006)

HAZARD CLASS: Suspect ORM-E

UN/NA NUMBER: Suspect NA9189

COLOR CODE: Suspect ORANGE

Note: These materials are suspect until data is received for a waste stream determination. Once a waste stream determination has been made all appropriate documents will be updated.

UNRECYCLED SLAG

PLANT 5

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471

METHOD USED:

PARAMETER	UNITS	Unexcuted Sldg SAMPLE 21	SAMPLE 21 DUP.	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20		125
BARIUM	(MG/L)	< 0.25		113
CADMIUM	(MG/L)	< 0.020		136
CHROMIUM	(MG/L)	< 0.10		136
LEAD	(MG/L)	< 0.10		132
MERCURY	(UG/L)	< 0.10	< 0.10	
SELENIUM	(MG/L)	< 0.20		115
SILVER	(MG/L)	0.023		92

sent out 7/6/89

256

ENVIRODYNE ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone
Weston, Inc.
208 Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

PROJ. #: 3222-00471

REPORT DATE: November 22, 1988
SAMPLE ANALYZED: Eleven samples analyzed for Volatiles.

DATE RECEIVED: August 19, 1988
P.O. #:

Unrecycled Slag

VOA COMPOUND	DETECTION LIMIT (ug/l)	SAMPLE-21 (ug/l)
ACETONE	10	45
BENZENE	5	ND
BROMOFORM	5	ND
2-BUTANONE	10	ND
CARBON TETRACHLORIDE	5	ND
CHLOROBENZENE	5	ND
CHLOROETHANE	10	ND
CHLOROFORM	5	ND
1,1-DICHLOROETHANE	5	ND
1,2-DICHLOROETHANE	5	ND
1,1-DICHLOROETHYLENE	5	ND
ETHYL BENZENE	5	ND
2-HEXANONE	10	ND
METHYLENE CHLORIDE	5	34
4-METHYL-2-PENTANONE	10	33
1,1,2,2-TETRACHLOROETHANE	5	ND
TOLUENE	5	ND
TRICHLOROETHENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND
1,1,2-TRICHLOROETHANE	5	ND
VINYL CHLORIDE	10	ND
XYLENE	5	ND

SURROGATE COMPOUNDS	PERCENT RECVRY
1,2-DICHLOROETHANE-D4	89
TOLUENE-D8	103
p-BFB	97

230

MAGNESIUM ZIRCONATE

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

[illegible]

CERTIFICATE OF ANALYSIS

TO: AS:-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 19, 1988
PROJECT CODE: TEP 35035-Corrected Certificate
ORDER NUMBER: 602.09.02
PAGE 1 OF 12

Sample Description: Nine (9) TCLP extract samples received September 17, 1987

Concentration units are mg/liter (ppm)

Magnesium Zirconate MTC 030 SRC 530

TCLP METALS

Sample No.	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
23-4 MTC 061 SRC 916	0.108*	0.279	0.041	0.15	0.18	0.017*	1.11	<0.0002
19-5 MTC 061 SRC 913	0.053*	0.831	0.109	0.11	0.014*	**	2.99	<0.0002
MTC 062 SRC 310	0.015*	0.819	0.013	0.19	<1.0	0.051*	1.16	<0.0002
8 MTC 061 SRC 916	0.146*	1.78	0.028	0.05	<1.0	**	1.53	<0.0002
4-9 MTC 042 SRC 742	0.058*	0.088	0.030	0.09	<1.0	<0.2†	1.12	<0.0002
4-11 MTC 030 SRC 530	0.5	8,150	0.009	0.11	<0.2	<0.4	0.12	<0.0002
10-13 MTC 061 SRC 913	0.045*	0.789	0.175	0.15	0.019*	**	<0.01*	<0.0002
4-15 MTC 061 SRC 917	0.092*	0.424	0.140	0.15	0.012*	<0.3	<0.01*	<0.0002
15-16 MTC 061 SRC 916	0.072*	0.397	0.142	0.16	0.007*	<0.2	<0.01*	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010 and Cold Vapor EPA Method 7471 for mercury, except for those indicated.

†Analyzed by Standard Additions, ICP EPA Method 6010.

*Analyzed by Standard Additions, Graphite Furnace EPA 7000 methods.

See narrative

Approved by Laboratory Manager

Title

Janet Clinger
Gale Clinger
7/25/89

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 15, 1988

PROJECT NO.: 3222-00360

METHOD USED: Magnesium Zirconate

HC93-2 530 MTC SRC 030 530

PARAMETER	UNITS	SOIL-0272	SENC-SPIKE
ARSENIC	(UG/L)	3.2	[illegible]
BARIUM	(MG/L)	0.905	80
CADMIUM	(MG/L)	< 0.005	[illegible]
CHROMIUM	(MG/L)	< 0.010	104
LEAD	(MG/L)	0.068	115
MERCURY	(UG/L)	< 0.2	100
SILVER	(MG/L)	< 0.020	[illegible]
SELENIUM	(MG/L)	< 0.2	114

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly – Part 4 must be bg/blo.)

Lab. Nos. 12-93

Analyses Requested EP Toxicity

As, Se, Ag, Pb, Ba

Lot No. B082-916-

MATERIAL	LAB NO.	IDENTIFICATION	mg/L As	Se	Ag	Pb	Ba
NTS Waste							
Drum #15		#5	<1.0	<0.1	<1.0	<1.0	<2
ACCOUNT NO: QAC02							
DATE SAMPLED: 2-8-88							
SUBMITTED BY: J. W. Meyer							
REMARKS: Furnace Salt Non-Chloride							

ANALYTICAL DATA

NO	DISTRIBUTION OF COPIES
1	Originator
2	Extra Copy
3	Quality Assurance
4	Analytical (RECORD COPY)

Approved By [signature]

Date of Report 2-2

FMPC Depleted

Magnesium Zirconate

REPORT OF CHEMICAL ANALYSES

(NOTE: Write Firmly – Part 4 must be bg/blo.)

Lab. Nos. 12-4316

Analyses Requested EP Toxicity

As, Se, Ag, Pb, Ba

Lot No. B093-530-D030-

MATERIAL	LAB. NO.	IDENTIFICATION	mg/L As	Se	Ag	Pb	Ba
NTS Waste							
Drum #5		#6	<1.0	<0.1	<1.0	<1.0	<25
ACCOUNT NO. QAC02							
DATE SAMPLED: 2-8-88							
SUBMITTED BY: J. W. Meyer							
REMARKS: Crucible Cleanout Mg Oxide & Mg Zirconate						234	

ANALYTICAL DATA

NO.	DISTRIBUTION OF COPIES
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2	Extra Copy
3	Quality Assurance
4	Analytical (RECORD COPY)

[signature]

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P.O. Box 549 • [illegible]

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CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 19, 1988
PROJECT CODE ITEP 35035-Corrected Certific
ORDER NUMBER 602.09.02
PAGE 2 OF 12
Job No.: 303317

Sample Description: One (1) TCLP extract sample received September 17, 1987

Concentration units are mg/liter (ppm)

Magnesium Zirconate

TCLP METALS	MTC 030 SRC 530 7-7
Arsenic	<0.2
Barium	1.14
Cadmium	<0.002
Chromium	<0.02
Lead	<0.05
Selenium	<0.2
Silver	<0.01
Mercury	0.0012

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Beverly D. Stacy 235
Laboratory Manager
Title

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

SERVICES

Cleveland Creek Road • P.O. Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9551

CERTIFICATE OF ANALYSIS

TO ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED February 19, 1988
PROJECT CODE ITEP 35035-Corrected Certificate
ORDER NUMBER 602.09.02
PAGE 1 OF 12
Job No.: 303317

Sample Description: Three (3) TCLP extract samples and one (1) TCLP blank received September 17, 1987

Concentration units are mg/liter (ppm)

Magnesium Chromate

	TCLP Blank	TCLP METALS MTC 030 SRC 530 S-1	MTC 011 SRC 732 H2-2	MTC 030 SRC 530 6-3
Arsenic	<0.2	<0.2	<0.2	<0.2
Barium	<0.002	1.12	1.43	0.238
Cadmium	<0.002	0.003	0.038	0.003
Chromium	<0.02	<0.02	0.24	<0.02
Lead	<0.05	<0.05	<0.05	<0.05
Selenium	<0.2	<0.2	<0.2	<0.2
Silver	<0.01	<0.01	<0.01	<0.01
Mercury	<0.002	<0.0002	<0.0002	<0.0002

Sample extracted in accordance with "Toxicity Characteristic Leaching Procedure", Federal Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

Approved by Laboratory Manager
Title

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WET SUMP CAKE

OFF-SITE CLEANING AREAS

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

1 068 4XA
MTC SRC

Waste wet sump or filter cakes, oil contaminated

Material Type Code 1068

Source(s) UNC Nuclear Industries, Richland, Wash.

Material Description oil-contaminated, wet sump or filter cake

Description of Generating Process(es) oil-contaminated wastes from uranium pickling or cleaning operations are left to settle forming a sludge (sump-cake) or treated with an alkali to precipitate uranium compounds which are filtered out (filter cake). Cake is presumed to be oil-contaminated, and coding indicates normal uranium content, 0.71% ^{235}U.

Provide Material and Process codes where applicable:

[MTC]	---->	[SRC]	---->	[MTC]	---->	[SRC]	---->	[MTC]
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material? unknown

Is this waste chemically or physically similar to another waste for which analysis data are available? unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

wet sump or filter cake, oil contaminated 256

Documentation....(cont.) 2 1 068 H X A
MTC SRC

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals: no

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents: no

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe:

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe: unknown; must be tested.

Gilbert E. [illegible] 8/4/89
Name Date

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

1550 Bear Creek Road • P O Box 549 • Oak Ridge, Tennessee 37831 • 615-482-9707

CERTIFICATE OF ANALYSIS

TO: ASI-Fernald Office
ATTN: L. T. Murphy
10845 Hamilton Cleves Road
Ross, OH 45061

DATE REPORTED: February 26, 1988
PROJECT CODE: ITEP 35098
ORDER NUMBER: 602.09.02
PAGE 3 OF 3
Job No.: 303317

Sample Description: Three (3) TCLP extract samples received February 4, 1988
FMPC Custody Transfer Record 10-15-87

Concentration units are mg/liter (ppm)

METALS	Wet Sump Cake MTC 067 SRC FTA 4-78	MTC 069 SRC 965 21-80	MTC 072 SRC 221 4-81
Arsenic	0.8	<0.2	0.4
Barium	22.4	<0.2	0.77
Cadmium	0.031	<0.005	<0.005
Chromium	0.15	<0.02	<0.02
Lead	0.64	<0.05	<0.05
Selenium	<0.2*	<0.2	<0.2
Silver	0.24	<0.01	0.09
Mercury	<0.0002	<0.0002	<0.0002

Samples extracted in accordance with "Toxicity Characteristic Leaching Procedure", Fede Register, Vol. 51, No. 216, pp. 40643-40653.

Analyzed by EPA Method 6010.

Mercury analyzed by (Cold Vapor) EPA Method 7471.

*Samples analyzed by Standard Addition, Graphite Furnace, EPA Method 7000 Series.

Approved by: Laboratory Manager
Title

240

Accredited by the American Association for Laboratory Accreditation in the chemical field of testing, as listed in the current AALA Directory of Accredited Laboratories

ENVIRODYNE
ENGINEERS

Sent over July 6 7/1989

256

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone

REPORT DATE: December 13, 1988

PROJECT NO.: 3222-00471

METHOD USED:

Wet Sump Cake

PARAMETER	UNITS	SAMPLE 19	BENCH SPIKE
ARSENIC	(MG/L)	< 0.20	118
BARIUM	(MG/L)	2.44	113
CADMIUM	(MG/L)	< 0.02	117
CHROMIUM	(MG/L)	0.147	106
LEAD	(MG/L)	0.147	121
MERCURY	(UG/L)	1.07	
SELENIUM	(MG/L)	< 0.20	121
SILVER	(MG/L)	0.025	95

ENVIRODYNE
ENGINEERS

REPORT OF ANALYSIS

CLIENT: Ms. Judy Stone
Weston, Inc.
20E Welsh Pool Road
Pickering Creek Industrial Park
Lionville, Pennsylvania 19353

REPORT DATE: November 22, 1988
SAMPLE ANALYZED: Eleven samples analyzed for Volatiles.

DATE RECEIVED: August 19, 1988
P.O. #:

PROJ. #: 3222-00471

VOA COMPOUND	DETECTION LIMIT (ug/l)	SAMPLE-19 (ug/l)
ACETONE	10	ND
BENZENE	5	ND
BROMOFORM	5	ND
2-BUTANONE	10	ND
CARBON TETRACHLORIDE	5	ND
CHLOROBENZENE	5	ND
CHLOROETHANE	10	ND
CHLOROFORM	5	ND
1,1-DICHLOROETHANE	5	ND
1,2-DICHLOROETHANE	5	ND
1,1-DICHLOROETHYLENE	5	ND
ETHYL BENZENE	5	ND
2-HEXANONE	10	ND
METHYLENE CHLORIDE	5	31
4-METHYL-2-PENTANONE	10	26
1,1,2,2-TETRACHLOROETHANE	5	ND
TOLUENE	5	ND
TRICHLOROETHENE	5	ND
1,1,1-TRICHLOROETHANE	5	ND
1,1,2-TRICHLOROETHANE	5	ND
VINYL CHLORIDE	10	ND
XYLENE	5	5

Wet Sample

SURROGATE COMPOUNDS	PERCENT RECOVERY
1,2-DICHLOROETHANE-D4	86
TOLUENE-D8	103
p-BFB	96

WET SUMP CAKE

OFF-SITE SALT BATH TREATMENT

DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

0068, VXB
(MTC) (SRC)

Waste "SUMP CAKE"

Material Type Code 0068

Source(s) UNC Richland

Material Description "wet sump cake or filter cake, oil-contaminated"

Description of Generating Process(es) One of the steps in the HANFORD plants co-extrusion process (to make enriched uranium cores with copper + zirconium sheath from our enriched PRAPIUM billets) ~~was~~ involved a salt bath treatment. Wastes from this operation were sent to a "trench" to settle the solids. The final sludge from this trench was dug up, put into drums and sent to the FMPC. In addition to enriched uranium, its likely to have, salts, zirconium, copper, oils and other contaminants.

Provide Material and Process codes where applicable:

(MTC)	---->	(SRC)	---->	(MTC)	---->	(SRC)	---->	(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material? NO

Is this waste chemically or physically similar to another waste for which analysis data are available? unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Documentation....(cont.) 2 0068, VXB MTC, SRC

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic (Barium) Cadmium Chrome Mercury Lead Selenium

Solvents: unknown

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe: (See "description of generating process" section). The salt bath used is a mixture of Barium chloride, Sodium chloride and Potassium chloride.

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics:

Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe: None likely; should be tested

Gilbert E. Koch 8/9/89
Name Date

USED OIL

OFF-SITE

Used Oil - Off-Site

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DOCUMENTATION OF PROCESS KNOWLEDGE
RCRA DETERMINATIONS

0015 YAQ
MTC SRC

Waste: oil

Material Type Code: 0015

Source(s): national Electric Coil (Co) - no longer in existence!

Material Description: unknown uranium or radiologically contaminated oil

Description of Generating Process(es): It is presumed to be oil from the Gaseous Diffusion motor system. It is likely to be contaminated with radioactive materials.

Provide Material and Process codes where applicable:

(MTC)	---->	(SRC)	---->	(MTC)	---->	(SRC)	---->	(MTC)
Precursor(s)		Generating Process		Material		Processing/ Treatment		New Material/ Code

Are there other material codes or source codes which may be assigned to this material? unknown

Is this waste chemically or physically similar to another waste for which analysis data are available? unknown

Is there any reason to believe that this material may contain or be contaminated with any of the following RCRA toxic metals or solvents? Circle suspected metal(s) or solvent(s) and describe how contamination is suspected to occur (eg., as a contaminant in raw materials, from materials of

Documentation....(cont.) 2 0015 YAQ
MTC SRC

construction of process equipment such as lead gaskets and pump seals, from mixing with another waste).

RCRA Toxic Metals:

Silver Arsenic Barium Cadmium Chrome Mercury Lead Selenium

Solvents:

1,1,1-trichloroethane Perchloroethylene Paint Thinner/Mineral Spirits

Other solvents/organics

Describe: these solvents may have been used to clean the motor-drive equipment and thus may be contaminates in this "oil".

Is there any reason to believe that this material may exhibit any of the following RCRA characteristics? Circle or enter suspected characteristic(s) and describe reason for suspecting that this waste may exhibit it. (For acidic wastes, include in the description any subsequent neutralization of the waste).

RCRA Characteristics: unknown

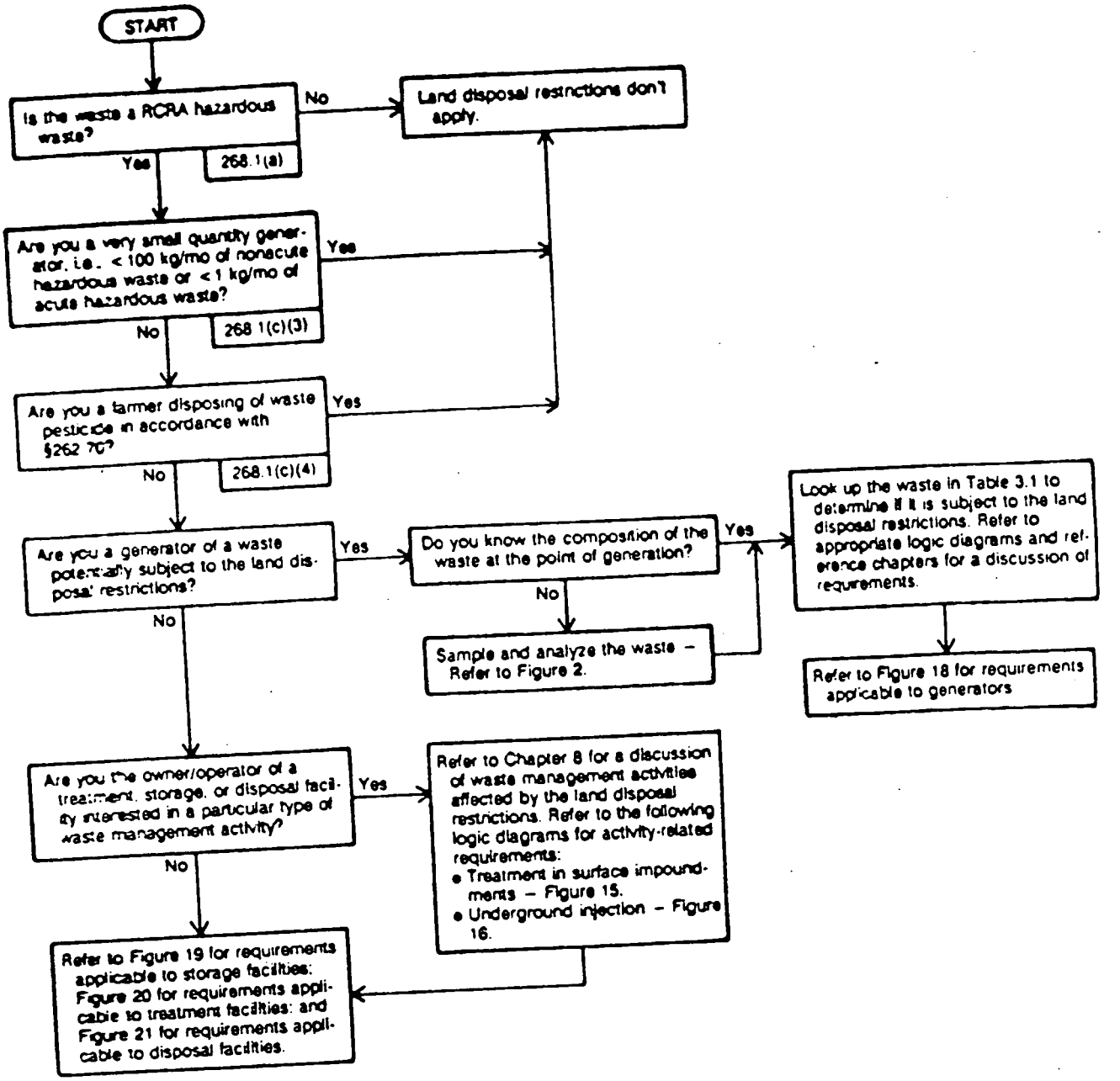
Low pH (<2) High pH (>12.5) Ignitable (Flash Point <140°F) Reactive

Describe:

Gilbert E. [illegible] 8/2/89
Name Date

APPENDIX C-2

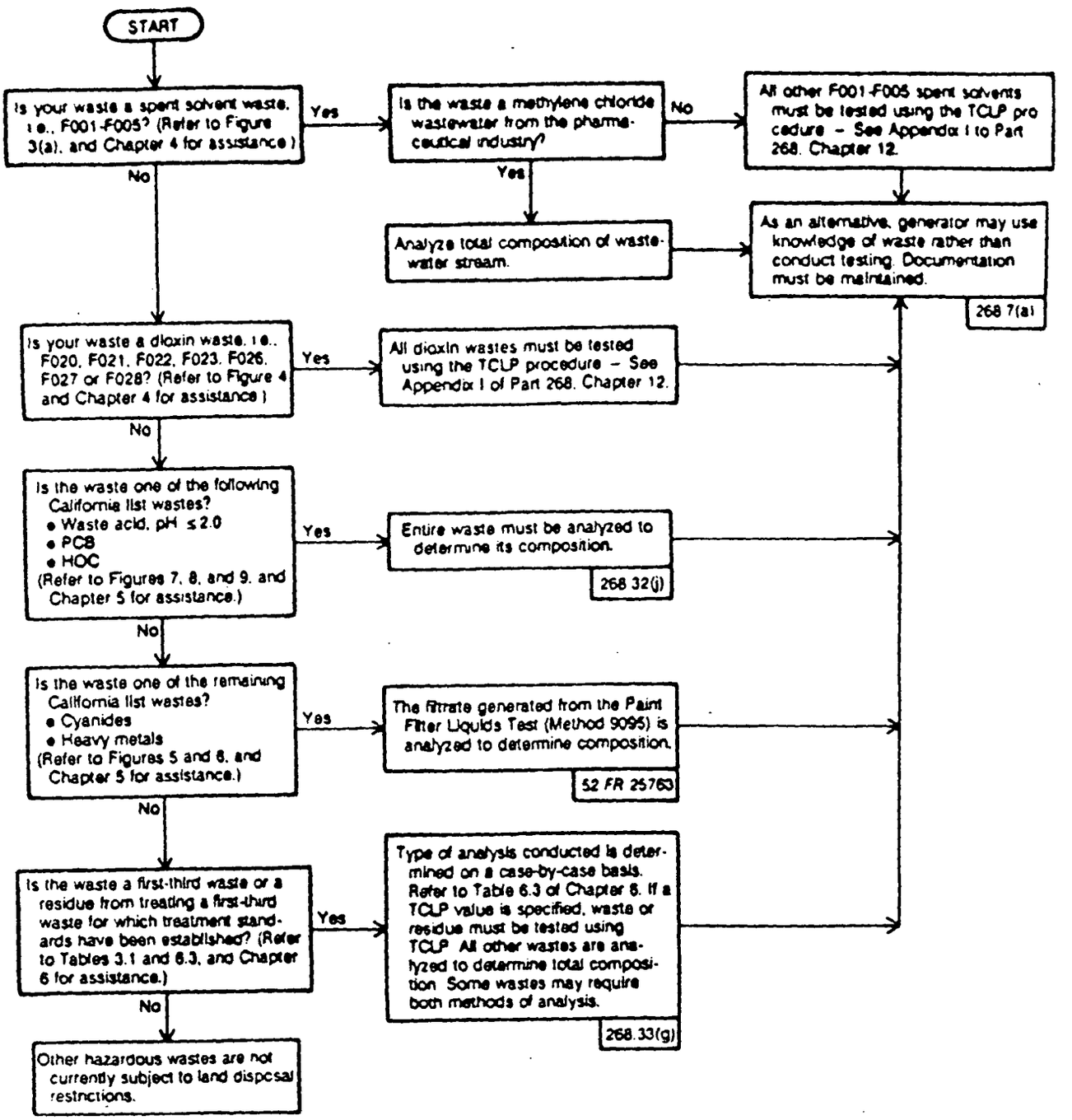
RCRA SAMPLE DETERMINATION FLOW CHARTS FOR LAND DISPOSAL RESTRICTIONS



Source: McCoy and Associates, Inc.

FIGURE 1

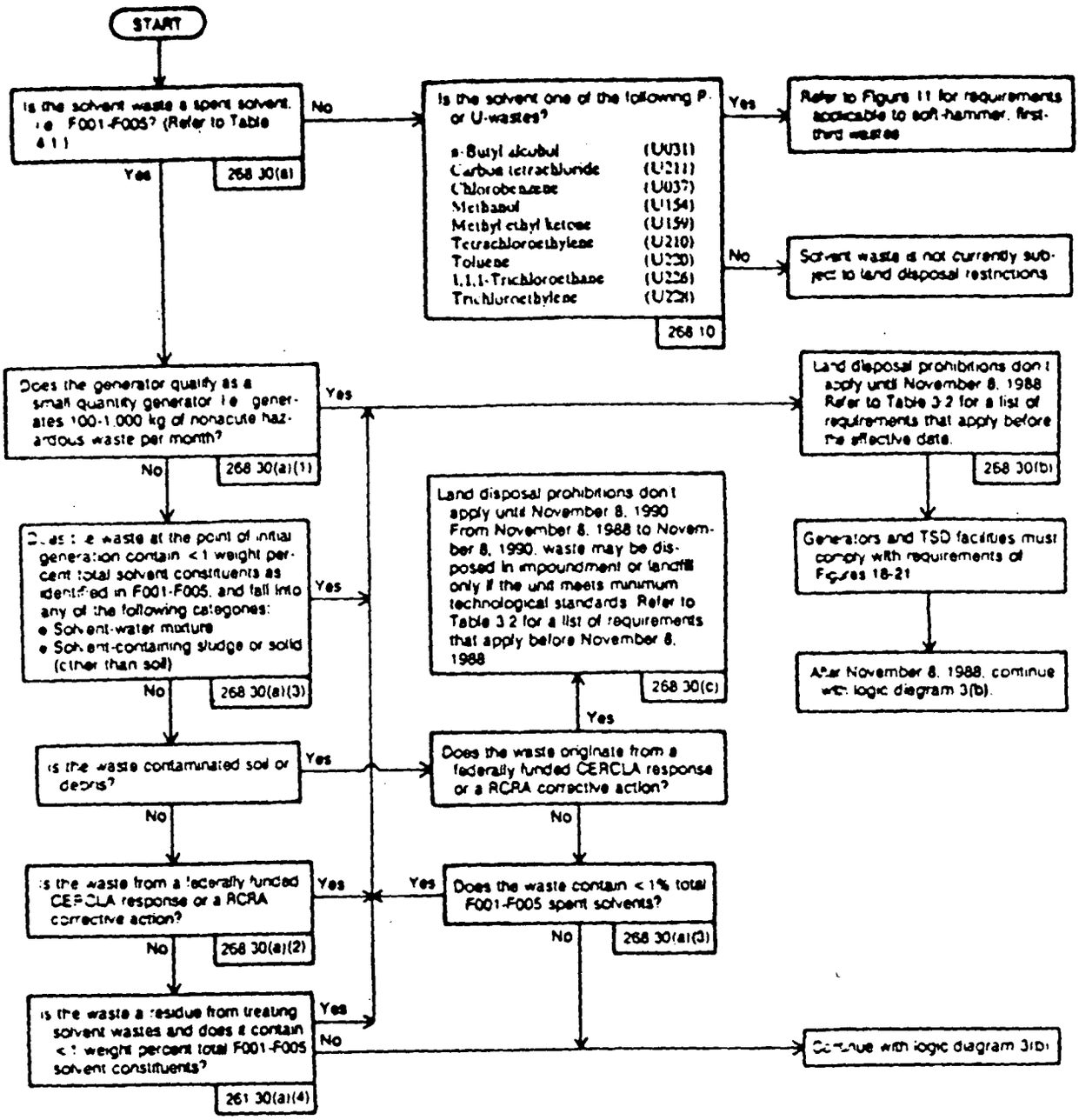
APPLICABILITY OF THE LAND DISPOSAL RESTRICTIONS



Source: McCoy and Associates, Inc

FIGURE 2

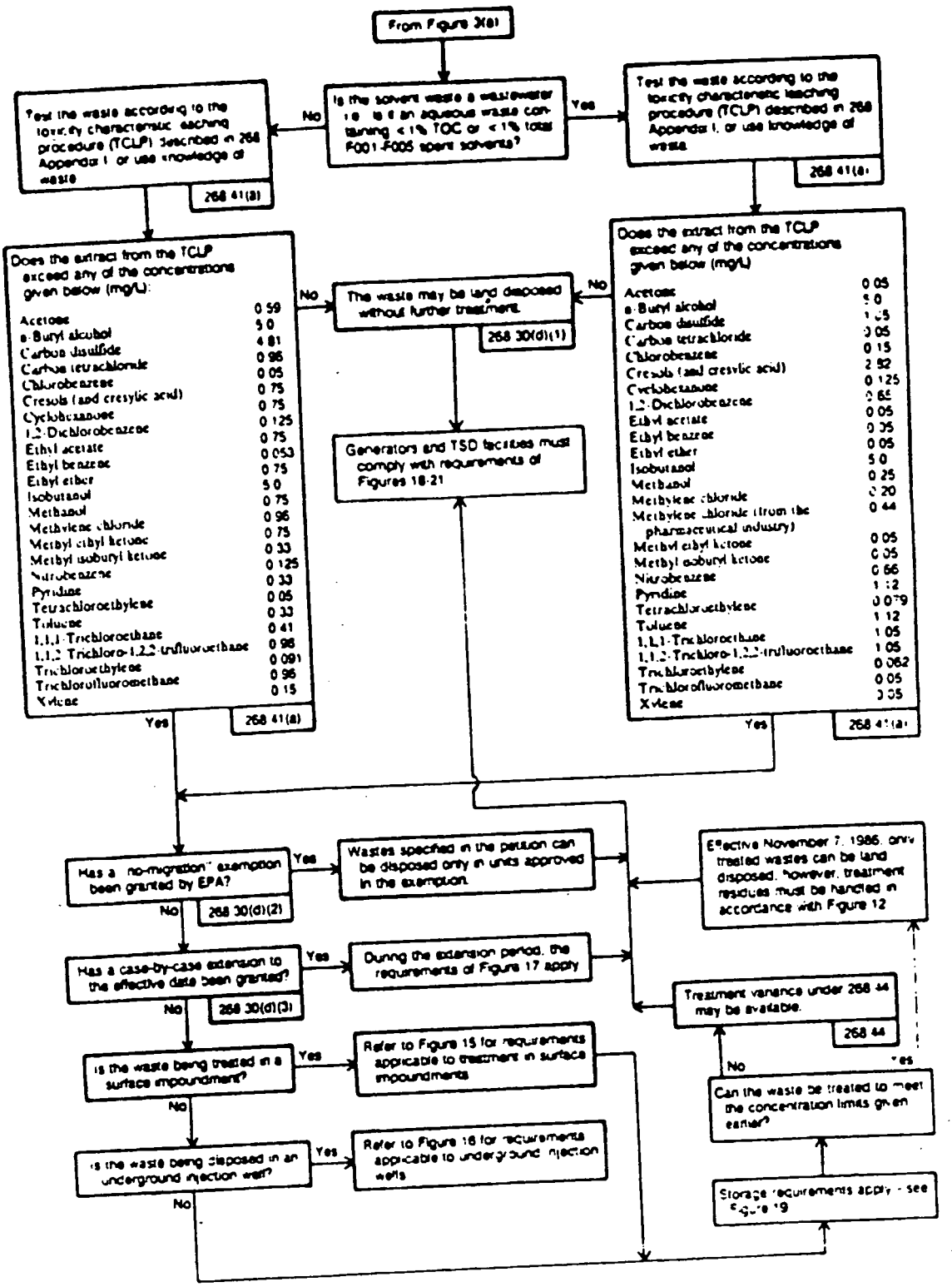
ANALYTICAL REQUIREMENTS FOR WASTES SUBJECT TO THE LAND DISPOSAL RESTRICTIONS



Source: McCoy and Associates, Inc.

FIGURE 3(a)

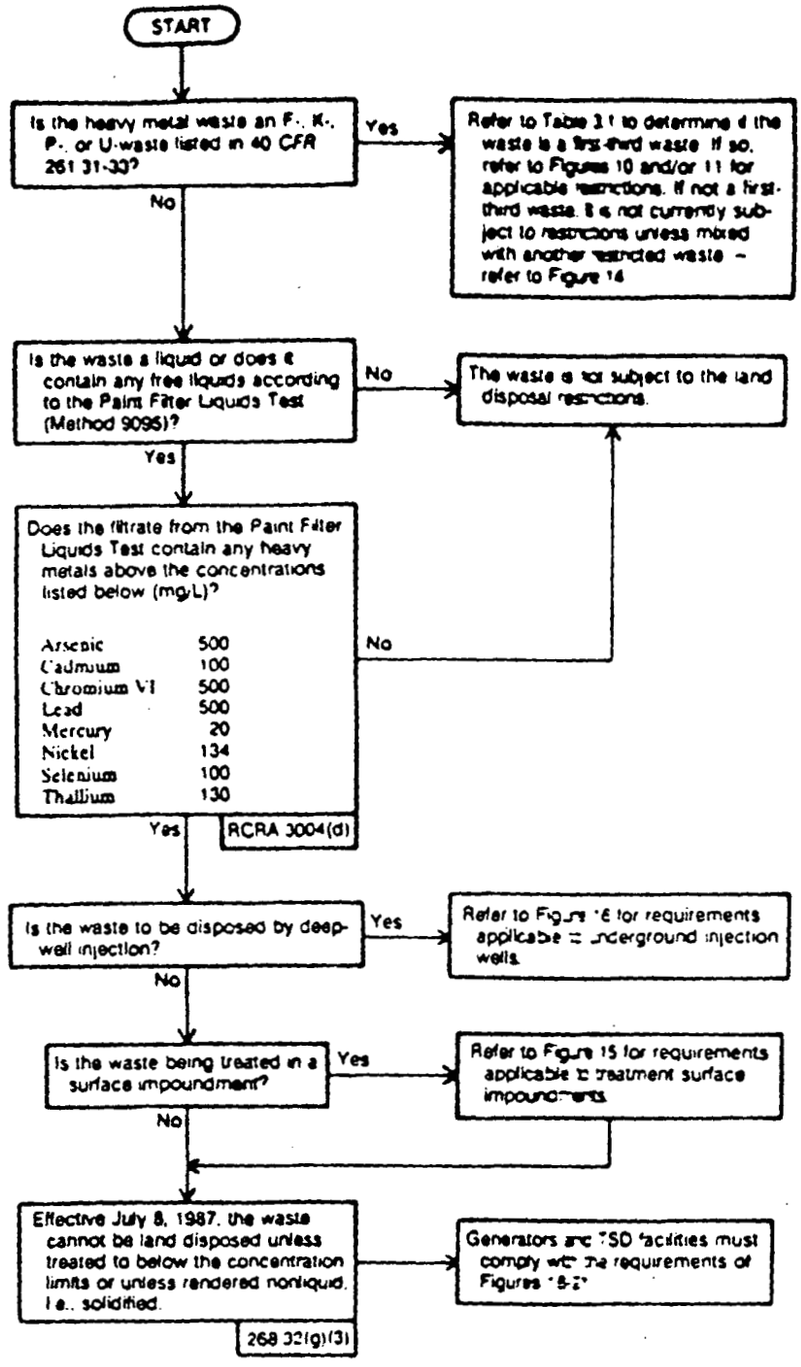
LAND DISPOSAL RESTRICTIONS APPLICABLE TO SOLVENT WASTES



Source: McCoy and Associates, Inc.

FIGURE 3(b)

LAND DISPOSAL RESTRICTIONS APPLICABLE TO SOLVENT WASTES (Continued)

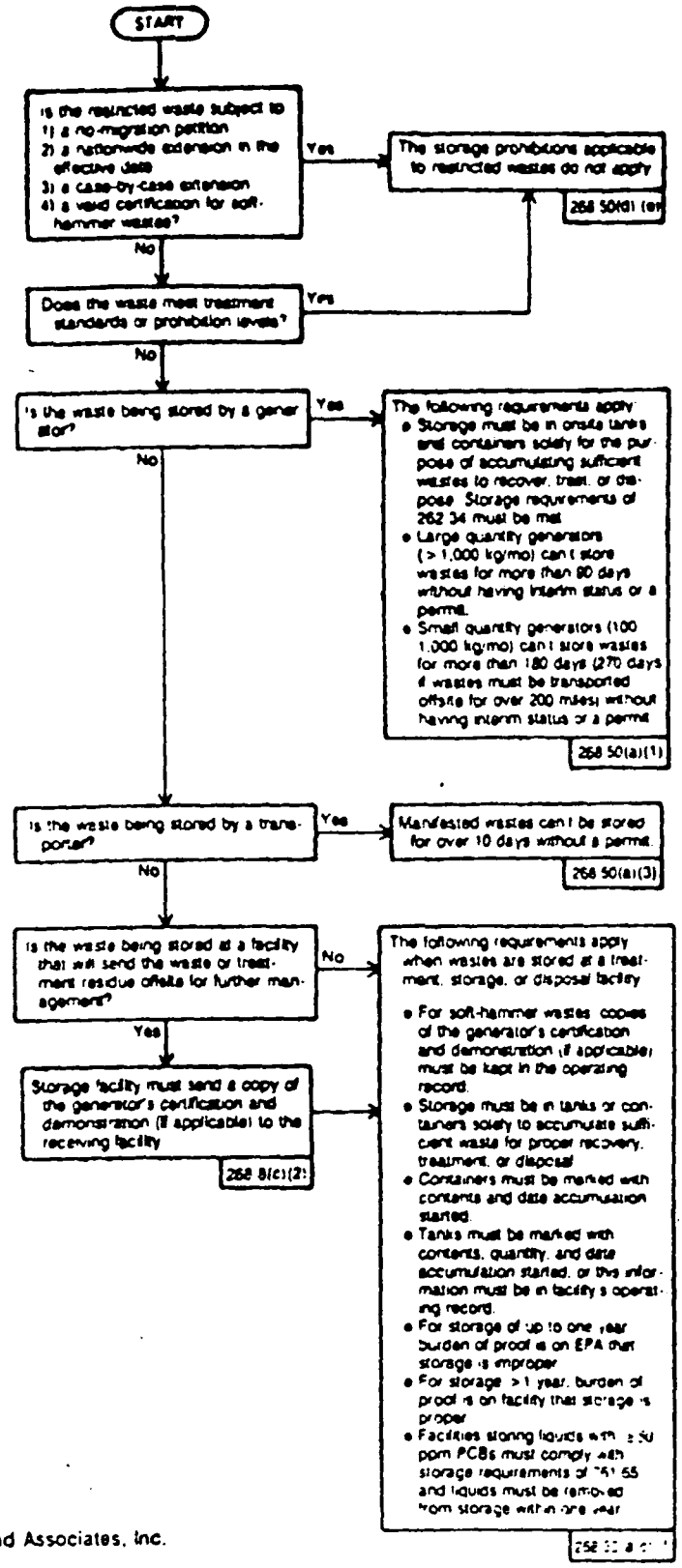


Note: Prohibitions for heavy metals are imposed under the statutory requirements of the Hazardous and Solid Waste Amendments of 1984, RCRA Section 3004(d) – see Chapter 14 of this Guide. Regulations, which may be more stringent than the statutory requirements, are under development for heavy metal wastes.

Source: McCoy and Associates, Inc.

FIGURE 5

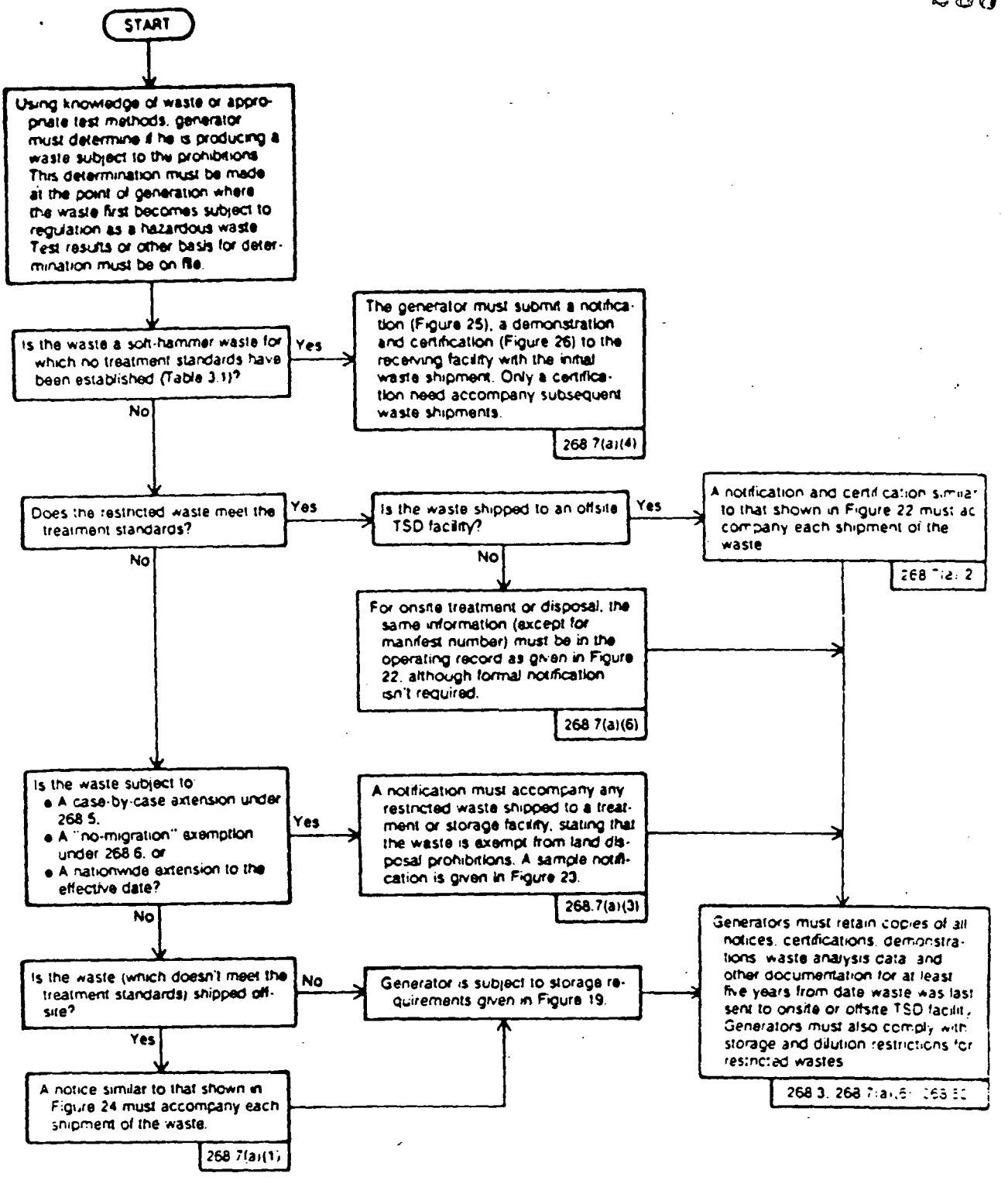
RESTRICTIONS APPLICABLE TO WASTES CONTAINING *ONLY* HEAVY METALS



Source: McCoy and Associates, Inc.

FIGURE 19

STORAGE REQUIREMENTS FOR RESTRICTED WASTES



Source: McCoy and Associates, Inc.

FIGURE 18

REQUIREMENTS APPLICABLE TO GENERATORS OF RESTRICTED WASTES