

# Interim Status Document

## INTEC RCRA Interim Status Document for CPP-1617 and CPP-1619: Section B—Waste Analysis Plan

**INEEL**

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Interim Status Document	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: i of i
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## CONTENTS

B-1	PURPOSE .....	1
B-2	WASTE ANALYSIS PLAN SPECIFICS .....	1
B-2.1	Generator-Supplied Information and Documentation .....	1
B-2.2	Wastes Stored at RMWSF (CPP-1617) AND HCRWSF (CPP-1619) .....	2
B-2.3	Parameters and Rationale for Waste Analysis [40 CFR 265.13(b)(1)]. .....	3
B-2.4	Test Methods .....	4
B-2.5	Frequency of Analysis .....	6
B-2.6	Additional Requirements for Ignitable, Reactive, or Incompatible Wastes .....	6
B-3	WASTE ANALYSIS REQUIREMENTS PERTAINING TO LAND DISPOSAL RESTRICTED (LDR) WASTES .....	6
B-4	RECORDKEEPING .....	7

## TABLES

Table 1.	Typical Wastes Stored at INTEC-1617/1619. ....	2
Table 2.	Parameters and Rationale for Waste Analysis. ....	3
Table 3.	Test Methods for Waste Analysis Parameters. ....	4
Table 4.	Comparison of ACMM Methods with SW-846 Methods. ....	5

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 1 of 7
---	--	--

## B-1 PURPOSE

The purpose of this waste analysis plan is to provide information on the procedures for sampling and analyzing waste prior to acceptance at the Radioactive Mixed Waste Staging Facility (RWMSF) or Hazardous Chemical and Radioactive Waste Storage Facility (HCRWSF). This plan provides documentation for the establishment of RCRA Interim Status requirements established in 40 CFR 165.13 (a) (b) & (c) and to describe the procedures used to obtain sufficient waste information to operate RWMSF and HCRWSF in an environmentally safe mode and to protect human health. This plan describes the waste characteristics of wastes accepted or potentially accepted at the Radioactive Mixed Waste Staging Facility (CPP-1617) and the Hazardous Chemical and Radioactive Waste Storage Facility (CPP-1619). This plan includes information related to chemical analysis provided by generators, including tests for corrosivity, ignitability, free liquid(s) determination, toxicity characterization leaching procedure (TCLP) for metals, volatile organics, and semi-volatile organics.

The RWMSF or HCRWSF does not accept material or waste unless it has been characterized through process knowledge or through sampling and analysis. The characterization should be of sufficient detail to enable workers to make decisions with regard to acceptance criteria and or what mode of storage will be used.

## B-2 WASTE ANALYSIS PLAN SPECIFICS

### B-2.1 Generator-Supplied Information and Documentation

Waste Generators provide all the necessary characterization data for wastes stored at RWMSF (CPP-1617) and HCRWSF (CPP-1619). When processes generating hazardous waste are uniform, samples characteristic of the waste stream are taken and waste profiles are determined. These waste profiles, in combination with knowledge of process (MSDS Sheets, chemical manifests, etc.) are compiled prior to the shipment of materials and receipt at CPP-1617 or CPP-1619. Waste Profiles contain detailed information on physical and chemical characteristics of the waste. Generators update the waste profile information if there is any change to the waste stream process.

The basic information provided by generators includes:

- General Information – The area generating the waste, technical contacts, description, and processes generating the waste.
- Physical Characteristics – Physical state (liquid or solid); pH; flash point; and special handling requirements, including safety procedures or comments.

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 2 of 7
--------------------------------------	--	--

- Chemical Characteristics – Waste analysis information with breakdown by RCRA Waste Codes and chemical constituent concentrations.
- Supporting Documentation – May include documentation used for process knowledge (for example, Material Safety Data Sheets).

The generator uses sampling methods that that are comparable to EPA recommended procedures with notable differences. Each sampling procedure is evaluated against the hazards associated with the material to be sampled. Radiation, for example, is included as a hazard and requires modified approaches so as to take into account ALARA (As Low As Reasonably Achievable) concerns. From this standpoint, an individual Sampling and Analysis Plan is generated for each sampling run. This approach is consistent with 40 CFR 265.13 (b)(3)(ii).

## B-2.2 Wastes Stored at RMWSF (CPP-1617) AND HCRWSF (CPP-1619)

Table 1 lists the hazardous and mixed wastes routinely stored at RMWSF and HCRWSF. Non-routine wastes are accepted for storage if allowed under the Part A Permit.

Table 1. Typical Wastes Stored at INTEC-1617/1619.

Waste Description/Composition	RCRA Waste Code	Generating Facility/ Process Description
Photo chemicals	D006 D007 D011	Photo labs
Acids with metals	D002 D004 D006 D007 D008 D009 D010 D011	Pilot plants operations
Mercury contaminated solids	D009	Laboratories operations
Solids contaminated with metals	D006 D007	Debris, PPE, rags, broken glass, and so on from pilot plants operations
Lead scrap/debris	D008	Debris
Solvent rags	F001, F003 F005 D018 D035	Routine plant maintenance activities
Paint, thinner, and paint related materials	F003 F005 D001 D018 D035	Routine plant maintenance activities
Lead acid batteries	D008	Routine plant maintenance activities
Ni-Cad batteries	D006	Routine plant maintenance activities
Crushed fluorescent light bulbs	D009	Routine plant maintenance activities
Incandescent and mercury vapor lamps	D008, D009	Routine plant maintenance activities

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 3 of 7
--------------------------------------	--	--

Waste Description/Composition	RCRA Waste Code	Generating Facility/ Process Description
Low pressure sodium lamps	D003, D009	Routine plant maintenance activities
Printed circuit boards	D011	Routine plant maintenance activities
Small capacitors and light ballasts with PCBs	N/A	Routine plant maintenance activities
Unused/outdated chemicals	various D-, P-, or U-codes	Small quantities of laboratory chemicals and standards

### B-2.3 Parameters and Rationale for Waste Analysis [40 CFR 265.13(b)(1)].

The specific parameters selected for characterization are determined on a case-by-case basis. The generator selects the appropriate parameters based on knowledge of the waste source, characterization requirements to identify RCRA-regulated wastes, and characterization requirements for waste storage and subsequent treatment and/or disposal. Thus, not all the parameters identified are selected for each waste stream. The parameters and rationale for waste analysis are presented in Table 2. The parameters and associated rationale are derived on the basis of the chemicals or chemical combinations traditionally encountered at the INEEL.

Table 2. Parameters and Rationale for Waste Analysis.

Parameter	Rationale
Toxicity Characteristic Metals Arsenic Barium Cadmium Chromium Lead Selenium Silver Mercury	To determine if a waste contains toxic metal
pH	To determine if a waste is corrosive (D002)
Flash Point	To determine if a waste is ignitable (D001)
Water Reactive or Cyanide/Sulfide-bearing	To determine if a waste is reactive (D003)

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 4 of 7
--------------------------------------	--	--

Parameter	Rationale
Volatile Organics	To determine if a waste contains volatile organics for compatibility
Semi-volatile Organics	To determine if a waste contains semi-volatile organics for compatability

#### B-2.4 Test Methods

40 CFR 265.13 (b)(2) specifies that sampling and analytical methods used to characterize hazardous and mixed wastes must be delineated. The analytical test methods presented in Table 3 are selected based on which constituents are anticipated to be found in the wastes. Table 3 lists methods employed by waste generators to establish waste profiles.

Table 3. Test Methods for Waste Analysis Parameters.

Parameter		ACMM Methods	Test Methods SW-846	Methods
Toxicity Characteristics Metals				
Arsenic	(D004)	2100, 7900		6010
Barium	(D005)	2100, 7900		6010
Cadmium	(D006)	2100, 7900		6010
Chromium	(D007)	2100, 7900		6010
Lead	(D008)	2100, 7900		6010
Selenium	(D010)	2100, 7900		6010
Silver	(D011)	2100, 7900		6010
Mercury	(D009)	2809		6010
pH		7017		9040
Acidity		7012		
Volatile organics		7300, 7350,		8010, 8015, 8200, 8020, 8240
Semi-volatile organics		Process knowledge		8270
Ignitable		8985		ASTM-D-9380

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 5 of 7
--------------------------------------	--	--

Parameter		ACMM Methods	Test Methods SW-846	Methods
Reactive		Process knowledge		

Test methods used to measure waste parameters of interest are presented in Table 4.

Table 4. Comparison of ACMM Methods with SW-846 Methods.

ACMM Method	Comments
2809, 7801	<b>Methods 2809 and 7801</b> (mercury) are EPA method 7470.
2100, 7900	<b>Method 7900</b> (metals by inductively-coupled plasma) is EPA Method 6010. Method 7900 has several sample preparation options and as executed for NWCF storage and treatment tanks, an acid digestion is not performed. This acid digestion is not performed because of the high dissolved solids content, the high acidity, and corrosion problems that would occur in the Remote Analytical Laboratory (RAL) hot cell; additionally, these analyses are not being performed to prove the system is non-hazardous. Also, the method 7900 sample preparation for NWCF samples involves use of a 1-milliliter (mL) sample diluted to 20 mL and the adjustment of the final diluted sample acidity to between 3.2 and 3.6 <u>M</u> . The dilution is necessary because of the high solids content and the high concentrations of metals. The high acidity is necessary to normalize the measurement system response for input samples with variable acidity.  <b>Method 2100</b> is EPA method 6010. Method 2100 samples are prepared according the EPA method 3005 or 3010.
7017	<b>Method 7017</b> (pH) is EPA Method 9040, except for minor mechanical differences due to remote handling equipment.
9300	<b>Method 9300</b> (volatile organics) is EPA Method 8260.

Each waste stream is characterized by waste-sampling-and-analysis in combination with knowledge-of-process.

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 6 of 7
--------------------------------------	--	--

### **B-2.5 Frequency of Analysis**

For waste streams in which composition is variable or generated on a one-time basis, characterization/ recharacterization or reprofiling must be completed prior to acceptance for storage at the facility. Waste Streams typical of operation, with no variables, are characterized and documented in conjunction with knowledge-of-process. They are not recharacterized unless a change in process occurs. In addition, a characterization is performed when:

- A new waste stream is generated.
- The process generating an established waste stream changes.
- The waste characteristics are highly variable.
- There are inconsistencies in documentation provided by generators.
- An off-site treatment, storage, and/or disposal facility rejects the waste because its fingerprint samples are inconsistent with the waste profile provided by the INEEL.
- An off-site treatment, storage, and/or disposal facility requires more information relative to their acceptance criteria.

### **B-2.6 Additional Requirements for Ignitable, Reactive, or Incompatible Wastes**

Waste characterization documentation provided by generators identifies potential ignitable or reactive wastes prior to acceptance and receipt at CPP-1617 and CPP-1619. Following review of the information, a determination is made as to whether any special precautions, based on DOT requirement or safety practices, must be addressed during storage and for shipment to a permitted treatment, storage, and/or disposal facility. Container types, storage location, and segregation for incompatible wastes, are determined by CPP-1617/1619 personnel based on DOT Hazard Class and RCRA Waste Codes and 40 CFR 264, Appendix V.B-2.6.

## **B-3 WASTE ANALYSIS REQUIREMENTS PERTAINING TO LAND DISPOSAL RESTRICTED (LDR) WASTES**

Specific requirements applicable to wastes stored at CPP-1617 and CPP-1619 include retaining the following information concerning the characteristics of the waste:

- EPA Hazardous Waste Number
- Corresponding treatment standards

Interim Status Document  INTEC	<b>INTEC RCRA INTERIM STATUS DOCUMENT FOR CPP-1617 AND CPP-1619: SECTION B—WASTE ANALYSIS PLAN</b>	Identifier: ISD-5 Revision: 0 Page: 7 of 7
--------------------------------------	--	--

- Waste analysis data
- All appropriate notifications and certification
- Uniform Hazardous Waste Manifest number associated with the shipment of the waste.

Land disposal requirements, as stated in 40 CFR 268, are met by performing sampling and analysis as required when waste is shipped to another TSDF. Most waste has been addressed through incineration for CPP-1617. For CPP-1619, any time sampling and analysis has not been adequate to determine disposition for a waste in a given TSDF, that TSDF stipulated which information is necessary to meet conditions found in 40 CFR 268. CPP-1617 and CPP-1619 will continue to operate within the parameters of the above procedures.

#### **B-4 RECORDKEEPING**

ACMM procedures and EPA Sampling and Analysis procedures are maintained at the INTEC analytical laboratories. Examples are available upon request.