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WCATS: Waste Documentation

Course #8504

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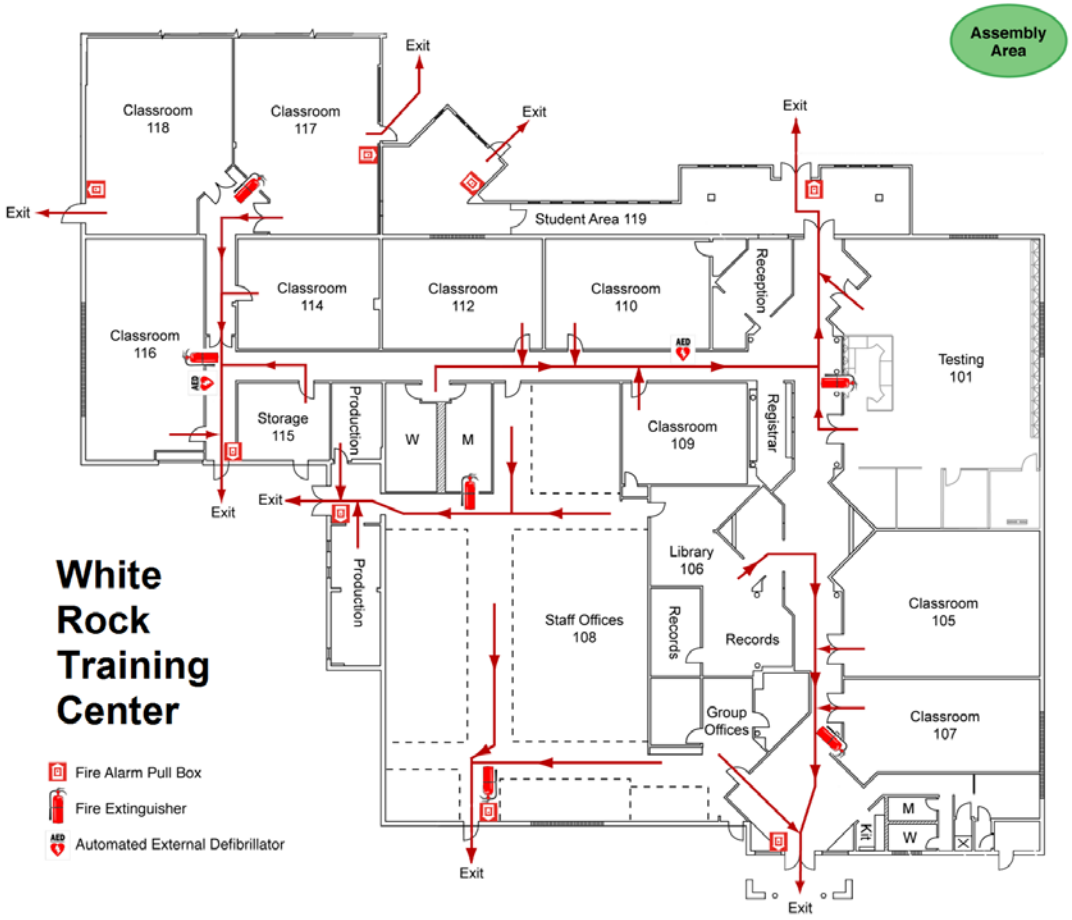

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Introduction

Course Overview

This course, *Waste Documentation* (Course 8504), was developed for individuals at Los Alamos National Laboratory (LANL) who

- characterize and document waste streams in the Waste Compliance and Tracking System (WCATS) according to Environmental Protection Agency (EPA) and Department of Transportation (DOT) regulations, Department of Energy Orders, and other applicable criteria.

NOTE: Generators must complete Waste Generation Overview Live (Course #23263) to obtain permissions to use WCATS.

Course Objectives

When you have completed this course, you will be able to

- recognize how waste documentation enables LANL to characterize and classify hazardous waste for compliant treatment, storage, and disposal;
- identify the purpose of the waste stream profile (WSP);
- identify the agencies that provide guidance for waste management;
- identify LANL policy documents that may be used to help compute waste documentation;
- identify the purpose of each electronic field on the WSP within WCATS;
- recognize which WCATS navigation panels are applicable to your waste stream(s); and
- populate the WCATS navigation panels with the information required to generate a WSP.

Target Audience

LANL-qualified waste generators, waste management subject matter experts (SMEs), and Waste Management Coordinators (WMCs).

Course Limitations

Participants musts must have the following pre-requisites:

- Unexpired LANL *Waste Generation Overview*, Course #23263. If training has expired, you will lose WCATS authorities.
- Working knowledge of Resource Conservation and Recovery Act (RCRA) hazardous waste regulations, particularly as pertains to waste characterization requirements.
- Familiarity with US Department of Transportation (DOT) hazardous class definitions and hazardous materials classification requirements.

Acronyms

AK	acceptable knowledge
CAS	Chemical Abstract Service
DOE	Department of Energy
DOT	Department of Transportation
EPC-CP	Environmental Protection and Compliance division – Compliance Programs (group)
EPA	Environmental Protection Agency
ID	identification
LANL	Los Alamos National Laboratory
LDR	land disposal restriction
LOC	level of concern
MSDS	material safety data sheet (see SDS)
NPDES	National Pollution Discharge Elimination System
PCB	polychlorinated biphenyls
NWW	non-waste water
RCA	radiological controlled area
RCRA	Resource Conservation Recovery Act
RLWTF	Radioactive Liquid Waste Treatment Facility at TA-50
RLWTP	Radioactive Liquid Waste Treatment Plant at TA-53
SDS	safety data sheet (replaces MSDS)
SWWS	Sanitary Waste Water System at TA-46
TSCA	Toxic Substances Control Act
TSDF	treatment, storage, and disposal facility
UCNI	unclassified nuclear information
UHC	underlying hazardous constituent
UTS	Universal Treatment Standards
WAC	waste acceptance criteria
WCATS	Waste Compliance and Tracking System
WDR	waste disposal request
WEF	Waste Acceptance Criteria Exception Form
WMC	waste management coordinator
WSP	waste profile form
WSP	waste stream profile

Module 1: Waste Guidance Documentation

Module Objectives

After completing this module, you will be able to

- recognize how waste documentation enables LANL to characterize, treat, store, and dispose of hazardous waste;
- identify the purpose of the waste stream profile (WSP) and the waste disposal request (WDR);
- identify federal and state laws and internal policies that provide guidance for waste management activities; and
- identify LANL policy documents that may be used to ensure an understanding of each field on the waste forms and that complete and accurate information is provided on the waste forms.

Waste Documentation at LANL

Official waste documentation resides within the Waste Compliance and Tracking System (WCATS) Oracle database. Generators who perform waste stream documentation must use WCATS. In addition to this course, generators must work closely with their waste management coordinator (WMC) to complete waste documentation requirements, as the WMC must review and concur with generator initiated WSPs..

WCATS Application Overview

WCATS supports the generation, characterization, processing, and shipment of LANL radioactive, hazardous, and industrial wastes.

WCATS is a desktop application that can be used on both PCs and Macintosh (Mac) computers. Some functions can also be performed via mobile devices that can communicate with the system via a docking device or cradle. Information captured and maintained by WCATS is stored in an Oracle database.

WCATS also comes with a report tool, Crystal Reports, which is used to create reports for end users and WCATS support personnel.

WSP Overview

The terms “waste stream,” “waste stream profile,” and “waste stream ID” all mean the same thing relative to this course and may be used interchangeably in waste documentation. Before the implementation of WCATS, waste was documented using the waste profile form (WSP). Information formerly filled out on this form must now be entered into the WCATS database.

Guidance Overview

To complete the WSP, you must provide the information necessary for proper handling, characterization, treatment, storage, and disposal of LANL waste. Guidance is provided by, but not limited to, the following statutes and documents:

- Resource Conservation and Recovery Act (RCRA),
- Toxic Substances Control Act (TSCA),
- Department of Transportation (DOT) regulations,
- New Mexico Hazardous Waste Act (NMHWA),
- New Mexico Administrative Code (NMAC)
- Department of Energy (DOE) Order 435.1

LANL Policy Documents

Documents that affect waste management at LANL are listed in the following table.

Requirement	Title
P409	LANL Waste Management
P101-14	Chemical Management
P930-1	LANL Waste Acceptance Criteria

NOTE: LANL institutional documents are subject to revision, and new documents are added and deleted regularly. For the latest updates of LANL policies, click on the Policies link on the LANL homepage.

Module 2: Waste Profile

Module Objectives

After completing this module, you will be able to

- identify the purpose of each WCATS WSP field,
- recognize which WCATS fields are applicable to a given waste stream, and
- provide all necessary information for the selected waste type.

Roles and Responsibilities

The following roles and responsibilities are recommended to ensure consistent and reliable waste characterization.

Waste Generators

Waste generators are responsible for providing a complete and accurate characterization of their waste. Waste generators should

- make waste determinations for any solid waste generated (except exempt waste);
- complete a WSP for each waste stream generated;
- obtain and upload analytical data and/or acceptable knowledge (AK) documentation necessary and sufficient to support current, up-to-date, accurate, and complete characterization of the waste stream;
- electronically sign the applicable Waste Generator Certification statement(s) in WCATS to affirm the accuracy of the information; and
- complete all attachments to the WSP (as appropriate).

WCATS will notify the WMC that the WSP is ready for WMC review. WCATS is LANLs permanent record of waste management documentation and the information will be retained forever

Waste Management Coordinators

WMCs

- assist generators in completing the WSP,

- review the WSP for accuracy and completeness, and
- sign the completed WSP as the waste-certifying official.

WCATS will notify the appropriate reviewers that the WSP is ready for review.

Reviewers

- review the WSP in WCATS for accuracy and completeness,
- work with the WMC and generator to correct any problems, and
- release the WSP for active use as a waste stream profile.

Exempt Waste

All wastes must be characterized with a WSP in WCATS unless they are specifically exempted. Exempted wastes include

- industrial wastewater discharges that are point source discharges subject to Section 402 of the Clean Water Act and are discharged from an active outfall included in LANL's National Pollution Discharge Elimination System (NPDES) Permit (contact the Water Quality and Hydrology Group [ENV-WQH] at 665-0453 for additional information);
- wastewater from restrooms, drinking water fountains, showers, and office-type kitchens (including wastewaters discharged via pipeline originating outside a radiological controlled area [RCA] controlled for contamination), but not including the washing of laboratory glassware;
- solid wastes that are intended for disposal, salvage, or recycling (office trash, food waste from the cafeteria, recyclable paper and cardboard, landscape debris, scrap metal, excess furniture and equipment, etc.); and
- Municipal waste disposed via a "Los Alamos National Laboratory Transfer Station Pass."

Lab-Wide Profiles

Certain commonly used profiles are available as LANL-wide or generic profiles and have already been created in the WCATS system. These waste streams are NOT exempt and must be tailored in WCATS to meet the specific characteristics of the waste and identification (ID) information for the specific generator. Contact your WMC for the current list of LANL-wide or generic profiles available to you. With your WMC's assistance, you can locate, copy, and modify a generic profile to meet your specific needs.

NOTE: Perform the following steps in WCATS to access the available LANL-wide profiles under the Waste Stream Navigator:

- Click on the tear drop.
- Click on LANL.
- Click on LABWIDE to access the lab-wide profiles.

Organization of the Waste Profile Record in WCATS

Table 1 shows the headings of the navigation panels in WCATS for the information/data required to populate and process a waste stream profile in WCATS.

Table 1: Waste Profile Record in WCATS

Reference*	Description
1	General Information
2	Site Area
3	Method of Characterization
4	Documentation
5	Waste Prevention/Minimization Information
6	Chemical/Physical Information
7	Waste Category
8	Generator Estimates
9	Annual Generation
10	Process and Waste Description
11	Ignitable/Corrosive/Reactive (I/C/R) Characteristics
12	Toxicity Characteristics
13	Composition
14	Additional Information
15	Work Control Documentation
16	Packaging/Storage Control Information
17	Land Disposal Restriction (LDR) Information
18	LDR Certifications
19	Underlying Hazardous Constituents (UHCs)*
20	Nuclides
21	Waste Certification Statements
22	Cost Codes
23	Work Path

24	Review—EPA Codes †
25	Review—Composition*
26	Review—Classification*
27	Signatures
28	Containers†
29	Comment Log
30	Edit Log

*If the user selects a "destination-specific" waste type i.e., RLWTF, RLWTF, SWWS, or NNSS then additional "Certification" panels will be "prompted" by WCATS.

†These panels are listed for information only. These panels are not completed by the waste generator and/or WMC during preparation of the waste stream profile.

General Information

The general information panel provides the foundation for the creation of a new waste stream profile. Once the waste type has been selected within the general information panel, the application can then identify which panels are required to produce a complete WSP. Profile panel options specific to the selected waste type will not appear until the general information panel has been saved.

All elements of the proposed waste stream profile must support and meet the criteria of the appropriate attachment of the *LANL Waste Acceptance Criteria* (P-930-1) for the selected waste type and ultimate waste management destination. Enter the following information into the newly created waste stream:

Waste Stream Name

You may use any waste stream name meaningful to you, but the name should be unique, concise, and descriptive of the waste generated. The waste stream name may contain general descriptors, such as specific building or process numbers, to differentiate similar waste streams. Use descriptors that will enable you to later find the waste stream in WCATS when searching using the waste stream name.

Waste Type

From the drop-down list in the waste type field, select the waste type for your waste stream. WCATS builds the record and selects input fields based on the waste type selected. More information on a waste type can be obtained by clicking the magnifying glass next to the waste type.

Company, Facility, Service Unit

From the drop-down lists provided in the generating area section, select the company (LANL), facility (technical area), and service unit (building) where the waste is to be generated

Generator and Waste Management Coordinator

Your name as the generator should already appear in the generator field. Use the search button to activate the person finder form and select your WMC.

Save the General Information

Click the save button on the toolbar to set the general information section.

NOTE: Once the general information has been saved, WCATS creates a new waste stream ID number.

Site Area

The Site Area (where the waste is being stored) contains the following information:

- waste stream location
- generating group
- waste accumulation (area and site ID number)
- Environmental Restoration (ER) site information if needed

Enter the following information into the site ID:

Waste Stream Location

This information includes the technical area, building, and room and may already be populated by WCATS. If needed, click on the binoculars and find the appropriate information.

Generating Group

This field should be populated based on your sign-in information. If not, you may fill it in with your group name.

Waste Accumulation

From the drop-down menus, select the type of temporary waste accumulation area, i.e., satellite accumulation area, etc. Locate the site identification number assigned to the accumulation area by EPC-CP.

ER Site

Use the ER site only if this profile is for an environmental restoration area. Leave blank (i.e., do not enter "N/A") if the waste is not from an ER site.

Save the Site Area Information

Click the save button on the toolbar to set the site area section.

Method of Characterization

NOTE: Refer to ADESH-AP-TOOL-111, Waste Characterization for complete and specific LANL criteria for AK and analytical data.

NOTE: The documentation used to support the characterization of your waste will consist of a combination what is entered under this panel, the Documentation panel, the Process Description/Waste Description panel, and Additional Information.

Select the "Method of Characterization" in the navigation panel. The profile panel will display five choices of methods of characterization and corresponding document references. Validated analytical data and/or AK sufficient to support compliant and defensible waste characterization, classification, and management of the waste must be attached (i.e., scanned and uploaded) to the profile in WCATS, or must be referenced in a traceable manner.

For each method selected, you must attach supporting documentation or specify the name or traceable path to the document if it is not feasible to attach the document, such as an ongoing process logbook.

Check all of the methods of characterization that apply to the waste stream

Three analytical choices are presented: chemical/physical, radiological, and PCB. There is a selection for material safety data sheet (MSDS)/safety data sheet (SDS) and other AK documentation.

Analysis is required when

- the waste has an unknown origin;
- a chemical reaction has occurred that may have created an unknown chemical compound;
- chemicals or products have been processed, combined, or otherwise altered, thus changing their original properties (i.e., SDS no longer accurately represents a “spent” waste).;
- the waste requires a radiochemical analysis for determining if contaminated;
- the waste contains unknown chemical or radiological contamination; OR
- AK documentation does not provide sufficient information to characterize the waste. (See P409, *Waste Management*)

If documentation will be attached to the WSP to support a selected method of characterization, then check the appropriate box under the heading “Attachment.”

Under the heading “Document Reference,” list the specific, traceable document or other source of information supporting the selected method of characterization, even if the document is not attached to the WSP.

Save the Method of Characterization Information

Click the save button on the toolbar to set the method of characterization information section.

Documentation

To attach documentation to a waste stream profile, perform the following tasks:

1. For the Documentation profile panel, click on Documentation in the navigation panel of the waste stream profile.
2. In the lower right corner of the Documentation profile panel, click the upload button.
3. Carefully read the document classification warning and click yes to continue.

NOTE: Any document uploaded into the WCATS application must be certified as unclassified and must have the appropriate derivative classification (DC) review performed.

If the document is considered classified and/or has not been DC reviewed, it cannot be uploaded. Click no and you will be returned to the documentation profile panel.

Once the document has been certified, a Microsoft open dialog box appears for selecting a file.

4. Select the file you wish to upload and click open. A new row appears with the attached document information provided.

NOTE: The maximum file size supported is 10 MB. Supported file formats include: doc, docx, pdf, xls, ppt, and many more.

5. Click the save button to save the attached document in the documentation profile panel.

NOTE: Notice that file name, type, and length for the selected document are displayed below the documentation table.

To download a previously uploaded file, select the desired document from the documentation table and click the download button.

To delete an uploaded document from the documentation table, select the desired document and click the remove button.

*NOTE: If analytical data are attached or referenced as a method of characterization, then **ALL DETECTED ANALYTES** (both RCRA-regulated and and non-regulated) must be addressed in the WSP (i.e., included under the "Toxicity Characteristics," "Composition," and/or "Additional Information" panels discussed later.*

NOTE: Characterization information may also be entered or further explained in the "Additional Information" panel covered later in this course.

Waste Prevention/Minimization

Select "Waste Prevention/Minimization Information" in the navigation panel. The profile panel will display four questions requiring answers from drop-down lists and a section for comments.

Select the correct answer for each question.

If any of the selected responses require a comment, enter your text in the comment box provided.

NOTE: WSP will not be refused or rejected if it includes comments, but rather comments will be used to assist generators and WMCs with waste minimization and prevention efforts.

Save the Waste Prevention/Minimization information.

Click the save button on the toolbar to set the waste prevention/minimization information section.

Chemical/Physical Information and Waste Source and Matrix

To enter Chemical and Physical information to a waste stream profile, perform the following tasks:

6. Click on chemical and physical information in the navigation panel of the waste stream profile for the chemical and physical information profile panel to appear.
7. From the drop-down list, select a waste source type for the waste stream.
8. From the drop-down list, indicate whether the waste was generated in an RCA by selecting yes or no.
9. From the drop-down list, select the radioactive waste type, i.e., low level or transuranic.

NOTE: If the waste generated is in a RCA and is nonradioactive, follow all of the requirements of P121, Radiation Protection, regarding contamination control.

When generating naturally occurring radioactive material (NORM) waste, contact the Waste Disposition Project–Low-Level Waste Disposition (WDP-LLWD) Project for guidance.

10. If the waste is intended for a special destination, based on the waste type selected under the General Information panel, WCATS will present specialized navigation panels unique to the destination facility and its waste acceptance criteria (WAC).

NOTE: For the following special destinations, the corresponding completed attachment listed below will be prompted in WCATS and must be populated with the applicable data information:

- Sanitary Waste Water System (SWWS) Plant
- Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50
- Radioactive Liquid Waste Treatment Plant (RLWTP) at TA-5
- HE Wastewater Treatment Facility (TA-16)
- Nevada Nuclear Security Site (NNSS)

NOTE: These attachments will be addressed later under the panel "Waste Certification Statements." Contact your WMC for assistance in determining proper disposal destinations.

11. From the drop-down list, indicate the waste classification by selecting unclassified or classified/sensitive.

*NOTE: **WARNING!** No classified/sensitive information is to be entered into the WCATS application. If your waste stream pertains to classified information, please contact EPC-CP for assistance.*

If the waste itself is considered classified/sensitive, first, it is encouraged that the user declassifies all classified/sensitive waste; and second, ensures that there is a disposal path forward and selects yes from the drop-down list.

To enter waste source and matrix information to a waste stream profile, perform the following tasks:

12. From the drop-down list, select a waste source for the waste stream.

NOTE: The waste profile designation of Waste Source A or Waste Source B is important to LANL for mandatory annual waste reporting to DOE. Under Executive Order 450.1a, DOE collects waste quantity generated from each of its sites by waste type and whether it was generated by routine processes or non-routine events. See Table 2 for more information on waste source options.

Table 2: Waste Source Options

Waste Source A is

- Produced from any LANL production operation, analytical, and/or research and development (R&D) operations; treatment, storage, disposal operations, "work for others"; or any other periodic and recurring work that is considered ongoing in nature.
- Generated at LANL from regular activities, a waste stream of a predictable quantity and characterization, and is not part of environmental restoration activities.

Source	Description
Decon (decontamination)	Results from routine removal of unwanted material (especially radioactive material) from the surface of, or from within another material
Materials Processing Production	Generated from mission-oriented materials processing and/or production
Research/Development/Testing	Generated from mission-oriented research, development, and/or testing
Scheduled Maintenance	Generated from planned/routine maintenance activities
Housekeeping Routine	Generated from routine/ongoing housekeeping activities
Spill cleanup Routine	Generated from conventional wiping/mopping/cleaning of normal, day-to-day spills resulting from routine activities
Sampling Routine Monitoring	Generated from routine, ongoing sampling/monitoring actions necessary as a part of mission-oriented project activity
Other	If the routine waste does not fit one of the above categories, check "other" and describe

Waste Source B is

- Generated or occurs on an unscheduled basis, or is of unpredictable quantity and/or characterization.
- Because of unpredictability, cannot be trended over an extended period of time.

Source	Description
Abatement	Removal of material such as asbestos or contaminated items that are not a routinely generated waste
Construction/Upgrades	Debris or waste from construction or remodeling, including removal of equipment or building components
Demolition	Generated from tearing down/removal of a building, or portion thereof

Decon/Decom (D&D)	Decontamination (Decon): removal of unwanted material (especially radioactive material) from the surface of, or from within another material and Decommissioning (Decom): permanent removal from service of surface facilities and components necessary for pre-closure activities only; after facility closure, in accordance with regulatory requirements and environmental policies
Investigation-Derived	Investigation-Derived Waste (IDW) is debris or waste from collecting environmental samples at a solid waste management unit and/or other areas of concern (e.g., soil contaminated with a listed waste or that exhibits characteristics of contamination, personal protective equipment [PPE], or sampling equipment). *NOTE: Remediation/restoration waste is not considered IDW.*
Orphan/Legacy	Any material or waste with an unknown origin, history, generator, constituent, or process or any material or waste that does not have a defined owner
Remediation/Restoration	Debris or waste from environmental restoration activities, or other activities conducted under a RCRA corrective action
Repackaging (secondary)	Generated from the required overpacking (repacking) of leaking or damaged waste containers
Unscheduled Maintenance	Generated from emergency, unplanned, non-routine maintenance activities
Housekeeping—Non-routine	Generated from lab, building, storage area, or outdoor area cleanup (housekeeping) activities. Includes clean-outs of excess or unwanted items and materials, and chemical inventory reduction projects
Spill cleanup—Non-routine	Generated from cleanup of accidental releases or spills
Non-petroleum Tanks	Generated from removal and/or cleanup of storage tanks containing material other than petroleum products
Petroleum Tanks	Generated from the removal and/or cleanup of storage tanks containing petroleum products
Other Waste	If the waste does not fit into one of the above categories, check other and describe in the “Other” field under Waste Source and Matrix.

13. From the drop-down list, select a waste matrix for the waste stream profile.

NOTE: See Table 3 for more information on waste matrix options.

Table 3: Waste Matrix Options

Category	Description
Gas	• Gas at a pressure less than or equal to 1.5 atmospheres • Gas at a pressure greater than 1.5 atmospheres • Gas: liquefied, compressed. A gas, which in a packaging under the charged pressure, is partially liquid at a temperature of 20° C (68° F).
Liquid	• Aqueous waste — waste that is amenable to pH measurement; an aqueous solution contains at least 20% free water by volume. • Non-aqueous waste — liquid (or liquids) that contains less than 20% water • Suspended solids/aqueous — an aqueous liquid with a suspension of finely divided particles from which the particles do not settle out readily and that cannot be readily filtered (a colloid) • Suspended solids/non-aqueous — a non-aqueous liquid with a suspension of finely divided particles from which the particles do not settle out readily and that cannot be readily filtered (a colloid)
Solid	• Powder, ash, or dust — a loose grouping or aggregation of solid particles • Solid — a substance that has a definite volume and shape and that resists forces that tend to alter its volume or shape • Sludge — any thick, viscous mass; usually a sediment or filtered waste product • Absorbed/adsorbed liquid — a liquid substance that has penetrated into a solid • Debris — defined in P409 Construction and Demolition debris tool

NOTE: Profile different waste streams separately (e.g., liquid acetone and rags contaminated with acetone are both from the same process but are separate waste streams to be profiled separately).

14. From the drop-down lists provided, select a single matrix type for the open waste stream profile.

NOTE: Homogeneous waste contains only one material or substance, or waste has its components adequately mixed so that identical samples can be drawn throughout.

Heterogeneous waste contains multiple components that are separate because of density or specific gravity and are located in different places within the mixture.

If waste is heterogeneous, provide a description in the process and waste description panel.

15. Click the save button to save all data entered into the profile.

Waste Category

To select a waste category for a waste stream profile, perform the following tasks:

NOTE: This section applies to section 2 of the WSP.

16. For the waste category profile panel, click on waste category in the navigation panel of the waste stream profile.
17. From the available waste categories table provided, select all proper waste categories that apply to the waste stream by clicking on the respective check box.

NOTE: See Table 4 below for available waste categories and descriptions.

Table 4: Waste Category Options

Category	Description
Inorganic	Pertaining to, or composed of, chemical compounds that do not contain carbon as the principal element (except carbonates and cyanides).
Organic	Composed of chemical compounds based on carbon chains/rings and containing hydrogen with/without oxygen, nitrogen, or other elements. Typically includes PPE, wood, paper, cellulosics, volatile/semi-volatile organic compounds.
Solvent	This box is checked ONLY if the waste stream includes those SPENT halogenated on non-halogenated solvents that are identified (i.e., “Listed”) for the EPA Waste codes F001-F005 in 40 CFR 261.31. Solvents are considered “spent” when they have been used to dissolve or mobilize other constituents (examples: degreasing, cleaning, fabric scouring, diluents, extraction, reaction, and synthesis media), or include the still bottoms from the recovery or recycling of listed spent solvent. Generally, for waste-characterization purposes, a volatile or semi-volatile organic compound specified for its toxic or ignitable characteristics.
Degreaser	Check this box only if the constituent used for degreasing is identified (i.e., “listed”) in 40 CFR 261.31, AND the waste involves a spent solvent (as described above) used primarily in or for a large scale degreasing operation (i.e., not for minor equipment cleaning or maintenance operations). Note: If the constituent(s) is not specifically listed in 40 CFR 261.31 and/or is not spent (i.e., used as a degreaser) then do NOT check this box.
Dioxin	A member of a family of highly toxic chlorinated aromatic hydrocarbons found in a number of chemical mixtures. Dioxin is also known as polychlorinated dibenzo-para-dioxin.

Electroplating	A material processing operation to cover or coat an object with a thin layer of metal by electrolysis. The process can generate corrosive and toxic metal-containing wastewater, treatment sludges and rinsates. Regulated electroplating operations do not include the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc, and aluminum plating on carbon steel; (6) chemical etching and milling of aluminum; (7) chemical conversion coating (wastewater); (8) electrolysis plating; and (9) printed circuit board manufacturing (unless etching or milling). Describe in the "Waste/Process Description" box the detail of the electroplating process. *Note: Treatment of wastewater may result in the classification of an F006 RCRA-regulated sludge after-treatment.* *Note: Treatment of wastewater from the chemical conversion coating of aluminum may result in the classification of an F019-RCRA-regulated waste sludge.* *Note: The electroplating meets the listing under 40 CFR 261.31 for F007, F008, or F009.*
Treated Hazardous Waste or Residue	Waste or residue generated from the treatment of listed or characteristic hazardous waste. Also included are wastes from treated hazardous debris under 40 CFR 261.3(f)(1). For treated hazardous debris, describe the following in the process description [40 CFR 261.3(f)(1)]: • How the hazardous debris was originally generated, and • The technology from 40 CFR 268.45, Table 1, used to treat the debris. 1) If checked, provide WCATS ID numbers or legacy WSP numbers in the Waste/Process Description field or in the "Additional Information" panel for all wastes prior to treatment. EPA codes and UHCs associated with these WSPs are needed to certify the treatment for the waste(s). 2) See additional instructions under the Notification and Certification—"TSDF or Generator Treatment" subsection on the WCATS-generated Land Disposal Restriction and Notification (LDR) form. The LDR form will need to be completed to inform the receiving treatment storage disposal facility (TSDF) that the waste either does or does not meet the treatment standards and that a certification will be required.
No-Longer Contained-In	This applies only to hazardous debris and/or hazardous environmental media for which the generator has received a no-longer contained-in determination from the State. The documentation of the no-longer contained-in determination will need to be provided with the WSP.
Explosive Process	High Explosive (HE) or HE-contaminated waste. Check if the waste is from an explosive process, even if the waste is or may no longer be explosive. Treated explosive waste does not fall under this category but falls under the "Treated Hazardous Waste or Residue" category.

Infectious / Medical	Waste materials that carry a probable risk of transmitting disease to humans or animals. Examples include, but are not limited to: • Regulated medical waste • Infectious substances (etiologic agents) • Other potentially infectious materials (OPIM) See LANL Waste Acceptance Criteria, Attachment 10.
Biological	A waste that cannot be classified as an infectious substance or as a regulated medical waste and is not subject to federal or state regulations of infectious waste.
Beryllium	Includes beryllium metal, beryllium oxide, alloys containing 0.1% or more beryllium, and beryllium compounds, such as beryllium sulfate. See ISD101-21, Chronic Beryllium Disease Prevention Program for more information.
Empty Container	Check if the item meets the definition of a "RCRA empty container," as defined in 40 CFR 261.7.
Battery	Alkaline and carbon batteries may be discarded as municipal refuse. • Hazardous-waste batteries (e.g., mercury, lithium, and nickel-cadmium) are to be managed as universal waste. (See Lab-wide profile). *Note: See either P409, the "Waste Identification Toolset," and click on the appropriate button in the battery section or the Battery Recycling Program for guidance.* Other non-hazardous batteries will need to be profiled. *Note: Non-radioactive, wet-lead, acid and gel cell batteries should be recycled through salvage or as profiled and managed as universal waste.*
Asbestos	Contains any of the following naturally occurring crystalline minerals: chrysotile, amosite, crocidolite, tremolite, actinolite, and anthrophyllite. Comes in two forms: • Friable: brittle or readily crumbled, pulverized, or reduced to powder by hand pressure when dry. • Non-friable: not brittle or readily crumbled when dry and is completely encapsulated in a manufactured article such as an undamaged safe or file cabinet. *Note: Refractory ceramic fiber does not meet the definition of asbestos and is not a New Mexico Special Waste. Check with your WMCs for safe handling.*
Polychlorinated Biphenyls	Regulated by the source concentration of polychlorinated biphenyls (PCBs) in the material. Check the box that indicates your source concentration.

Hazardous Waste Contaminated Soil	Soil that contains a hazardous waste listed in subpart D of part 261, or that exhibits a characteristic of hazardous waste identified in subpart C of part 261. "Soil" means unconsolidated earth material composing the superficial geologic strata (material overlying bedrock). Soil consists of clay, silt, sand, or gravel size particles as classified by the U.S. Natural Resources Conservation Service or a mixture of such materials with liquids, sludges or solids which is inseparable by simple mechanical removal processes and which is made up primarily of soil by volume based on visual inspection. Hazardous waste contaminated soil is the only environmental media that has specific certification requirements under the LDR regulations, 40 CFR 268. See additional instructions for completing the LDR for hazardous waste contaminated soil that meets or does not meet treatment standards under the Notification and Certification: "Generator Requirements" subsection. For non-hazardous soil (environmental media) do not mark this box.
Untreated Hazardous Debris	Waste that meets the definition of Debris according to 40 CFR 268.2(g) and is RCRA-hazardous because it contains a hazardous waste listed in Subpart D of part 261, or that exhibits a characteristic of hazardous waste identified in subpart C of part 261 (e.g., PPE). See additional instructions for completing the LDR for untreated hazardous debris under the "Notification and Certification—Generator Requirements" subsection. For non-hazardous debris (e.g., construction debris, concrete, dirt, and/or rebar) do not mark this box for untreated hazardous debris under this section.
Commercial Solid Wastes	Check this box for profiling a waste to be accepted at the Los Alamos County Landfill other than routine sanitary solid waste such as office trash, loads with a LANL Transfer Station Pass issued by EPC-CP. Contact Water Quality and RCRA (EPC-CP) for assistance with waste destined for the sanitary solid-waste landfill.
Other	If the waste does not belong in one of the above waste categories, check "other" and describe your waste in the field under the "Response" column.

- If desired, a response to the selected category can be entered by double-clicking in the corresponding response field and entering the relevant information.
- Click the save button to save all data entered into the waste category profile panel.

Generator Estimates

Generators are expected to provide a general estimate of the waste stream's annual volume per calendar year. For the profile to be approved, estimates for 3 years must be entered. Estimates can be added for future years, and previously-entered estimates can be inactivated and updated.

In accordance with the LANL Director's instructions, generators must budget for waste generation activities. This information will assist groups such as, WDP or ENV-ES, in projecting waste volumes for each year, as WSPs are reviewed, and extended if necessary, on an annual basis.

To enter generator estimates for a waste stream profile, perform the following tasks:

- For the generator estimates profile panel, click on generator estimates in the navigation panel of the waste stream profile.
- In the generator estimates profile panel, click the add button located at the bottom right. .
- In the Input dialog box that appears, enter the year of the estimate and click OK.

NOTE: If there is currently an estimate for the year you have entered, you will be prompted with an option to inactivate the current estimate. You must inactivate the current estimate to create a new one for the same year.

NOTE: If your WSP is for a one-time use or one year duration project, you still must enter estimates for years two and three (in which case, estimated volumes for years two and three will be zero).

- In the new row that appears in the generator estimates table, double-click in the volume column for the waste stream.

NOTE: The volume unit is automatically set to cubic meters (CM or m^3). If you would like to change the unit of measure, click in the volume unit column to choose from a drop-down list of options.

- The Estimate Date is calculated by the application.
- Repeat the above steps for 2 more years (3 total years are required).
- Click the save button to save all data entered into the generator estimates profile panel.

NOTE: A user can also inactivate an estimate by selecting the desired estimate and clicking the inactivate button below the table. A new estimate for that year can then be entered.

To view all inactive and active estimates for the open waste stream, check the Show Historical Estimates box in the lower left corner of the generator estimates profile panel.

Annual Generation

The application keeps track of the amount of waste generated on a given waste stream for the year to date. To review the annual generation table for an open waste stream profile, perform the following tasks:

To display the annual generation profile panel, click annual generation in the navigation panel of the waste stream profile.

NOTE: Notice the annual generation table is organized by year, number of containers assigned to the waste stream, total volume and weight of all included containers, and the total weight of the waste minus the containers.

Notice the option to view alternative units of measurement for both the volume and weight is offered in the drop-down list in the lower left corner of the annual generation profile panel.

Process and Waste Description

Generators are required to provide any additional information pertaining to chemical, physical, or radiological characteristics of the waste that could pose a threat to human health and/or the environment. The first box in this panel should provide a clear, succinct description of the waste-generating process, including what materials and chemicals are used and how they are used. The second box should provide a clear and concise description of the generated waste itself, including physical and chemical properties, regulatory, and waste management aspects of the waste.

To enter Process and Waste Description information to a waste stream profile, perform the following tasks:

- For the process and waste description profile panel, click on process and waste description in the navigation panel of the waste stream profile.
- In the fields provided, enter a complete and concise description for both the waste-generating process and the waste associated with the waste stream.

NOTE: Do not include the number of containers, the volume and weight of waste, or property numbers; these are specific to a waste load, not a waste stream.

- Click the save button to save all data entered into the process and waste description profile panel.

Ignitable/Corrosive/Reactive (I/C/R) Characteristics

I/C/R characteristics refer to the ignitability, corrosivity, and reactivity of a waste stream. To identify I/C/R characteristics for a waste stream profile, perform the following tasks:

- For the I/C/R characteristics profile panel, click on I/C/R characteristics in the navigation panel of the waste stream profile.
- In the drop-down list, select an ignitability characteristic.
- Next, select the corrosivity characteristic.
- If the waste is a liquid, check the appropriate range for the flash point of your waste stream, as determined by analytical data, MSDS/SDS, or other AK.

NOTE: If the waste is not a liquid, select the appropriate category from Table 5 below for other forms of ignitable waste as defined in 40 CFR 261.22(a):

Table 5: Other Forms of Ignitable Waste

Category	Description
EPA Ignitable — Non-liquid	Check this box if the waste is a ignitable, non-liquid waste as defined at 40 CFR 261.21(a)(2) (e.g., a flammable metal powder).
DOT Flammable Gas	Check this box if the waste is an ignitable compressed gas as defined in 49 CFR 173.300 and/or 49 CFR 173.115(a).
DOT Oxidizer	Check this box if the waste meets the definition of a DOT oxidizer as defined in 49 CFR 173.151 and 49 CFR 173.127(a).
Not Ignitable	Check this box only if a flash point range is not selected and the waste does not meet any of the Table 5 criteria.

NOTE: If the waste is ignitable by one of these criteria, identify in the composition profile panel the component(s) causing this condition.

- In the drop-down list, select a corrosivity characteristic.

NOTE: EPA corrosivity is defined in 40 CFR 261.22(a). A solid waste exhibits the characteristic of corrosivity if a representative

sample of the waste has either of the properties shown in Table 6 below.

Table 6: Characteristics of Corrosivity

Category	Description
pH Ranges	Check this box if the waste is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by 40 CFR 261.22(a)(1). Liquids that do not contain water (hydrogen ions) cannot be measured for pH.
Liquid Corrosive to Steel	40 CFR 261.22(a)(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 millimeters (0.250 inch) per year at a test temperature of 55°C (130°F).
Non-aqueous	Check this if the waste does not meet any of the above criteria.

NOTE: If the waste is corrosive by one of these criteria, identify in the composition profile panel the component(s) causing this condition.

- If applicable, in the drop-down list, select the temperature range that best describes the boiling point of your liquid waste.

NOTE: Boiling point is the temperature at which the transition from the liquid-to-gaseous phase occurs at atmospheric pressure.

The boiling point identifies the DOT packaging group for Hazard Class 3.

If the waste is not liquid in form, select the not applicable option.

- In the table of options provided, select reactivity characteristics by checking the selected box in the corresponding row.

NOTE: EPA reactivity is defined in 40 CFR 261.23(a). A solid waste item exhibits the characteristic of reactivity if a representative sample of the waste fits any of the category descriptions shown in Table 7.

Table 7: Characteristics of Reactivity

Category	Description
RCRA Unstable	It is normally unstable and readily undergoes violent changes without detonating. [40 CFR 261.23(a)(1)]
Water Reactive	It reacts violently with water. [40 CFR 261.23(a)(2)] OR It forms potentially explosive mixtures with water. [40 CFR 261.23(a)(3)] OR When mixed with water, it generates toxic gases, vapors, or fumes in sufficient quantity to present a danger to human health or the environment. [40 CFR 261.23(a)(4)]
Cyanide or Sulfide Bearing	It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment. [40 CFR 261.23(a)(5)]
Explosive	It is capable of detonation or explosive decompositon or reaction at standard temperature and pressure.[40 CFR 261.23(a)(6)]
Shock Sensitive	It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure. [40 CFR 261.23(a)(7)]
DOT Forbidden Explosive	Waste meets the RCRA definition of explosive, found at 40 CFR 261.23(a)(8), OR is DOT "forbidden" according to 49 CFR 173.54, OR Is a DOT Division 1.1, 1.2, or 1.3 material, as defined at 49 CFR 173.50 and 49 CFR 173.53 [40 CFR 261.23(a)(8)]
Non-reactive	Check this if the waste does not meet any of the above criteria.

NOTE: If the waste is reactive by one of these criteria, identify in the composition profile panel the component(s) causing this condition.

- If desired, enter a response to the reactivity characteristic selected by double-clicking in the response column of the corresponding row.
- Click the save button to save all data entered into the I/C/R characteristics profile panel.

Toxicity Characteristics

NOTE: Toxicity characteristics refers to characterizing the following contaminants:

- *8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and*
- *24 toxicity characteristic organics (VOCs/SVOCs)*

- *8 herbicides and pesticides*

A solid waste that exhibits the characteristic of toxicity has an EPA Hazardous Waste Number as defined in 40 CFR 261.24. To identify toxicity characteristics for a waste stream profile, perform the following tasks:

- For the toxicity characteristics profile panel, click on toxicity characteristics in the navigation panel of the waste stream profile.
- For each contaminant listed in the contaminants table provided, indicate the method of characterization. The method of determining the presence of each contaminant listed here must be documented by checking either “AK,” “TCLP,” or “Total.” In addition, each contaminant listed here must either be checked for “None/non-detect” or, if detected or determined to be present in the waste, must have a minimum-maximum (min-max) range for contaminants determined to be present in the waste. AK and/or analytical data supporting the values input here must be identified and referenced or attached to the WSP, as discussed earlier under “Documentation.” Profiles with contaminant values that do not match the documentation or are not supported by documentation will not pass review or become activated.

NOTE: To ensure a complete waste stream profile, characteristics for all contaminants must be accounted for. Methods of characterization are described in Table 8.

Table 8: Methods of Characterization

Method	Description
Acceptable Knowledge (AK)	If AK documentation was used as the characterization method, check the "AK" box. *Note: The WSP by itself is not adequate documentation for AK. AK documentation is described in P409.*
Toxicity Characteristic Leaching Procedure (TCLP)	Check this box as applicable if TCLP analysis was performed for either all constituents or just certain constituents. TCLP results are typically reported in mg/L.
Total	Check this box as applicable if total concentration of constituents (i.e., "Totals") analysis was performed for either all or just certain constituents. If the waste was analyzed by "Totals", do not divide the reported result(s) by 20 for "TCLP-equivalent", just enter the Totals result(s) as reported.

- For each contaminant, indicate the concentration by entering the minimum-to-maximum range in parts per million by double-clicking in the minimum and maximum fields provided in each corresponding row.

NOTE:

- *If no concentration is detected, check the None/Non-detect box in the corresponding column.*
- *Notice that the limit column identifies the regulatory limit for each contaminant.*
- Click the save button to save all data entered into the toxicity characteristics profile panel.

Composition

All other constituents in the waste not already identified in the Toxicity Characteristics panel must be listed in the composition panel of the waste stream profile. All constituents of the waste, including physical (e.g., wood, concrete, PPE, water) and chemical, must be accounted for. All analytes detected and reported on analytical data must be accounted for as well. Multiple, inconsequential constituents may be grouped (e.g., as "other minor constituents") on one line of the Composition panel, with a min-max range for all of these constituents combined. However, the supporting AK/data for these grouped constituents must be attached to the WSP or otherwise described under 'Waste Description' and/or 'Additional Information'.

To add additional constituents and contaminants to a waste stream profile, perform the following tasks:

- For the additional constituents and contaminants profile panel, click on composition in the navigation panel of the waste stream profile.
- Click the Add (CAS) button to deploy the chemical reference table.
- In the chemical reference table, select the desired material, by name or by Chemical Abstract Service (CAS) number and click OK. You can use the search box to search for a partial CAS number or material name.
- If the material you desire is not available in the chemical reference table, click cancel to return to the additional constituents and contaminants profile panel. In the additional constituents and contaminants profile panel, click the other button to deploy a WCATS Input Request Dialog box.
- Enter the name of the material you wish to add and click OK.
- Once the newly added material is entered into the additional constituents and contaminants table, the concentration amounts can be entered by double-clicking in the corresponding columns.

NOTE:

- *The concentration unit is automatically set to weight percentage.*
- *If you wish to change the concentration unit to ppm, click in the corresponding column, and select from the drop-down list.*
- *Guidelines for concentration ranges are shown in Table 9.*

Table 9: Guidelines for Concentration Ranges

Guidelines for the ranges are	
Constituent between	**Guideline**
0.1 and 5.0% of total	Report to the nearest 1%
5.0 and 25.0% of total	Report to the nearest 2.5%
25.0 and 50.0% of total	Report to the nearest 5%
50.0 and 100.0% of total	Report to the nearest 10%

NOTE: Accounting for 100% of the waste ensures proper classification, storage, transportation, and disposal, but because of the errors inherent in chemical analysis and physical measurements, your maximum value may exceed 100%. Good characterization practices, including keeping to the range limits specified above, should result in a maximum value no greater than 130%, which is acceptable.

- Click the save button to save all data entered into the additional constituents and contaminants profile panel.

NOTE:

- *If you entered the material name via the other button, there will not be a CAS number associated with the material.*
- *To convert from % to ppm: multiply the percentage by 10,000 (e.g., 2% × 10,000 = 20,000 ppm).*
- *To convert from ppm to %: divide the percentage by 10,000 (e.g., 20,000 ÷ 10,000 = 2%).*
- *To delete an unwanted item from the additional constituents and contaminants table, select the item and click the remove button in the lower right corner.*
- *If you frequently encounter a chemical that is not in the provided list, send the chemical name and CAS number to wastehelp@lanl.gov. An SME will review the information and add it to the list if necessary.*

Additional Information

This section should be used to enter information that clarifies, completes, or otherwise enhances the other sections of the WCATS profile. This information could and should include the following as applicable:

- A statement indicating that potential RCRA-listed solvents were or were not used for their solvent properties, enabling a determination of whether F001-F005 waste codes apply.
- Statement indicating that the area where waste was generated (e.g., soil, concrete, asphalt) was not from any (ER-related) potential release sites or area of radioactive contamination, or that historical documents indicate that no spills or other contamination occurred in the vicinity of the waste-generating source.
- The chemical, physical, or radiological characteristics of the waste that could pose a threat to human health or the environment.
- Waste matrix is stable/solidified form; therefore, detected or potential RCRA-characteristic metals are unlikely to leach above regulated limits (e.g., chromium in monolithic stainless steel).
- Detected constituents are not from RCRA F-, K-, P-, or U-listed sources, according to EPC-CP-approved Due-Diligence review or AK Review.
- See “Additional Constituents Form” under “Documentation” for detail of minor additional constituents.
- Although constituents listed could otherwise result in an (explosive, reactive, oxidizer, etc.) hazard, the waste as generated does not meet the regulatory definition of (explosive, reactive, oxidizer, etc).
- WSP is for one-time use only, for disposition of the wastes described herein. Similar wastes generated in the future will be profiled separately.
- Container-specific (radiological, chemical, etc.) characterization data will be attached to the container record with the associated Waste Disposition Request (WDR).

Work Control Documentation

Waste generators must ensure that their procedures address how waste is managed and controlled. By answering the questions listed below, the generator is confirming that the applicable procedures adequately address how waste is managed and how changes to waste constituents are prevented.

To enter work control documentation for a waste stream profile, perform the following tasks:

- For the work control documentation profile panel, click on work control documentation in the navigation panel of the waste stream profile.
- From the drop-down list, select yes or no in response to the available questions.
- If any of the selected responses require a comment, enter such text in the comments field provided.
- Click the save button to save all data entered into the work control documentation profile panel.

Packaging/Storage Control Information

As required by P409, waste generators must ensure that waste is packaged in accordance with the applicable WAC. Additionally, they must identify the controls that will be implemented to prevent contents from being added to waste containers while in storage. To identify packaging/storage control information for a waste stream profile, perform the following tasks:

- For the packaging/storage control profile panel, click on packaging/storage control in the navigation panel of the waste stream profile.
- In the text field provided, enter a description as to how the waste will be packaged according to the applicable WAC.
- Identify the intended storage control measures by checking the selection box in the corresponding row.

NOTE: Storage controls are considered actions taken to prevent contents from being added to waste containers while in storage.

- If desired, a response to your selection can be entered by double-clicking in the provided response field.
- Click the save button to save all data entered into the packaging/storage control profile panel.

Land Disposal Restriction (LDR) Information

This panel is used only for RCRA-hazardous waste. To enter LDR information for a waste stream profile, perform the following tasks:

- For the LDR information profile panel, click on LDR information in the navigation panel of the waste stream profile.
- From the list, select a proper treatability group for your waste stream by checking the corresponding box.

- Determine if the waste stream meets the Non-Wastewater, Wastewater treatability group, or the alternative treatment, 40 CFR 268.42(c), “Lab Pack.” (See Table 10 below).

Table 10: Treatment

Treatability Group	Criteria
Non-Wastewater	If the waste stream does not meet the definition for wastewater.
Wastewater	“Wastewaters are wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS)” [40 CFR 268.2(f)].
Lab Pack [40 CFR 268.42(c)]	EPA hazardous waste numbers and certification will be added on the form to meet the requirement for the alternative treatment under 40 CFR. Select this box for waste that meets the definition of a lab pack(s) as defined in 40 CFR 264.316 or 265.316 and the waste contains NONE of the waste specified in Appendix IV of Part 268 (D009, F019, K003, K004, K005, K006, K062, K071, K100, K106, P010, P011, P012, P076, P078, U134, and U151) and contains NONE of the reactive waste specified in 40 CFR 261.23(a)(1) through (8) The WSP reviewer will assign the appropriate EPA codes. A certification for lab packs containing hazardous waste to use the alternative treatment standard for lab packs will be included on the LDR Certifications panel.

- If Lab Pack was selected, no other information is required for the LDR portion of the WSP. If Lab Pack was not selected, continue on.
- From the lists provided, select either a generator requirement or a TSDF or generator treatment option for your waste stream by checking the corresponding box.

NOTE:

- *The receiving TSDF needs to be informed that the waste either does or does not meet the applicable treatment standards with the required certification(s).*
- *For waste characterized at the point of generation, follow the subsection for “Generator Requirements.” For treated waste, follow the subsection for “TSDF or Generator Treatment.” Descriptions for both generator requirements and TSDF or generator treatments are provided in Table 11.*

Table 11: Generator Requirements

Generator Requirements are described as the following:	
Option	Description
This shipment contains hazardous waste-contaminated soil that does not meet treatment standards.	Check this box if you have hazardous soil that does not meet the treatment standards. Check the treatability group box for NWW (since this is not WW). Identify the UHCs in the waste stream that exceed the Universal Treatment Standards (UTS) limits by 10 times in order to meet the alternative 40 CFR 268.49 treatment standards. Two certifications for contaminated soil will be included on the LDR Certifications panel. Note: If the hazardous waste soil meets the treatment standards (268.40 and/or 268.49) at the original point of generation, check box for "Hazardous Wastes-contaminated soil meeting treatment standards at point of generations" under the Generator Requirements subsection. WDP-HMLW will include the appropriate EPA codes and subcategories on the LDR form.
This shipment contains untreated hazardous debris to be treated to 40 CFR 268.45 treatment standards.	Check this box if you have untreated debris and would like it to be treated to the alternative 40 CFR 268.45 standard. Check the treatability group box for NWW (since this is not WW). Identify all potential UHCs. *Note: In order for the treatment facility to determine the best treatment technology for the waste, all potential UHCs need to be identified. The contaminants subject to treatment in this hazardous debris are being treated to comply with 40 CFR 268.45.* WDP-HMLW will include the appropriate EPA codes and subcategories on the LDR form. This is just a notification; there is no certification required under 40 CFR 268.7(a)(2).
Hazardous wastes (except soil) meeting treatment standards at point of generation.	For example, this box is checked if all constituents in an F-listed waste are below the concentration based treatment standards under 40 CFR 268.40 at the point of generation. 40 CFR 268.7(a)(1) allows the determination of whether the hazardous waste meets the treatment standards either by testing the waste or by using acceptable knowledge of the waste. Check this box if the waste at the point of generation meets the treatment standards. Check the appropriate treatability group box. A certification will be included on the LDR Certifications panel. WDP-HMLW will include the appropriate EPA codes and subcategories on the LDR form.

Hazardous wastes contaminated soil meeting treatment standards at point of generation:	For example, this box is checked if all constituents in an F-listed waste are below the concentration based treatment standards under 40 CFR 268.40 or 40 CFR 268.49 at the point of generation. 40 CFR 268.7(a)(1) allows the determination of whether the hazardous waste contaminated soil meets the treatment standards either by testing the waste or by using acceptable knowledge of the waste. Check this box if the contaminated soil at the point of generation meets the treatment standards. Check the appropriate treatability group box. Two certifications will be included on the LDR Certifications panel. Note: If this is hazardous waste contaminated soil meeting treatment standards at the point of generation, the table under 40 CFR 268.7(a)(4) requires two certifications. There will be two certifications provided on the LDR form for signature. WDP-HMLW will include the appropriate EPA codes and subcategories on the LDR form.
If the hazardous waste does not fit into the descriptions listed above, complete the LDR form with the following:	Check the appropriate treatability group box. Identify all potential UHCs if applicable. This is just a notification; there is no certification required to meet 40 CFR 268.40 treatment standards. WDP-LLWD will include the appropriate EPA codes and subcategories on the LDR form.
TSDF or Generator Treatments are described as the following: *Note: This section pertains to treated waste from a TSDF, or less than 90-day generator treatment. Generator treatment requires different certifications than TSDF treatment, so the treatment facility/generator must check the appropriate TSDF or generator treatment box*.	
TSDF-treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45	Check this box for TSDF treatment if the hazardous debris has been treated to meet the alternative 40 CFR 268.45 treatment standards. Check the treatability group NWW (since this is not WW). List the untreated waste (original) WSP number(s) in the process description of this WSP. List the description of treatment technology from 40 CFR 268.45, Table 1, in the process description section of the WSP. The description of how the hazardous debris was originally generated will be provided by the original profiles (before treatment). A certification is required to indicate these contaminants are compliant with 40 CFR 268.45.
Generator-treated hazardous debris meeting the alternative treatment standards of 40 CFR 268.45	Mark this box for generator treatment if the hazardous debris has been treated to meet the alternative 40 CFR 268.45 treatment standards. Follow steps 1 through 4 as listed above under the TSDF treated hazardous debris. Two certifications are required to indicate these contaminants

	are compliant with 40 CFR 268.45. *Note: If the waste is disposed in a Subtitle D facility, the required notification will be sent to the State by EPC-CP with the information listed above plus the name and address of the Subtitle D facility. If the waste is disposed in a Subtitle C facility, then the notification would be provided to the Subtitle C.*
Hazardous Waste Contaminated Soil treated to 40 CFR 268.49	Check this box if the hazardous waste contaminated soil has been generator treated or TSDF treated to meet the alternative 268.49 standards. The UHC must be treated to below 10 times UTS or a 90% reduction in the original concentration of the UHCs to meet this certification. The waste will be land disposed without further treatment. (See Guidance on Demonstrating compliance with Land Disposal Restrictions [LDR] Alternative Soil Treatment Standards) Two certifications are required to indicate that the soil has been treated to meet the alternative 268.49 standards. See additional certifications for soil treated to remove all characteristics by checking one of the following boxes listed in this subsection: “Waste or residue from characteristic hazardous waste meeting treatment standards and UTS” or “Waste or residue from characteristic hazardous waste treatment not meeting UTS.” *Note: Since the ultimate disposition of the waste is unknown at the time the waste stream profile is completed (Subtitle C or Subtitle D landfill), the information listed below is required.* *Check treatability group box NWW (since this is not WW).* WDP-LLWD will include the appropriate EPA codes (applied to waste after treatment) and subcategories on the LDR form.
Waste or residue from characteristics hazardous waste treatment meeting treatment standards and UTS	Check this box if the waste has been treated to remove all characteristics (268.40, or 268.49) and meets UTS for all UHCs after on-site treatment. The waste will be land disposed without further treatment. The information from the original WSP, the WSP for the residue, and the certification constitute the notification required to meet 40 CFR 268.7(e) requirements. Check the treatability group. Identify all potential UHCs. Two treatment certifications for waste or residue from characteristics hazardous waste treatment meeting treatment standards and UTS will be included on the LDR form for signature. WDP-LLWD will include the appropriate EPA codes for the treated waste, and subcategories on the LDR form.
Waste or residue from characteristic hazardous waste treatment not meeting UTS	Check this box if the waste is no longer hazardous, but does not meet UTS for all UHC(s). The waste will be shipped to another facility for further treatment. Check the treatability group box.

	Identify all potential UHCs. Two certifications will be provided on the LDR Certifications panel. Complete the subsection under "Generator Requirement" for additional notification(s)/certification(s) so the waste can be shipped to another facility for further treatment.
Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed	Mark this box if the treated waste meets 40 CFR 268.40 treatment standards. Check the treatability group. A certification will be included on the LDR Certifications panel.
Other Generator wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.	Follow steps 1 through 3 as listed above under Other TSDF wastes meeting the more stringent 40 CFR 268.40 treatment standards to be land disposed.
Other wastes that could not be treated to meet treatment standards 268.40, 268.45, or 268.49	Other wastes to be further managed at a different treatment or storage facility to meet treatment standards and UTS not achieved on-site (e.g., non-characteristic wastes treated in an accumulation area). Complete the applicable subsection under "Generator Requirement" for notification(s)/certification(s) so the waste can be shipped to another facility for further treatment. Complete the LDR Certifications panel. *Note: TSDF requirement under 40 CFR 268.7(b)(1) and (2) requires the TSDF to test the residue of the treated waste. It is up to the facility.*

- Click the save button to save all data entered into the LDR information profile panel.

LDR Certifications

To certify previously selected LDR information for a waste stream profile, perform the following tasks:

NOTE: This section is used only for waste that is RCRA-Hazardous and for non-hazardous high explosive (HE) waste destined for treatment at TA-16.

- For the LDR certification profile panel, click on LDR certification in the navigation panel of the waste stream profile.

NOTE: Depending on what selections were made in the LDR information profile panel, a list of required signatures will be populated in the LDR certification table.

- Select the signature you wish to execute and click sign.
- Click the save button to save all data entered into the LDR certification profile panel.

Underlying Hazardous Constituents (UHC)

NOTE: This section/panel is used only for waste that is RCRA-Hazardous. Leave blank for non-RCRA-hazardous WSPs.

To add underlying hazardous constituents (UHCs) to a waste stream profile, perform the following tasks:

- For the UHC profile panel, click on UHC in the navigation panel of the waste stream profile. From the Available Underlying Hazardous Constituents table provided, select all constituents that apply to your waste stream by selecting the desired constituent and clicking the add button below the table.
- If no UHCs are present in the waste, click the box marked “No UHCs” in the lower-left corner of the panel.

NOTE: Once a UHC has been added, notice that it will appear in the Selected Underlying Hazardous Constituents table. If you wish to remove a constituent from the Selected Underlying Hazardous Constituents table, select the desired constituent and click the remove button above the table.

- Click the save button to save all data entered into the UHC profile panel.

NOTE: Refer to the Appendix to find a table of all available UHCs and their regulated limits for both wastewaters and non-wastewaters.

To add Nuclides to a WSP, perform the following tasks:

- Click on Nuclides in the WCATS WSP navigation panel
- From the Available Nuclides table provided, select all Nuclides that apply to your waste stream by selecting the desired Nuclide and clicking the Add button below the table.
- Once the newly added nuclide is entered into the selected nuclides table, the concentration amounts can be entered by double-clicking in the corresponding columns.
- Click the Save button to save all data entered into the nuclides profile panel.

NOTE: For low-level waste destined to the National Nevada Security Site, nuclide concentrations must be given in Bq/M^3.

To remove a Nuclide, select the desired Nuclide and click on the Remove button.

Waste Certification Statements

NOTE: Complete this section with assistance from your WMC.

To enter a waste certification statement for a waste stream profile, perform the following tasks:

- For the waste certification statement profile panel, click on waste certification statement in the navigation panel of the waste stream profile.
- Certify that the waste stream as profiled meets all the criteria of the appropriate attachment of the LANL WAC for the selected waste type and ultimate waste management destination by checking the first box.
- If insufficient AK or analytical data exist to demonstrate that the waste meets all criteria of the proposed WAC attachment (i.e., some criteria were “not analyzed for”) but you have reason to believe the waste stream meets the WAC attachment, check Box 1, and profile approval will be subject to reviews and acceptance (i.e., approval is “at risk”).
- If your waste stream exceeds one or more of the criteria or the proposed WAC attachment, then:
  - Check box 2
  - Click the link at the bottom of the page to complete the Waste Acceptance Criteria (WAC) Exception Form (WEF) portion.
  - Contact the WSP Review Team to obtain a WEF tracking number and specific instructions for completing the WEF.
  - Attach a copy of the numbered and approved (signed) WEF to the profile as characterization documentation. A profile requiring a WEF will not be approved unless the WEF is approved and attached to the profile.

NOTE: If Box 3 is checked, contact WDP-HMLW for further guidance to receive DOE approval for the “No Disposal Path” waste stream to complete the WSP approval process.

Cost Codes

To enter cost codes for a waste stream profile, perform the following tasks:

- For the cost codes profile panel, click on cost codes in the navigation panel of the waste stream profile.

- From the drop-down list, select a recharge mode.

NOTE: Recharge modes vary depending on the waste stream profile. Recharge modes are defined in Table 12.

Table 12: Recharge Modes

Recharge Mode	Description
Selection List – or mode 1	Allows generators to select cost codes from a preselected list and apply percentages at their own discretion
Prorated – or mode 2	Allows generators to select cost codes from a preselected list with percentages predefined
Unconstrained – or mode 3	Allows generators to select from all active cost codes and apply percentages at their own discretion
Program Exempt – or mode 4	Similar to mode 1, except cost records are exempt

- Once a recharge mode is selected, click the add button to deploy the cost center finder for preselecting cost codes.

NOTE: If the unconstrained recharge mode was selected, cost codes do not need to be preselected.

- In the cost center finder dialog box, enter a cost center code and/or description into the provided fields, and click the search button identified as binoculars to populate a list of available cost centers that match the inserted criteria.

NOTE: To clear all input fields, click the refresh button.

- From the populated list, select the desired cost center and click OK to deploy the cost code finder.
- In the cost code finder dialog box, enter a program code, cost account code, and/or work package code, and click the search button identified as binoculars to populate a list of available cost codes that match the inserted criteria.

NOTE: To clear all input fields, click the refresh button.

- From the populated list, select the desired cost code and click OK.

NOTE: Notice the cost code table within the cost code profile panel is organized by cost center, program code, cost account code, work package code, and percent allocation per code.

Once additional cost codes are added to the table, percent allocation amounts can be defined by double-clicking in the percent

allocation column of the desired cost code and entering a numeric amount.

REMEMBER: Percent allocations must equal 100%.

To remove a cost code from the table, select the code desired, and click the remove button below the table.

- Click the save button to save the cost code information in the cost code profile panel.

Work Path

WCATS is work path driven: tasks are assigned to a work path, which governs what actions can be taken on that particular container or process, for instance, and in what order. Many of the profile windows have a Pending Task panel, which shows the tasks that are not yet completed for that profile. Keep in mind that some tasks do not show up as pending until one or more required tasks ahead of them on the work path have been executed. In general, work paths define what users are allowed to do to waste items.

Review—EPA Codes

This section is used by the WSP Review team only. However, this section may be “pre-populated” if the WSP being processed was initiated by copying a previously established WSP. EPA codes will be assigned, or amended as applicable, by the WSP review team.

Review—Composition

This section is used by the WSP Review team only. However, this section may be “pre-populated” if the WSP being processed was initiated by copying a previously established WSP.

Review—Classification

This section is used by the WSP Review team only. However, this section may have been “pre-populated” if the WSP being processed was initiated by copying a previously established WSP. In such cases, the WSP Review Team will review and amend ancillary waste types as applicable.

Signatures

To properly activate a waste stream profile, the following signatures and/or reviews must be obtained:

- Waste Generator Certification

- Waste Certifying Official (Waste Management Coordinator)
- RCRA Review
- EPC-CP Review
- NNSS Waste Certifying Official (LLW to NNSS only)
- (Specific Destination Site) Waste Review – (e.g., SWWS, RLWTF, RLWTP, HE to TA-14, TA-16, TA-36, TA-39, and TSDF-MLLW)

NOTE: Signature requirements are determined when waste type selection is made.

To sign off on a waste stream profile, perform the following tasks:

- To display the reviewers profile panel, click reviewers in the navigation panel of the manifest profile form.
- Before signing, confirm that all information provided in the waste stream profile is correct and has been properly entered into the system.

NOTE:

Notice the reviewers table is organized by signature order, description, and status.

Signature order requires that the signatures requested be performed in the order defined.

Signature statuses are as follows:

  - *Pending – awaiting signature; yellow dot*
  - *Approved – signed; green dot*
  - *Revoked – signature removed; red dot*

- Once confirmed, click the save button to ensure that all information has been set in the waste stream profile.
- Click the lock button to prevent further editing of the waste stream profile and to enable the sign button located on the reviewers profile panel.
- Select the signature assigned to you, and click the sign button below the table.
- Carefully read the waste stream signature authorization warning, and click approve to endorse the waste stream profile.

NOTE:

- *Endorsing a waste stream declares that you have fully reviewed all forms and associated attachments and certifies that all information provided appears to be complete, accurate, and meets WAC requirements.*
- *If you do not approve of the waste stream profile, click the revoke button to disapprove the profile.*
- *If a profile has been revoked, a comment regarding the revoking action can be entered into the comment log of the waste stream profile. If you do not approve or disapprove at this time, simply click cancel to return to the waste stream profile.*
- *If you would like to raise a concern with another WCATS user regarding the open profile, the profile can be shared via file, share profile in the menu bar. Once the approve/revoke button has been clicked, a waste stream validation results dialog box appears providing information regarding the execution of the endorsement.*

NOTE: An endorsement can either pass or fail. If your endorsement has failed, please contact Waste Help at wastehelp@lanl.gov or 5-2494.

- In the waste stream validation results dialog box, click the OK button to return to the Signatures panel of the waste stream profile.

NOTE: Once a signature has been performed, the status will change within the reviewers table and signatory information is displayed below.

NOTE: An approved profile may be revoked, edited, resubmitted and re-approved until waste has been processed/managed under the profile. Once waste has been managed under the profile, the profile is "frozen" in WCATS. Waste that does not conform with the existing profile must be processed under a different profile.

Containers

The application keeps a log of all WCATS containers assigned to a waste stream. To view the container log for any given waste stream, perform the following tasks:

- To display the container log profile panel, click containers in the navigation panel of the waste stream profile. NOTE: Notice that the container log is organized by container ID, Labeled ID, Origin Date, Container Type, Decommissioned Status, and Container Status.

To view information regarding a particular container assigned to the waste stream, double-click on the container in the containers log to deploy the container profile.

Comment Log

The application allows users to document comments on a waste stream for further viewing. To add a comment to a waste stream, perform the following tasks:

- To display the comment log profile panel, click comment log in the navigation panel of the waste stream profile.
- To add a comment to the log, click the add button in the bottom right corner of the comment log profile panel.

NOTE: Notice that the comment log is organized by comment time and comment text.

WARNING: All comments made on any profile within the WCATS application are permanent and irrevocable.

There is no restriction to the length of the comment.

- In the new waste stream comment dialog box, enter your comment concerning the open waste stream and click OK to place the comment into the comment log.
- Click the save button to ensure that all information has been set in the waste stream profile.

Edit Log

The application keeps a log of all edits made to any profile created. To view the edit log for any given waste stream profile, perform the following tasks:

- To display the edit log profile panel, click edit log in the navigation panel of the waste stream profile.

NOTE: Notice that the edit log is organized by edit time and edit information provided by the editor.

To view all edit records (records showing each time the profile was unlocked for editing), click/check on the show all edit records option.

To view all quality records (records showing each time data was entered into the profile), click/check on the show all quality records option. The edit log is permanent and is not editable.

Activity: Waste Profile Exercise

Waste Profile Exercise Information

Joyce generated one liter of mixed waste in an RCA and stored it in a satellite accumulation area. You are Joyce's WMC and need to verify that she filled out the WSP correctly. You will use the following information to fill out the WSP. Your instructor will help you with the activity while the WSP sections are covered throughout the course.

Process/Chemical Specific information

Joyce wants to isolate genetic material (DNA) from hamster cells. She does this by performing a chemical extraction in which the cells are placed in a mixture that consists of a nonaqueous phase and an aqueous phase. These two phases can be seen distinctly in the waste container with the nonaqueous phase on the bottom of the aqueous phase. The DNA, which is radioactively labeled, stays in the aqueous phase. The nonaqueous component comprises between 60% and 80% of the total mixture and the aqueous between 20% and 40%. The mixture is pH adjusted to 7. The chemicals listed in the following table comprise the two phases.

Nonaqueous	Aqueous
2% 3-pentanol	1% (wt/vol) sodium N-lauroylsarcosinate
40% chloroform	10 mM ethylene diamine tetraacetic acid
50% phenol	100 mM sodium chloride
	50 mM tris (hydroxymethyl) aminomethane

The radioactive labels used are

- 0.001 µCi/ml of tritium, and
- 0.0005 µCi/ml of carbon-14.

For waste identification, Joyce will use acceptable knowledge (AK) and safety data sheets (SDSs). She has referenced Laboratory Notebook #059, DNA Purification Solution #2 for AK.

Answer Key

The percentages are supposed to be *volume percentages*.

Volume percent calculation for sodium N- lauroylsarcosinate (SLS)

SLS is already given as a weight percent, so just assume this is volume percent and use the equation

The activity states that the aqueous component is between 20% and 40% of the total liter of the mixture, so the minimum calculation would be for an initial volume of 0.2 liter (20% of 1 liter) and the maximum would be for 0.4 liter (40% of 1 liter).

1% SLS

Minimum volume, assuming the aqueous phase is 20% of the total:
$V_1C_1 = V_2C_2$
(0.2 l)(1%) = (1 l)(C_2)
C_2 = 0.2% minimum volume percent of SLS

Maximum volume, assuming the aqueous phase is 40% of the total:
$V_1C_1 = V_2C_2$
(0.4 l)(1%) = (1 l)(C_2)
C_2 = 0.4% maximum volume percent of SLS

Use all the calculations to fill out *Additional Constituents* as follows:

CAS No.	Name Constituent	Minimum %	Maximum %
584-02-1	3-pentanol	1.2	1.6
67-66-3	chloroform	28.8	38.4
108-95-2	phenol	30	40
137-16-6	sodium N-lauroylsarcosinate	0.2	0.4
60-00-4	ethylene diamine tetraacetic acid	0.06	0.12
1185-53-1	tris (hydroxymethyl) aminomethane hydrochloride	0.16	0.32
7647-14-5	sodium chloride	0.12	0.23
7732-18-5	water	20	40
	TOTAL RANGE =	80.54	121.07

Answer key for additional constituents' calculations:

The percentages are supposed to be *volume percentages*.

For constituents that are already given as volume percent:

Use the equation $\mathbf{V_1C_1 = V_2C_2}$ because you are diluting a volume of nonaqueous liquid (60-80% of the total liter) to a total volume of 1 liter with an aqueous liquid.

The constituents in the nonaqueous phase include:

- 2% 3-pentanol
- 48% chloroform
- 50% phenol

The nonaqueous component is between 60% and 80% of the total liter mixture, so

- in the **minimum** calculation, you are diluting 0.6 liter nonaqueous liquid (60% of 1 liter) to a total volume of 1 liter, and
- in the **maximum** calculation, you are diluting 0.8 liter nonaqueous liquid (80% of 1 liter) to a total volume of 1 liter.

3-pentanol

Minimum volume, assuming the nonaqueous phase is 60% of the total:
$V_1C_1 = V_2C_2$
(0.6 l)(2%) = (1 l)(C_2)
C_2 = 1.2% minimum volume percent of 3-pentanol

Maximum volume, assuming the nonaqueous phase is 80% of the total:
$V_1C_1 = V_2C_2$
(0.8 l)(2%) = (1 l)(C_2)
C_2 = 1.6% maximum volume percent of 3-pentanol

chloroform

Minimum volume, assuming the nonaqueous phase is 60% of the total:
$V_1C_1 = V_2C_2$
(0.6 l)(40%) = (1 l)(C_2)
C_2 = 24% minimum volume percent of chloroform

Maximum volume, assuming the nonaqueous phase is 80% of the total:
$V_1C_1 = V_2C_2$
(0.8 l)(40%) = (1 l)(C_2)
C_2 = 32% maximum volume percent of chloroform

phenol

Minimum volume, assuming the nonaqueous phase is 60% of the total:
$V_1C_1 = V_2C_2$
(0.6 l)(50%) = (1 l)(C_2)
C_2 = 30% minimum volume percent of phenol

Maximum volume, assuming the nonaqueous phase is 80% of the total:
$V_1C_1 = V_2C_2$
(0.8 l)(50%) = (1 l)(C_2)
C_2 = 40% maximum volume percent of phenol

For constituents given as molar solutions:

The constituents in the nonaqueous phase include:

- 10 mM ethylene diamine tetraacetic acid (EDTA)
- 100 mM sodium chloride (NaCl)
- 50 mM tris (hydroxymethyl) aminomethane

This calculation can only be an estimate because we don't have enough information to calculate a volume percent from a molar concentration. This is because, to make a molar solution, a particular weight of a chemical is added to a volume of water and then the chemical dissolves; the volume displacement is usually much less than the weight of the chemical added to the water. For example, when 5 g of NaCl is added to 100 ml of water, the volume taken up by the dissolved NaCl will be less than 5 ml, so the volume percent would be less than 5%.

NOTE: However, 5% weight percent NaCl is 5 g of NaCl in 100 ml water.

Because of the inability to account for volume displacement of dissolved chemicals, we will assume that the weight of the chemical is equal to volume displacement. This will be an overestimate of volume percent, but the point of the exercise is to show that these are estimates and it doesn't really matter because the substances aren't toxic or hazardous. If one had a toxic substance, consult WS-WA for a more accurate determination (e.g., if you were heading towards a regulatory limit).

Therefore, the general approach is:

- Calculate the minimum and maximum molarity in the mixture using the formula $V_1C_1 = V_2C_2$
- Convert molarity to weight % and assume weight % is volume percent

The activity states that the nonaqueous component is between 20% and 40% of the total liter of mixture, so the minimum calculation would be for an initial volume of 0.2 liter (20% of 1 liter) and the maximum would be for 0.4 liter (40% of 1 liter).

10 mM ethylene diamine tetraacetic acid (EDTA)

Minimum volume, assuming the aqueous phase is 20% of the total:

- Calculate the minimum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.2 l)(10 mM) = (1 l)(C_2)
C_2 = 2 mM minimum volume percent of EDTA

- Convert molarity to weight %

FW EDTA = 292.4 g/mol

(2 mmol EDTA/1 liter)(1 mol/1000 mmol)(292.4 g/mol EDTA) = 0.6 g EDTA in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus 0.6 g/1liter = 0.06g/100 ml = 0.06% EDTA

Maximum volume, assuming the aqueous phase is 40% of the total:

- Calculate the maximum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.4 l)(10 mM) = (1 l)(C_2)
C_2 = 4 mM maximum volume percent of EDTA

- Convert molarity to weight %

FW EDTA = 292.4 g/mol

(4 mmol EDTA/1 liter)(1 mol/1000 mmol)(292.4 g/mol EDTA) = 1.2 g EDTA in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus: 1.2 g/1liter = 0.12 g/100 ml = 0.12% EDTA

100 mM sodium chloride (NaCl)

Minimum volume, assuming the aqueous phase is 20% of the total:

- Calculate the minimum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.2 l)(100 mM) = (1 l)(C_2)
C_2 = 20 mM minimum volume percent of NaCl

- Convert molarity to weight %

FW NaCl = 58.44 g/mol

(20 mmol NaCl/1 liter)(1 mol/1000 mmol)(58.44 g/mol NaCl) = 1.2 g NaCl in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus: 1.2 g/1liter = 0.12 g/100 ml = 0.12% NaCl

Maximum volume, assuming the aqueous phase is 40% of the total:

- Calculate the maximum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.4 l)(100 mM) = (1 l)(C_2)
C_2 = 40 mM maximum volume percent of NaCl

- Convert molarity to weight %

FW NaCl = 58.44 g/mol

(40 mmol NaCl/1 liter)(1 mol/1000 mmol)(58.44 g/mol NaCl) = 2.3 g NaCl in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus: 2.3 g/1liter = 0.23 g/100 ml = 0.23% NaCl

50 mM tris (hydroxymethyl) aminomethane

Minimum volume, assuming the aqueous phase is 20% of the total:

- Calculate the minimum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.2 l)(50 mM) = (1 l)(C_2)
C_2 = 10 mM minimum volume percent of tris

- Convert molarity to weight %

FW tris = 158 g/mol

(10 mmol tris/1 liter)(1 mol/1000 mmol)(158 g/mol tris) = 1.6 g tris in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus: 1.6 g/1liter = 0.16 g/100 ml = 0.16% tris

Maximum volume, assuming the aqueous phase is 40% of the total:

- Calculate the maximum molarity in the mixture using the formula $V_1C_1 = V_2C_2$

$V_1C_1 = V_2C_2$
(0.4 l)(50 mM) = (1 l)(C_2)
C_2 = 20 mM maximum volume percent of tris

- Convert molarity to weight %

FW tris = 158 g/mol

(20 mmol tris/1 liter)(1 mol/1000 mmol)(158g/mol tris) = 3.2 g tris in 1 liter

Volume/weight percent is volume/weight of solute in 100 ml (0.1 l) of solvent. Thus: 3.2 g/1liter = 0.32 g/100 ml = 0.32% tris

Appendix

§ 268.48 Universal treatment standards.

(a) Table UTS identifies the hazardous constituents, along with the non-wastewater and wastewater treatment standard levels, that are used to regulate most prohibited hazardous wastes with numerical limits. For determining compliance with treatment standards for underlying hazardous constituents as defined in § 268.2(i), these treatment standards may not be exceeded. Compliance with these treatment standards is measured by an analysis of grab samples, unless otherwise noted in the following Table UTS.

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
Organic Constituents			
Acenaphthylene	208-96-8	0.059	3.4
Acenaphthene	83-32-9	0.059	3.4
Acetone	67-64-1	0.28	160
Acetonitrile	75-05-8	5.6	38
Acetophenone	96-86-2	0.010	9.7
2-Acetylaminofluorene	53-96-3	0.059	140
Acrolein	107-02-8	0.29	NA
Acrylamide	79-06-1	19	23
Acrylonitrile	107-13-1	0.24	84
Aldrin	309-00-2	0.021	0.066
4-Aminobiphenyl	92-67-1	0.13	NA
Aniline	62-53-3	0.81	14
o-Anisidine (2-methoxyaniline)	90-04-0	0.010	0.66
Anthracene	120-12-7	0.059	3.4
Aramite	140-57-8	0.36	NA
alpha-BHC	319-84-6	0.00014	0.066
beta-BHC	319-85-7	0.00014	0.066

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
delta-BHC	319-86-8	0.023	0.066
gamma-BHC	58-89-9	0.0017	0.066
Benzene	71-43-2	0.14	10
Benz(a)anthracene	56-55-3	0.059	3.4
Benzal chloride	98-87-3	0.055	6.0
Benzo(b)fluoranthene (difficult to distinguish from benzo(k)fluoranthene)	205-99-2	0.11	6.8
Benzo(k)fluoranthene (difficult to distinguish from benzo(b)fluoranthene)	207-08-9	0.11	6.8
Benzo(g,h,i)perylene	191-24-2	0.0055	1.8
Benzo(a)pyrene	50-32-8	0.061	3.4
Bromodichloromethane	75-27-4	0.35	15
Bromomethane/Methyl bromide	74-83-9	0.11	15
4-Bromophenyl phenyl ether	101-55-3	0.055	15
n-Butyl alcohol	71-36-3	5.6	2.6
Butyl benzyl phthalate	85-68-7	0.017	28
2-sec-Butyl-4,6-dinitrophenol/Dinoseb	88-85-7	0.066	2.5
Carbon disulfide	75-15-0	3.8	4.8 mg/l TCLP
Carbon tetrachloride	56-23-5	0.057	6.0
Chlordane (alpha and gamma isomers)	57-74-9	0.0033	0.26
p-Chloroaniline	106-47-8	0.46	16
Chlorobenzene	108-90-7	0.057	6.0
Chlorobenzilate	510-15-6	0.10	NA
2-Chloro-1,3-butadiene	126-99-8	0.057	0.28
Chlorodibromomethane	124-48-1	0.057	15
Chloroethane	75-00-3	0.27	6.0
bis(2-Chloroethoxy)methane	111-91-1	0.036	7.2

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
bis(2-Chloroethyl)ether	111-44-4	0.033	6.0
Chloroform	67-66-3	0.046	6.0
bis(2-Chloroisopropyl)ether	39638-32-9	0.055	7.2
p-Chloro-m-cresol	59-50-7	0.018	14
2-Chloroethyl vinyl ether	110-75-8	0.062	NA
Chloromethane/Methyl chloride	74-87-3	0.19	30
2-Chloronaphthalene	91-58-7	0.055	5.6
2-Chloropchenol	95-57-8	0.044	5.7
3-Chloropropylene	107-05-1	0.036	30
Chrysene	218-01-9	0.059	3.4
p-Cresidine	120-71-8	0.010	0.66
o-Cresol	95-48-7	0.11	5.6
m-Cresol (difficult to distinguish from p-cresol)	108-39-4	0.77	5.6
p-Cresol (difficult to distinguish from m-cresol)	106-44-5	0.77	5.6
Cyclohexanone	108-94-1	0.36	0.75 mg/l TCLP
o,p′-DDD	53-19-0	0.023	0.087
p,p′-DDD	72-54-8	0.023	0.087
o,p′-DDE	3424-82-6	0.031	0.087
p,p′-DDE	72-55-9	0.031	0.087
o,p′-DDT	789-02-6	0.0039	0.087
p,p′-DDT	50-29-3	0.0039	0.087
Dibenz(a,h)anthracene	53-70-3	0.055	8.2
Dibenz(a,e)pyrene	192-65-4	0.061	NA
1,2-Dibromo-3-chloropropane	96-12-8	0.11	15
1,2-Dibromoethane/Ethylene dibromide	106-93-4	0.028	15
Dibromomethane	74-95-3	0.11	15

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
m-Dichlorobenzene	541-73-1	0.036	6.0
o-Dichlorobenzene	95-50-1	0.088	6.0
p-Dichlorobenzene	106-46-7	0.090	6.0
Dichlorodifluoromethane	75-71-8	0.23	7.2
1,1-Dichloroethane	75-34-3	0.059	6.0
1,2-Dichloroethane	107-06-2	0.21	6.0
1,1-Dichloroethylene	75-35-4	0.025	6.0
trans-1,2-Dichloroethylene	156-60-5	0.054	30
2,4-Dichlorophenol	120-83-2	0.044	14
2,6-Dichlorophenol	87-65-0	0.044	14
2,4-Dichlorophenoxyacetic acid/2,4-D	94-75-7	0.72	10
1,2-Dichloropropane	78-87-5	0.85	18
cis-1,3-Dichloropropylene	10061-01-5	0.036	18
trans-1,3-Dichloropropylene	10061-02-6	0.036	18
Dieldrin	60-57-1	0.017	0.13
Diethyl phthalate	84-66-2	0.20	28
p-Dimethylaminoazobenzene	60-11-7	0.13	NA
2,4-Dimethylaniline (2,4-xylidine)	95-68-1	0.010	0.66
2,4-Dimethyl phenol	105-67-9	0.036	14
Dimethyl phthalate	131-11-3	0.047	28
Di-n-butyl phthalate	84-74-2	0.057	28
1,4-Dinitrobenzene	100-25-4	0.32	2.3
4,6-Dinitro-o-cresol	534-52-1	0.28	160
2,4-Dinitrophenol	51-28-5	0.12	160
2,4-Dinitrotoluene	121-14-2	0.32	140
2,6-Dinitrotoluene	606-20-2	0.55	28
Di-n-octyl phthalate	117-84-0	0.017	28
Di-n-propylnitrosamine	621-64-7	0.40	14

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
1,4-Dioxane	123-91-1	12.0	170
Diphenylamine (difficult to distinguish from diphenylnitrosamine)	122-39-4	0.92	13
Diphenylnitrosamine (difficult to distinguish from diphenylamine)	86-30-6	0.92	13
1,2-Diphenylhydrazine	122-66-7	0.087	NA
Disulfoton	298-04-4	0.017	6.2
Endosulfan I	959-98-8	0.023	0.066
Endosulfan II	33213-65-9	0.029	0.13
Endosulfan sulfate	1031-07-8	0.029	0.13
Endrin	72-20-8	0.0028	0.13
Endrin aldehyde	7421-93-4	0.025	0.13
Ethyl acetate	141-78-6	0.34	33
Ethyl benzene	100-41-4	0.057	10
Ethyl cyanide/Propanenitrile	107-12-0	0.24	360
Ethyl ether	60-29-7	0.12	160
bis(2-Ethylhexyl)phthalate	117-81-7	0.28	28
Ethyl methacrylate	97-63-2	0.14	160
Ethylene oxide	75-21-8	0.12	NA
Famphur	52-85-7	0.017	15
Fluoranthene	206-44-0	0.068	3.4
Fluorene	86-73-7	0.059	3.4
Heptachlor	76-44-8	0.0012	0.066
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (1,2,3,4,6,7,8-HpCDD)	35822-46-9	0.000035	.0025
1,2,3,4,6,7,8-Heptachlorodibenzofluran (1,2,3,4,6,7,8-HpCDF)	67562-39-4	0.000035	.0025

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
1,2,3,4,7,8,9-Heptachlorodibenzofluran (1,2,3,4,7,8,9-HpCDF)	55673-89-7	0.000035	.0025
Heptachlor epoxide	1024-57-3	0.016	0.066
Hexachlorobenzene	118-74-1	0.055	10
Hexachlorobutadiene	87-68-3	0.055	5.6
Hexachlorocyclopentadiene	77-47-4	0.057	2.4
HxCDDs (All Hexachlorodibenzo-p-dioxins)	NA	0.000063	0.001
HxCDFs (All Hexachlorodibenzofurans)	NA	0.000063	0.001
Hexachloroethane	67-72-1	0.055	30
Hexachloropropylene	1888-71-7	0.035	30
Indeno(1,2,3-c,d) pyrene	193-39-5	0.0055	3.4
Iodomethane	74-88-4	0.19	65
Isobutyl alcohol	78-83-1	5.6	170
Isodrin	465-73-6	0.021	0.066
Isosafrole	120-58-1	0.081	2.6
Kepone	143-50-0	0.0011	0.13
Methacrylonitrile	126-98-7	0.24	84
Methanol	67-56-1	5.6	0.75 mg/l TCLP
Methapyrilene	91-80-5	0.081	1.5
Methoxychlor	72-43-5	0.25	0.18
3-Methylcholanthrene	56-49-5	0.0055	15
4,4-Methylene bis(2-chloroaniline)	101-14-4	0.50	30
Methylene chloride	75-09-2	0.089	30
Methyl ethyl ketone	78-93-3	0.28	36
Methyl isobutyl ketone	108-10-1	0.14	33
Methyl methacrylate	80-62-6	0.14	160

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
Methyl methanesulfonate	66-27-3	0.018	NA
Methyl parathion	298-00-0	0.014	4.6
Naphthalene	91-20-3	0.059	5.6
2-Naphthylamine	91-59-8	0.52	NA
o-Nitroaniline	88-74-4	0.27	14
p-Nitroaniline	100-01-6	0.028	28
Nitrobenzene	98-95-3	0.068	14
5-Nitro-o-toluidine	99-55-8	0.32	28
o-Nitrophenol	88-75-5	0.028	13
p-Nitrophenol	100-02-7	0.12	29
N-Nitrosodiethylamine	55-18-5	0.40	28
N-Nitrosodimethylamine	62-75-9	0.40	2.3
N-Nitroso-di-n-butylamine	924-16-3	0.40	17
N-Nitrosomethylethylamine	10595-95-6	0.40	2.3
N-Nitrosomorpholine	59-89-2	0.40	2.3
N-Nitrosopiperidine	100-75-4	0.013	35
N-Nitrosopyrrolidine	930-55-2	0.013	35
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	3268-87-9	0.000063	0.005
1,2,3,4,6,7,8,9-Octachlorodibenzofluran (OCDF)	39001-02-0	0.000063	0.005
Parathion	56-38-2	0.014	4.6
Total PCBs (sum of all PCB isomers, or all Aroclors) [8]	1336-36-3	0.10	10
Pentachlorobenzene	608-93-5	0.055	10
PeCDDs (All Pentachlorodibenzo-p-dioxins)	NA	0.000063	0.001
PeCDFs (All Pentachlorodibenzofurans)	NA	0.000035	0.001
Pentachloroethane	76-01-7	0.055	6.0

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
Pentachloronitrobenzene	82-68-8	0.055	4.8
Pentachlorophenol	87-86-5	0.089	7.4
Phenacetin	62-44-2	0.081	16
Phenanthrene	85-01-8	0.059	5.6
Phenol	108-95-2	0.039	6.2
1,3-Phenylenediamine	108-45-2	0.010	0.66
Phorate	298-02-2	0.021	4.6
Phthalic acid	100-21-0	0.055	28
Phthalic anhydride	85-44-9	0.055	28
Pronamide	23950-58-5	0.093	1.5
Pyrene	129-00-0	0.067	8.2
Pyridine	110-86-1	0.014	16
Safrole	94-59-7	0.081	22
Silvex/2,4,5-TP	93-72-1	0.72	7.9
1,2,4,5-Tetrachlorobenzene	95-94-3	0.055	14
TCDDs (All Tetrachlorodibenzo-p-dioxins)	NA	0.000063	0.001
TCDFs (All Tetrachlorodibenzofurans)	NA	0.000063	0.001
1,1,1,2-Tetrachloroethane	630-20-6	0.057	6.0
1,1,2,2-Tetrachloroethane	79-34-5	0.057	6.0
Tetrachloroethylene	127-18-4	0.056	6.0
2,3,4,6-Tetrachlorophenol	58-90-2	0.030	7.4
Toluene	108-88-3	0.080	10
Toxaphene	8001-35-2	0.0095	2.6
Tribromomethane/Bromoform	75-25-2	0.63	15
1,2,4-Trichlorobenzene	120-82-1	0.055	19
1,1,1-Trichloroethane	71-55-6	0.054	6.0
1,1,2-Trichloroethane	79-00-5	0.054	6.0

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
Trichloroethylene	79-01-6	0.054	6.0
Trichlorofluoromethane	75-69-4	0.020	30
2,4,5-Trichlorophenol	95-95-4	0.18	7.4
2,4,6-Trichlorophenol	88-06-2	0.035	7.4
2,4,5-Trichlorophenoxyacetic acid/2,4,5-T	93-76-5	0.72	7.9
1,2,3-Trichloropropane	96-18-4	0.85	30
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0.057	30
tris-(2,3-Dibromopropyl) phosphate	126-72-7	0.11	0.10
Vinyl chloride	75-01-4	0.27	6.0
Xylenes-mixed isomers (sum of o-, m-, and p-xylene concentrations)	1330-20-7	0.32	30
Inorganic Constituents			
Antimony	7440-36-0	1.9	1.15 mg/l TCLP
Arsenic	7440-38-2	1.4	5.0 mg/l TCLP
Barium	7440-39-3	1.2	21 mg/l TCLP
Beryllium	7440-41-7	0.82	1.22 mg/l TCLP
Cadmium	7440-43-9	0.69	0.11 mg/l TCLP
Chromium (Total)	7440-47-3	2.77	0.60 mg/l TCLP
Cyanides (Total) [4]	57-12-5	1.2	590
Cyanides (Amenable) [4]	57-12-5	0.86	30
Fluoride [5]	16984-48-8	35	NA
Lead	7439-92-1	0.69	0.75 mg/l TCLP
Mercury—Non-wastewater from	7439-97-	NA	0.20 mg/l TCLP

Universal Treatment Standards [Note: NA means not applicable]			
Regulated constituent common name	**CAS [1] number**	**Wastewater standard**	**Non-wastewater standard**
		Concentration [2] in mg/l	**Concentration [3] in mg/kg unless noted as "mg/l TCLP"**
Retort	6		
Mercury—All Others	7439-97-6	0.15	0.025 mg/l TCLP
Nickel	7440-02-0	3.98	11 mg/l TCLP
Selenium [7]	7782-49-2	0.82	5.7 mg/l TCLP
Silver	7440-22-4	0.43	0.14 mg/l TCLP
Sulfide [5]	18496-25-8	14	NA
Thallium	7440-28-0	1.4	0.20 mg/l TCLP
Vanadium [5]	7440-62-2	4.3	1.6 mg/l TCLP
Zinc [5]	7440-66-6	2.61	4.3 mg/l TCLP

Footnotes to Table UTS

1. CAS means Chemical Abstract Services. When the waste code and/or regulated constituents are described as a combination of a chemical with its salts and/or esters, the CAS number is given for the parent compound only.

2. Concentration standards for wastewaters are expressed in mg/l and are based on analysis of composite samples.

3. Except for Metals (EP or TCLP) and Cyanides (Total and Amenable) the non-wastewater treatment standards expressed as a concentration were established, inpart, based upon incineration in units operated in accordance with the technical requirements of 40 CFR part 264, subpart O or 40 CFR part 265, subpart O, or based upon combustion in fuel substitution units operating

in accordance with applicable technical requirements. A facility may comply with these treatment standards according to provisions in 40 CFR 268.40(d). All concentration standards for non-wastewaters are based on analysis of grab samples.

4. Both Cyanides (Total) and Cyanides (Amenable) for non-wastewaters are to be analyzed using Method 9010C or 9012B, found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846, as incorporated by reference in 40 CFR 260.11, with a sample size of 10 grams and a distillation time of one hour and 15 minutes.

5. These constituents are not "underlying hazardous constituents" in characteristic wastes, according to the definition at § 268.2(i).

6. [Reserved]

7. This constituent is not an underlying hazardous constituent as defined at § 268.2(i) of this Part because its UTS level is greater than its TC level, thus a treatment selenium waste would always be characteristically hazardous, unless it is treated to below its characteristic level.

8. This standard is temporarily deferred for soil exhibiting a hazardous characteristic due to D004-D011 only.