ESHID-603899

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Environment and Waste Programs
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National Nuclear Security Administration
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Symbol: EWP-25-022
Date: July 7, 2025
LA-UR: 25-26136

Mr. JohnDavid Nance, Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6313

Subject: Response to June 5, 2025, Letter Regarding Discarded Aqueous Film-Forming Foam

Dear Mr. Nance:

The United States Department of Energy (DOE) National Nuclear Security Administration, Los Alamos Field Office (NA-LA) and Triad National Security, LLC (Triad) submit this letter and the enclosed information in response to a letter dated June 5, 2025, *RCRA Permit Modification*. The letter requests responses regarding the practices for treatment, storage, and disposal of waste aqueous film-forming foam (AFFF) containing per- or polyfluoroalkyl substances (PFAS) at the Los Alamos National Laboratory (LANL or the Laboratory). The LANL Hazardous Waste Facility Permit, EPA ID# NM0890010515, was issued by the New Mexico Environment Department-Hazardous Waste Bureau (NMED-HWB) in 2010, and includes storage, labeling, and management practices for hazardous waste at 28 hazardous waste management units. NA-LA and Triad, in consultation with the DOE Environmental Management, Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B), collectively the Permittees, have determined that a permit modification associated with House Bill 140, is not necessary at this time since there are no current statutory or regulatory requirements for management of discarded AFFF containing PFAS. Additionally, N3B/EM-LA have confirmed that the geographical area under their control does not contain this type of waste. This confirmation is included as Attachment 1 to this correspondence.

This response provides relevant information on the current conditions at LANL as requested within the NMED-HWB's letter. The Triad Resource Conservation and Recovery Act (RCRA) Permitting and Compliance Team, part of the Waste Management Programs Group within the Environmental Protection and Compliance Division at LANL, gathered the information described below and provided within Attachments 2 and 3 of this response. The information was developed by reviewing LANL's current waste management and shipment procedures and querying the Waste Compliance and Tracking System (WCATS) for applicable waste streams managed at LANL and disposed of off-site in recent years.

General waste management information is provided addressing the specific requests outlined in the NMED-HWB letter. The information request language provided by the NMED-HWB is presented as underlined text, with the corresponding response provided directly below each request.

NMED Request:

- a comprehensive overview of LANL's current procedures for the proper treatment, management, storage, and disposal of discarded Aqueous Film Forming Foam (AFFF) containing PFAS

Response:
The procedures used by Triad to characterize, manage, and ship waste off-site at LANL include: FSD-P409-0300, *Waste Characterization and Compatibility*; TP-P409-0700, *Onsite Waste Management Field Tasks*; and TP-P409-0701, *Preparing and Shipping Waste/Material Off Site*. The referenced procedures are included as Attachment 2 to this response. As a routine practice, all Triad waste generated at the Laboratory must be characterized and evaluated for compatibility concerns, in accordance with the referenced procedures. Additionally, all waste generated at the Laboratory must undergo a documented hazardous waste determination at the point of generation before any dilution, mixing, or other alteration of the waste occurs. The waste characterization process may involve all or some of the following strategies: acceptable knowledge, declaration, direct monitoring and measurement, and direct sampling and analysis. Waste characterization is conducted and documented per FSD-P409-0300 in WCATS. Procedure TP-P409-0700 outlines the waste management process flow, identifies personnel roles and responsibilities, and details the requirements utilized to track waste movement onsite. Procedure TP-P409-0701 specifies the requirements for preparing and shipping waste off-site as conducted by technical personnel and authorized shippers. These procedures are used by Triad for all waste types generated at LANL including AFFF containing PFAS. Since 2020, there have been 52 containers of waste generated that contained discarded AFFF containing PFAS and water. Information regarding the containers is included as Attachment 3 of this response. All containers of discarded AFFF containing PFAS and water were shipped off-site for disposal. The WCATS data pull indicates that there are currently no containers of discarded AFFF containing PFAS being accumulated or in storage onsite. It is anticipated that any additional such waste generated will be shipped off-site for disposal using the same procedures.

NMED Request

- a comprehensive overview of LANL's planned procedures for the proper treatment, management, storage, and disposal of discarded Aqueous Film Forming Foam (AFFF) containing PFAS

Response:
The Laboratory has no additional planned procedures for the treatment, management, storage, and disposal of waste AFFF containing PFAS. NA-LA/Triad have identified relevant locations, waste streams, and appropriate disposal pathways for this type of waste.

NMED Request

- a description of how LANL intends to meet the statutory requirements established by HB 140

Response:
The New Mexico Hazardous Waste Act (HWA) amends the definition of "hazardous waste" but does not include specific requirements for management of these types of waste, including accumulation, storage, labeling, and management practices. The NMED-HWB request calls for speculation. Nevertheless, the Laboratory has proactively researched and identified disposal options for discarded AFFF containing PFAS and does not anticipate that its practices and procedures associated with these types of waste will change prior to any New Mexico regulatory changes.

If you have any questions or comments concerning this report, please contact Robert A. Gallegos (NA-LA) at (505) 901-3824 or by email at robert.gallegos@nnsa.doe.gov or Luciana Vigil-Holterman (Triad) at (505) 665-3435 or by email at luciana@lanl.gov.

Sincerely,

Jeannette T Hyatt
Digitally signed by Jeannette T Hyatt
Date: 2025.07.02 13:11:19 -06'00'

Jeannette T. Hyatt
Senior Director
Environment and Waste Programs
Triad National Security, LLC
Los Alamos National Laboratory

ROBERT GALLEGOS
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Robert A. Gallegos
Program Manager
Environmental Permitting and Compliance
National Nuclear Security Administration
Los Alamos Field Office
U.S. Department of Energy

JH:RG

Enclosure: 1) Environmental Management, Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) Applicability Statement
2) Waste Management Procedures
3) List of Waste Containers with Aqueous Film-Forming Foam Containing Per- or Polyfluoroalkyl Substances

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ATTACHMENT 1

Environmental Management, Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) Applicability Statement

EWP-25-022
LA-UR-25-26136

Date: July 7, 2025

In response to a letter dated June 5, 2025 from the New Mexico Environment Department – Hazardous Waste Bureau (NMED-HWB) regarding discarded aqueous film-forming foam (AFFF) at Los Alamos National Laboratory (LANL), the Department of Energy (DOE) Environmental Management, Los Alamos Field Office (EM-LA) and Newport News Nuclear BWXT–Los Alamos, LLC (N3B) have prepared this certification statement.

Through a query of the Waste Compliance and Tracking System (WCATS) database, discussions with N3B Waste Management staff and a comprehensive review of N3B's internal chemical database, we have determined that the geographical area under the control of EM-LA and N3B does not contain any known AFFF.

Certification Statement:

> The signatories below certify under penalty of law that this document was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

Robert Edwards

Digitally signed by Robert Edwards
Date: 2025.06.26 13:55:07 -06'00'

Robert Edwards III
Program Manager
Environment, Safety, Health, and Quality
N3B-Los Alamos

Sincerely,

Digitally signed by BRIAN HARCEK
Date: 2025.07.02 15:40:44 -06'00'

Brian Harcek, Director
Office of Quality and Regulatory Compliance
U.S. Department of Energy
Environmental Management
Los Alamos Field Office

ATTACHMENT 2

Waste Management Procedures

EWP-25-022
LA-UR-25-26136

Date: July 7, 2025

FSD-P409-0300	Revision: **0**	Los Alamos NATIONAL LABORATORY
Effective Date: 05/19/2021	Next Review Date: 05/19/2024	

Environment, Safety, Health, Quality, Safeguards, Security Directorate

Environmental Protection and Compliance Division

Functional Series Document

Waste Characterization and Compatibility

Document Owner/Subject Matter Expert:

Name:	Organization:	Signature:	Date:
Jim Stanton	EPC-WMP	Signature on File	05-05-21

Derivative Classifier: ☒ **Unclassified or** ☐ _____

Name:	Organization:	Signature:	Date:
Gabriel Gallegos	EPC-WMP	Signature on File	05-05-21

Approval Signatures:

Quality Assurance Reviewer:	Organization:	Signature:	Date:
Doris Quintana	IQPA-QSS	Signature on File	05-06-21
Responsible Line Manager:	Organization:	Signature:	Date:
Patrick L. Padilla, Team Leader	EPC-WMP	Signature on File	05-14-21
Responsible Line Manager:	Organization:	Signature:	Date:
Jennifer E. Payne, Division Leader	EPC-DO	Signature on File	05-19-21

REVISION HISTORY

Document Number and Revision *[Include revision number, beginning with Revision 0]*	**Effective Date** *[Document Control Coordinator inserts effective date]*	**Description of Changes** *[List specific changes made since the previous revision]*
FSD-P409-0300 R0	05/19/2021	This document reflects P409 R8 updates. This document consolidates and supersedes ADESH-AP-TOOL-111 Waste Characterization; ADESH-AP-TOOL-115, Waste Compatibility Determinations; and ADESH-AP-TOOL-314, Radioactive Characterization of Waste.

Table of Contents

1.0 INTRODUCTION

Waste characterization is the process by which Los Alamos National Laboratory (Laboratory or LANL) personnel identify and document:

- A waste's physical, chemical, biological, and radiological attributes;
- Proper waste segregation, packaging, storage, transport, treatment, and disposal requirements; and
- Any hazards or dangers posed by the waste and the appropriate protective actions to take.

Proper and accurate waste characterization is fundamental to ensuring that waste is managed in compliance with regulatory requirements and in a manner that is protective of workers, human health, and the environment.

Waste compatibility is an estimation of a waste's potential to chemically or biologically react with other materials. This includes whether or not the waste will react with water, air, the waste container, absorbent, other wastes (whether in the container or storage area), etc. For heterogeneous wastes, compatibility also includes whether or not different components of the waste will react with each other. Such chemical or biological reactions may damage the container, generate heat, cause a fire or explosion, emit flammable or toxic gases, etc. Wastes or materials that react with each other are called *incompatible*. Waste characterization leads to an accurate understanding of waste incompatibilities and ensures that incompatible wastes are managed in a manner that prevents them from reacting and causing significant safety issues.

1.1 Purpose

This document establishes LANL processes for waste characterization and compatibility assessments. Characterization activities must ensure that enough information is provided about the waste to adequately meet compliant packaging, storage, transportation, treatment, and disposal requirements. Characterization methods MUST be adequate for the radionuclides, chemicals, physical attributes, biological aspects, and classification status of interest. Moreover, waste characterization methods MUST be appropriate for the selected action criteria (such as radioactive clearance criteria, waste acceptance criteria, Data Quality Objectives, authorized release limits, regulatory levels, etc.).

1.2 Scope

All wastes generated at the Laboratory must be characterized and assessed for compatibility concerns. In addition, all waste generated at the Laboratory must have a documented hazardous waste determination at the point of generation before any dilution, mixing, or other alteration of the waste occurs.

Note: Dilution, mixing, or other alteration of waste likely constitute waste treatment and must be approved by Environmental Protection and Compliance Division (EPC) Waste Management Programs Group (WMP) subject matter experts (SMEs) per the process described in FSD-P409-0800, *LANL Waste Treatment Decision Making*.

Waste is any material that is discarded or abandoned, meaning material that is thrown away, destroyed, released into the environment, or not put to use. However, there are some radioactive materials that do not become waste until the Department of Energy (DOE) completes a formal process and determines the radioactive material will be discarded. After that decision is made, those materials become subject to this FSD.

1.3 Applicability

Waste characterization activities (Section 4.0) and compatibility assessments (Section 5.0) apply to all waste generated by Triad National Security, LLC (Triad) and its onsite subcontractors. Waste characterization activities and compatibility assessments also apply to any waste managed by Triad on behalf of the DOE or other entities.

Within the Laboratory, anyone who throws material away, destroys it, releases it into the environment, or decides that it is not going to be used is a waste generator. The individuals making these decisions normally include, but are not limited to, process personnel and/or front line managers who are closest to the work activity. Waste generators must collaborate with their Waste Management Coordinator (WMC, WMC-Help@lanl.gov) or Nuclear Process Infrastructure (NPI, npi6ak@lanl.gov) Acceptable Knowledge (AK) specialist/technologist to characterize their waste and perform a waste compatibility assessment.

For work that is being subcontracted, it is the responsibility of the requesting manager, Project Manager, and Subcontract Technical Representative to identify and assign the Waste Generator role to the appropriate LANL process personnel. These waste generators must also collaborate with their WMC or NPI AK personnel to characterize their waste and perform a waste compatibility assessment.

2.0 PRECAUTIONS AND LIMITATIONS

Waste characterization and compatibility assessments apply to all wastes. However, not all waste is the same. Some wastes can be effectively characterized based on readily available information, while others require direct measurements or extensive sampling and analysis. The more complex and heterogeneous a waste is, the more complicated the characterization process will be.

Waste characterization may include the process that generated the waste, activation from accelerators, and cross contamination from other activities or the environment in which the waste generating process took place. All personnel performing waste characterization should be cognizant of potential activation and cross contamination from other activities or locations.

Whenever waste characterization or compatibility is particularly difficult or complicated, ask for help by emailing WMC-help@lanl.gov, npi6ak@lanl.gov, npi7tru@lanl.gov, wm-wms-all@lanl.gov, and/or wmmanage@lanl.gov. These emails will put you in contact with your Waste Management Coordinator and various waste management SMEs. If necessary, these emails will start the Difficult Waste Streams process (described in AP-P409-0101, *Difficult Waste Streams*) to ensure that waste issues are addressed in an appropriate and timely manner.

This procedure implements portions of P409, *LANL Waste Management*. In addition, this procedure complements and is related to the following P409 implementing procedures:

- FSD-P409-0301, *Waste Characterization Strategy Form Preparation Procedure*.
- FSD-P409-0302, *Site Characterization for Construction, Renovation, or Demolition*.
- AP-P409-0303, *Waste Sample and Analysis Plan Procedure*.
- AP-P409-0304, *Listed Source Review Procedure for Managing Environmental Media*.
- FSD-P409-0305, *Acceptable Knowledge Package Requirements for NNSS Low-Level/Mixed Low-Level Waste*.
- AP-P409-0306, *Identifying and Assessing New or Discovered Potential Release Sites*.
- AP-P409-0307, *Waste Verification*.
- FSD-P409-0400, *Waste Determination and Categorization*.

Wastes with incompatibilities must be managed to prevent chemical or biological reactions.

Waste samples must be collected using methods that are consistent with the Environmental Protection Agency's (EPA) SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*.

Direct measurement of wastes (such as pH readings, X-ray fluorescence, *in situ* gamma spectroscopy, or real-time radiography) must be performed per approved procedure or manufacturer's instructions.

Waste management procedures (including this one) routinely refer to complex terms and definitions. For definitions of these terms, see LANL *Definition of Terms* and IG-P409-0002, *Waste Management Glossary*.

3.0 PREREQUISITE ACTIONS

1. Complete waste planning activities identified in FSD-P409-0100, *LANL Waste Planning*. This includes ensuring that there is a waste disposal path forward or written DOE authorization to proceed if there is not.
2. Identify the appropriate process personnel who are the waste generators for the activity or project and ensure they are trained according to Section 6 of P409, *LANL Waste Management*.
3. For wastes containing special nuclear material, a programmatic value determination (PVD) and termination of safeguards (TOS) must be completed before the material starts being managed as waste. However, characterization and compatibility assessments may be completed in parallel with or prior to PVD and TOS completion. See NMCA-TOS-FWI-003, *Termination of Safeguards* or contact nuclearmaterialsteam@lanl.gov and/or npi6ak@lanl.gov for assistance.

4.0 WASTE CHARACTERIZATION PROCESS DESCRIPTION

The waste characterization process must result in a legally defensible description of the waste. There are three basic strategies for characterizing waste streams.

- Acceptable Knowledge (AK);
- Declaration;
- Direct monitoring and measurement; and
- Direct sampling and analysis.

While each characterization strategy can be used alone, they are most often combined with other strategies as needed to successfully characterize the waste.

4.1 Characterizing with Acceptable Knowledge

AK is a waste characterization method that relies on existing documentation and data to accurately identify the physical, chemical, radiological, biological, and security aspects of the waste. Essentially, AK is a compilation of what process personnel already know about the waste and can successfully document in a legally defensible fashion. There can be a wide variety of information that could be used as AK. A list of common examples of AK is provided in Appendix A.

In order to characterize a waste using AK, waste generators and WMCs must:

1. Gather reliable and applicable information directly related to the waste and waste generating process. The information itself is referred to as AK.
2. Compare the AK to:
    a. The required information that must be addressed in a Waste Compliance and Tracking System (WCATS) Waste Stream Profile (WSP) and/or
    b. The Waste Characterization Checklist shown in Appendix B. All data must be of quality sufficient to meet waste management regulatory requirements as documented in P409, *LANL Waste Management*, and P409-1, *LANL Waste Acceptance Criteria*.
3. Assess the potential for cross-contamination from nearby activities, facilities, or contaminated sites. If cross-contamination is a risk, gather reliable and applicable AK on the activities, facilities, or contaminated sites by following the steps listed in FSD-P409-0301, *Waste Characterization Strategy Form Preparation* and/or FSD-P409-0302, *Site Characterization for Construction, Renovation, or Demolition*.
4. Assess the potential for radiological activation from accelerators or other sources. If activation is a risk, gather reliable and applicable AK on the accelerator or other source.
5. Make a preliminary waste determination based on the accumulated AK. This can be used to address any New Mexico Environment Department (NMED) concerns that arise prior to activation of a WSP in WCATS. The activated WSP is the final waste determination.

6. Complete a WSP in WCATS. Once the WSP is activated, per FSD-P409-0400, *Waste Determination and Categorization*, manage the waste according to the WSP.

Note: Some activities generate multiple waste streams. If the waste generating activity is construction, renovation, or demolition, it is likely that multiple waste streams will be generated. Use the following documents to gather AK information for these types of activities:

- FSD-P409-0301, *Waste Characterization Strategy Form Preparation*;
- FSD-P409-0302, *Site Characterization for Construction, Renovation, or Demolition*; and
- AP-P409-0304, *Listed Source Review Procedure for Managing Environmental Media*.

Note: There are special requirements that apply when AK is used to characterize radioactive wastes going to the Nevada National Security Site (NNSS) or the Waste Isolation Pilot Plant (WIPP). Use the following documents to gather AK information for these types of activities:

- FSD-P409-0305, *Acceptable Knowledge Package Requirements for NNSS Low-Level/Mixed Low-Level Waste*; and
- PA-AP-01146, *Acceptable Knowledge Documentation Procedure*.

Note: Appendix C lists various LANL databases and websites that may be useful in locating historical information that may be pertinent in identifying potential cross-contamination.

Note: For Transuranic (TRU) and mixed TRU (MTRU) waste, NPI-6 AK's processes complement waste sampling and analysis to characterize TRU waste at LANL according to requirements found in the WIPP Hazardous Waste Facility Permit (EPA No. NM4890139088), Waste Analysis Plan. TRU- and MTRU-related AK reports and associated documentation will be managed in accordance with PA-AP-01146, *Acceptable Knowledge Documentation Procedure*. The WCATS Questionnaire (form PA-FM-01016) is included in PA-AP-01146, captures required information, and is recorded in WCATS.

4.2 Characterizing by Declaration

Declaration is usually employed when AK, direct measurements, or analytical data are incomplete and other circumstances preclude more extensive sampling and analysis. When using this approach, personnel declare a waste to be regulated in a specific manner. Declaration must ALWAYS be to a more regulated waste type; never to a less regulated waste type (for example, declared to be hazardous waste not municipal solid waste). The best way to explain declaration is through example. The following list presents examples of characterization via declaration. The list is not exhaustive.

- Declaring all asbestos-containing wastes to be Regulated Asbestos Waste. There are some analytical methods that can be used to determine if the waste actually contains more than one percent of friable asbestos, but they are almost never used at LANL. Instead, known and suspected asbestos containing wastes are declared to be Regulated Asbestos Waste and are managed as if they contained greater than one percent of friable asbestos.

- Declaring any fluorescent light ballast installed before 1995 that is not labeled with the words "No PCBs" to be Toxic Substances Control Act (TSCA) waste. Federal regulations required some electrical equipment to be labeled with the words "No PCBs." Rather than sampling for Polychlorinated Biphenyls (PCBs) in each piece of equipment that was installed prior to 1995 but is not labeled "No PCBs," LANL personnel simply manage that equipment as PCB contaminated.
- Declaring drain lines being removed during a project to be hazardous waste. If AK demonstrates that there is known or suspected metals contamination in a drain line, collecting representative samples of the piping system may be too costly and time-consuming. Instead, LANL personnel declare the parts of the piping system that will be removed to be hazardous waste and manage them accordingly.
- Declaring equipment coming out of a radiologically controlled area to be low-level radioactive waste. In this case, AK demonstrates that there is a reasonable expectation that the equipment has become radiologically contaminated, but RCTs are not able to survey all surfaces of the equipment. Rather than dismantling the equipment to survey each surface, LANL personnel manage the equipment as radioactive waste.
- Declaring equipment coming out of a beryllium area to be beryllium waste. In this case, AK demonstrates that there is a reasonable expectation that the equipment is contaminated by beryllium. Rather than dismantling and decontaminating the equipment, LANL personnel manage the equipment as beryllium waste.

Declaration may also be used while analytical results are pending. In this case, a waste will be managed as hazardous waste (or other appropriate waste type) until analytical results demonstrate that the waste should be managed differently. In these cases, managing by declaration is a preliminary waste determination that only changes when data are returned and a waste stream profile is approved based on the analytical data.

When declaration is used as the final characterization strategy, the waste generator and WMC complete a waste stream profile in WCATS based on the declaration. In the WSP, a declaration is recorded as AK.

4.3 Characterizing with Monitoring and/or Measurement

Monitoring and measurement is a waste characterization method that involves visual inspection or examination (monitoring) or use of direct, real-time measurement equipment (measuring). Wastes must either be monitored/measured or sampled and analyzed whenever there is an information gap that is not adequately addressed by AK or declaration.

There is a wide variety of monitoring and measurement techniques. Application of these techniques is unique to the waste and its generating process. Some monitoring techniques include, but are not limited to:

- Visual inspection;
- Visual examination performed by Central Characterization Program personnel;

- Waste package certification;

Some direct measuring techniques include, but are not limited to:

- X-Ray Fluorescence;
- Non-destructive Assay (NDA);
- Vapor monitoring;
- In situ gamma spectroscopy;
- pH monitoring;
- In situ chemical analysis;
- Real-time radiography;
- Radiological monitoring; and
- Direct reading of swipe samples.

Direct monitoring and measurement activities must be planned via Data Quality Objects and results must be documented.

In order to characterize a waste by monitoring or measurement, contact WMC-Help@lanl.gov.

4.4 Characterizing with Sampling and Analysis

Sampling and analysis is a waste characterization method that involves collecting representative samples of the waste and submitting those samples to a certified laboratory for analysis. Wastes must be sampled and analyzed whenever there is an information gap that is not adequately addressed by AK, declaration, or direct monitoring/measurement.

In order to characterize a waste by sampling and analysis, perform the following steps:

1. The waste generator, WMC, and EPC Environmental Stewardship (EPC-ES) sampling personnel collaborate to clearly identify the Data Quality Objectives (DQOs) for the sampling event and develop a sampling and analysis plan (SAP). Use AP-P409-0303, *Waste Sample and Analysis Plan Procedure* when routine EPC-ES sampling protocols are not sufficient.
2. Based on the DQOs, Waste Characterization Strategy Form (WCSF, if applicable), and SAP, WMC completes a Request for Analysis (RFA) at https://epc.lanl.gov. See Appendix D for a list of analytical methods.

Note: There are instances when it is more appropriate to submit an RFA and then develop DQOs and a SAP. In those situations, the RFA is based on the available information instead of previously developed DQOs, SAPs, or WCSFs.

3. EPC-ES sampling personnel either collect the waste sample(s) or collaborate with the personnel who collect the sample(s). Waste samples must be collected using methods that are consistent with EPA SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*.

4. If needed, Radiation Protection (RP) personnel survey and release the sample(s).
5. EPC-ES personnel submit the sample(s) to the EPC Compliance Programs (EPC-CP) Sample Management Office (SMO). This includes completing a Chain of Custody (CoC) form to ensure the sample(s) are tracked from collection to analysis.
6. The SMO ships the sample(s) to a certified off-site analytical laboratory.
7. The off-site laboratory analyzes the sample and develops a report of the results. Normally, the analytical laboratory also uploads the report to a secure portion of the Laboratory's Environmental Information Management System (EIM). The chemical and physical analyses must be performed using methods that are consistent with EPA SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*.
8. SMO validates the data from the analytical laboratory and releases it to user-accessible portions of EIM.
9. In collaboration with SMO personnel, Waste Management Division's Waste Generator Services Group (WM-WGS) personnel develop a Waste Data Summary (WDS) from the data in EIM.
10. Complete a WSP in WCATS. Once the WSP is active, manage the waste according to the WSP.

Note: Waste must be managed per the preliminary waste determination if it is generated prior to WSP activation. Wastes characterized by AK and/or Declaration should have active WSPs in place prior to waste generation. Only wastes that must be characterized by sampling and analysis after generation should have WSPs completed and activated after generation.

4.4.1 Analytical Data from Laboratories Outside of the SMO Network

The SMO has subcontracts with many off-site, independent analytical laboratories. For this document, the term *SMO network* means the SMO and its subcontracted analytical laboratories.

Analytical data obtained through the SMO network meets specific NQA-1 requirements and arrives in a Level 4 data package format. Moreover, the analytical laboratories in the SMO network hold specific certifications to ensure that the data are valid and accurate. As such, it is preferred that all waste characterization samples be managed through the SMO.

However, occasionally, a project, subcontractor, or waste generating organization will choose to have its samples analyzed by a laboratory independent of the SMO. Data from laboratories outside of the SMO network is treated as AK.

4.4.2 Old Analytical Data

Waste and material must be managed to prevent tampering, additions, or other changes. However, unless it can be shown that a waste or material has not been tampered with, added to, or otherwise changed in any way, analytical data that is older than three years is treated as AK.

4.5 Combining Characterization Strategies

In some cases, it may be advisable to combine some or all of the characterization strategies to get a full understanding of the waste. This would normally occur for very complex wastes that have both chemical and radiological contamination. Using multiple strategies is a case-by-case determination between the waste generator and the WMC.

4.6 Required Characterization Information

The waste characterization process must determine the following specific information. Appendix B has a more detailed checklist to guide users in accurately completing the WCATS waste stream profile. Completion of the checklist is NOT required; it is a Best Management Practice only. However, completing the checklist prior to submitting a waste stream profile will provide documentation of a hazardous waste determination in the event a regulator requests it. If completed, do not upload the checklist to WCATS.

- What is the physical nature of the waste?
- Is the waste homogeneous (i.e., has the same uniform appearance and composition throughout) or heterogeneous (i.e., consists of visibly different substances or phases)?
- Is the waste ignitable? If yes, the waste is hazardous waste for ignitability (D001)
- Is the waste corrosive (liquids only)? If yes, the waste is hazardous waste for corrosivity (D002)
- What is the waste's boiling point (liquids only)?
- What is the waste's density (liquids only)?
- Is the waste reactive? If yes, the waste is a hazardous waste for reactivity (D003).
- What is the waste's chemical nature? What are its chemical constituents, levels, and ability to leach into groundwater?
- Is the waste radioactive? If so:
    - What radionuclides are present? What are their concentrations? Half-lives?
    - How are the radionuclides distributed throughout the waste? Concentrated in specific areas? Surface contamination only?
    - How did the waste become radioactively contaminated?
    - Is the radioactivity fixed or removable?
    - Is there a criticality concern?
    - Is the waste accountable? See NMCA-TOS-FWI-003, *Termination of Safeguards*.
    - What is the characterization date (see IG-P409-0002, *Waste Management Glossary*)?
    - Is the waste compactible?

  - Does the waste meet an existing Authorized Release Limit (see FSD-P409-0901, *Authorized Release Limits Proposal Process*)?

- Does the waste contain live micro-organisms (bacteria, viruses, etc.,) or other potential pathogens? If so, what organisms? What are the concentrations?
- Does the waste contain materials that could be acted upon by micro-organisms in the future? For example, could the material be fermented? Could micro-organisms consume the material in a way that generates heat, pressure, or toxic gases?
- Is the waste exempt from hazardous waste regulations?
- What is the expected volume of the waste? Include the volume of absorbent, if used.
- What is the expected weight of the waste? Include the weight of any absorbent and the expected container.
- Will this be an on-going waste stream or a one-time generation event?
- What process or activity generated or will generate the waste?

4.7 Completing a Waste Profile

Results of characterization are documented within Waste Stream Profiles prepared in the Laboratory's Waste Characterization and Tracking System (WCATS) and approved per FSD-P409-0400, *Waste Determination and Categorization*. Any information gaps should be filled by sampling and analytical data.

Note: The process for creating and documenting WSPs in WCATS is also provided in EPC-WMP-WCATS-GUIDE-002, *Waste Compliance and Tracking System (WCATS) User Guide* and UTrain course number 8504.

Note: There are some instances when WSPs are not required. To determine if a WSP is required for a specific waste, send an email to wmmanage@lanl.gov.

1. Log onto WCATS.
2. Click on File and select new Waste Stream.
3. Under the General Information panel, complete data entry for General Information, Generating Area, and Technical Contacts. The waste stream name should be descriptive but succinct (e.g., Asbestos Roofing Debris from TA-03-0038 or Radioactive Mercury Cleanup Waste from TA-03-0066).
4. Under the Site Area panel, complete data entry for Waste Stream Location, Generating Group, Waste Accumulation, and Environmental Restoration (ER) Site. If the waste is from a project that takes place in a Solid Waste Management Unit (SWMU) or Area of Concern (AOC), enter the SWMU/AOC number(s) in this panel. To find out if the waste is from a SWMU or AOC, see the GIS Map Results in the excavation permit (EXID) or Permits and Requirements Identification (PRID) document or follow the steps outlined in FSD-P409-0302, *Site Characterization for Construction, Renovation, or Demolition*.

5. Under the Method of Characterization panel, check the appropriate method(s). Remember that analytical data from non-SMO laboratories or analytical data older than three years is AK. Also, ensure that any verification sample data are included. In addition, for wastes covered by a WCSF or waste certification statement completed per FSD-P409-0301, *Waste Characterization Strategy Form Preparation*, ensure the waste characterization methods match what is listed in the WCSF or waste certification statement. Finally, if partially relying on a Listed Source Review document completed under AP-P409-0304, *Listed Source Review Procedure for Managing Environmental Media*, reference the document in this panel but DO NOT upload the Listed Source Review document. Likewise, if referring to a published report, list the publication information (such as the LA-UR number, chapter, and page number) but DO NOT upload the entire published report. A relevant excerpt of the report may be uploaded.
6. Under the Documentation panel, upload applicable documentation listed in the Method of Characterization panel, except for Listed Source Review documents or publications.
7. Under the Waste Prevention/Minimization panel, answer the questions as appropriate. Provide comments that demonstrate the actions taken to reduce waste volume or hazards. This may include statements such as:
    - Used micro-chemistry techniques to minimize waste generation;
    - Substituted nonhazardous ingredients to prevent hazardous waste generation;
    - Segregated waste streams to prevent cross-contamination; or
    - Reused material multiple times until it became spent.
8. Under the Chemical/Physical Information panel, complete data entry for chemical/physical information, waste source, and matrix.
9. Under the Waste Category panel, check each item that applies to the waste.
10. Under the Generator Estimates panel, enter the estimated waste volume that will be generated per year. This information is related to the waste planning and forecasting efforts described in FSD-P409-0100, *LANL Waste Planning*.
11. Under the Process and Waste Description Panel, describe the generating process and waste with enough information to clearly distinguish the waste from other waste streams. In the generating process text box, include information that is relevant to the ultimate waste determination and categorization performed under FSD-P409-0400, *Waste Determination and Categorization*. This may include statements such as:
    - Contaminated soil and rock removed during cleanup of spilled tritium-contaminated water in SWMU 53-001(a). The current status of SWMU 53-001(a) is Complete without Controls.
    - Construction debris from the demolition of TA-46-0001. The demolition process is a phased approach that removed asbestos, PCB-contaminated materials, radioactive-

contaminated materials, and lead-based painted materials prior to generation of this nonhazardous debris.

- Unused flammable liquid chemicals in their original containers from a laboratory cleanout in TA-59-0001. All containers are less than one gallon in volume and are eligible for labpacking per U.S. Department of Transportation (DOT) regulations.

12. Under the I/C/R Characteristics panel, enter data associated with ignitability, corrosivity, or reactivity characteristics. Boiling point information is required for DOT packing group determinations.
13. Under the Toxicity Characteristics panel, enter data as requested. This may be complicated if the waste is a solid matrix and Total analytical data (expressed in mg/kg) is being used in conjunction with a Waste Data Summary (WDS) run out of the Environmental Information Management (EIM) system. The WDS automatically applies a mass balance calculation (also known as the 20 Times Rule) to totals data for Toxicity Characteristic constituents. When this happens, select Totals checkbox and add the Min (ppm) and Max (ppm) ranges specified in the WDS. Upload the WDS under the Documentation panel. Requesters MUST add a statement to the Additional Information panel that the analytical data are Totals (mg/kg), that the WDS automatically applied the mass balance calculation (20 Times Rule).
14. Under the Composition panel, account for 100 percent of the waste. The range should be within the guidelines of individual constituents and the total should be within 100 to 130 percent.
15. Under the Additional Information panel, provide any additional information that will help reviewers or other WSP users make compliant, informed decisions related to the management of the waste. **Potential incompatible materials should be identified in this panel** if not addressed elsewhere. Waste segregation requirements from Section 5, below, should be listed here. If the waste is contaminated with live viruses or bacteria, list them in this panel.
16. Under the Work Control Documentation panel, identify any work documents that address the waste generating activity or may provide information useful to characterizing or managing the waste.
17. Under the Waste Packaging panel, describe waste packaging and storage control measures. DOT specification packaging identified in Section 5 below should be listed here to demonstrate that the waste is compatible with the planned packaging. Indicate if the waste is eligible for labpacking as described in Section 5, below.
18. The LDR panel is only completed for hazardous waste. Select the appropriate box based on characterization information.
19. The LDR Certifications panel is only completed for hazardous waste. Select the appropriate certification based on characterization information.

20. For characteristically hazardous waste, under the UHCs panel, select all known or suspected UHCs. If there are no UHCs, check the "There are no UHCs associated with this waste stream" box.
21. If the waste is radioactive and destined for the Nevada National Security Site (NNSS), identify all the applicable radionuclides and their concentrations under the Nuclides panel. If the radioactive material is not destined for NNSS, the radionuclide data may be uploaded to the container and/or Waste Disposal Request (WDR).
22. Under Waste Certification Statements panel, select the appropriate checkbox.
23. Enter appropriate cost codes in the Cost Codes panel.
24. Review and electronically sign the WSP to submit it to the next review step.

4.8 Conditions Requiring Re-Characterization

As stated in Section 3.3.1 of P409, *LANL Waste Management*, personnel should never assume that wastes only have to be characterized once. For ongoing waste streams, waste generators are expected to review and validate their waste characterization information at least annually to ensure that it is accurate and up-to-date. Further, State and Federal regulations require waste generators to re-characterize the waste whenever there is reason to believe that the process or operation generating the waste has changed or an off-site facility indicates that the waste received does not match the shipping manifests. Waste generators that re-characterize their waste must document these efforts to ensure that it is valid and can be reviewed by auditors, or state and federal inspectors.

At the Laboratory, waste generators must re-characterize their waste whenever:

- There is a change to the waste generating process;
- There is a change to material inputs or suppliers;
- The process owner changes;
- Process authorization documentation is revised;
- Material formulations are revised;
- When the waste stream profile reaches its usable limit (every three years);
- The waste has been treated to change a chemical, biological, physical, or radiological aspect (regardless of whether this treatment was intentional);
- There is a significant change to waste management regulations or requirements;
- New analytical data indicate a change in the waste stream composition;
- The waste is repackaged, and secondary materials are added to the container;
- There is a process upset, spill, or another abnormal event;
- New characterization data or information becomes available;

- A waste generator is notified that waste received at an off-site facility does not match an on-site waste stream profile, a pre-approved waste analysis certification, or accompanying shipping documentation; and/or
- A tamper indicating device is breeched without prior authorization.

4.9 Preliminary Waste Determinations and Categorizations

As stated in P409, *LANL Waste Management*, any person who generates a waste must make a *waste determination* at the *point of generation*. The waste determination must be made before any dilution, mixing, or other alteration of the waste occurs.

Note: Dilution, mixing, or other alteration of waste likely constitute waste treatment and must be approved by EPC-WMP per the process described in FSD-P409-0800, *LANL Waste Treatment Decision Making*.

Waste determinations are formally documented on WSPs in WCATS. If waste is generated before a WSP is approved in WCATS, waste generators must still document their waste determination at the point of generation. This is called a preliminary waste determination.

4.10 Verifying Characterization

EPC-WMP performs independent compliance assurance activities, including generator assistance site visits, P409 implementation assessments, and waste verification activities. These activities confirm initial waste characterization efforts or identify issues to address so LANL workers are protected from safety and health hazards. See PD-P409-0001, *Waste Management Compliance Assurance*, for more information.

Any waste verification result that contradicts the previously accepted characterization information triggers a re-characterization event as described in Section 4.8 above. Within 24 hours of receiving and confirming the verification data, WMCs MUST:

- Void the existing WSP;
- Initiate a new WSP;
- Change any affected labeling;
- Place the waste in an appropriate waste accumulation or storage area (if necessary);
- Reassess waste compatibility and segregation requirements; and
- Rectify any compatibility or segregation issues.

If the verification information contradicts previously accepted characterization information for waste that is stored in a permitted treatment or storage facility (TSF), personnel at the TSF must perform the actions listed above within 24 hours of receiving and confirming the verification data.

5.0 WASTE COMPATIBILITY DETERMINATION PROCESS

Waste generators and WMCs must use the knowledge gained during characterization efforts to make waste compatibility assessments. It is important that waste characterization efforts be as specific as possible for the waste because broad waste characterization in waste streams might lead to compatibility determination issues that can be avoided with more narrowly defined waste bounding.

Incompatibility is a primary concern for hazardous wastes, mixed wastes (hazardous and radioactive), biological waste, and nonhazardous chemical waste. The steps to completing a waste compatibility assessment are straightforward and are expected to be performed by the waste generator and WMC collaboratively:

1. Characterize the waste as narrowly and specifically as possible.
2. Determine the chemical family of the waste and the individual chemicals or products that were used in the waste generating process. This information is routinely listed on the Safety Data Sheet (SDS) for the chemicals and/or products that are used in the waste generating process.

Note: If the waste is heterogeneous, determine the chemical families of each part making up the waste.

3. Determine if the waste is a DOT hazardous material. If so, determine the appropriate Hazard Class or Division identified in 49 CFR 172.101. This information is routinely listed on the SDS for the chemicals and/or products that are used in the waste generating process.

Note: Not all chemicals or materials that are incompatible are DOT hazardous materials. However, if something is a DOT hazardous material, it is a clue that the chemical has known hazards that must be addressed during waste management activities.

4. Using SDSs, published literature, the collected waste characterization information, and DOT Hazard Class or Division, examine the primary chemical and biological constituents to determine if a chemical or biological reaction is possible. See Table 1, Appendix C, and Appendix E for more information.
5. Make a determination of container compatibility by:
    - Making sure the waste is in its original container; or
    - Making sure the waste is in a container that is of the same material and opacity as the original container; or
    - Identifying the approved DOT packaging type(s) allowable for the DOT Hazard Class or Division of the waste and making sure the waste is in a container that meets the DOT requirements.

As documentation demonstrating compatibility between the waste and its container, make one of the following statements as applicable in the Packaging/Storage Control Panel on the WCATS WSP:

- The waste is compatible with its container because it is in its original container.
- The waste is compatible with its container because it is in a container that is made of the same material and opacity as the waste's original container.
- The waste is compatible with its container because it is in a container that is approved by DOT for Hazard Class/Division _____. (If making this statement, include the DOT Hazard Class/Division and packaging specification(s) for the waste.)

If additional information is needed, upload documents to the **Documentation Panel** of the WCATS WSP. If compatibility determinations are performed at the container level, rather than the profile level, compatibility determination documentation should be uploaded to the documentation panel at the container level. A statement should be made in the Waste Description Panel to convey that compatibility determinations for that profile will all be done at the container level and included in the documentation panel of the container.

6. Make an **intra-container or intra-waste compatibility** determination using the following multi-step process:

   6.1 If the waste is in small containers that will be packaged into a single, larger container with other wastes, then only wastes with the DOT Hazard Classes or Divisions listed in 49 CFR 173.12 may be packaged in the same outer container. (This packaging configuration is called *Labpacking*.) All other DOT Hazard Classes or Divisions are to be considered incompatible. **State that the waste is eligible for labpacking per 49 CFR 173.12 in the Additional Information panel of the WSP.** Only wastes that are eligible for labpacking are allowed to be packaged in the same container with other wastes.

   6.2 Most wastes in small containers and many wastes that have liquids will be packaged with absorbent material to cushion the inner container and absorb any spills or leaks. Laboratory personnel use **inorganic** absorbents (those made with zeolite, clay, vermiculite, or other mineral-based materials) because these absorbents are both chemically and biologically inert, and are therefore compatible with the vast majority of wastes generated here. **Organic** absorbents (those made from paper, wood, corncobs, wheat, plastic, etc.) will react with oxidizers, peroxides, and biological materials and are PROHIBITED from being used with those waste types. LANL uses polypropylene absorbent for over packing containers of hydrofluoric acid because hydrofluoric acid is incompatible with vermiculite. WMCs must be aware of the absorbents that will be used by WM-WMS for final waste packaging and transport. **State that the waste is compatible with the selected absorbents (vermiculite, zeolite, clay-based, polypropylene, or other mineral-based absorbents) in the Additional Information panel or in the Process and Waste Description panel in the WCATS WSP.** If the determination involves stand-alone documents, the documents should be uploaded into the Documentation Panel of WCATS.

If compatibility determinations are being performed at the container level rather than the profile level, compatibility determination documentation should be uploaded to the documentation panel at the container level. A statement should be made in the Waste Description Panel to convey that compatibility determinations for that profile will be done at the container level and included in the documentation panel of the container.

7. Only packages or containers of **compatible** wastes should be stored next to each other in waste accumulation, staging, or storage areas. Title 40 CFR §264.177 and the LANL Hazardous Waste Facility Permit requirements, Section 2.8, require segregation of incompatible materials in containers during storage.

   Segregation is required to ensure:

   - The prevention of commingling incompatible wastes during storage or in the event of a release or spill, that incompatible wastes are not stored within or on the same secondary containment structure as required, and
   - Waste or materials are not stored so that a release or spill of these wastes might commingle in a fire suppression water holding area or tank.

   The LANL Hazardous Waste Facility Permit incorporates the segregation and compatibility requirements from DOT regulations at 49 CFR §177.848. See Appendix E for a representation of the DOT segregation requirements as they pertain to LANL.

   Note: See Table 1: Compatibility Guidance Table for some general guidance related to LANL wastes.

Table 1. Compatibility Guidance Table

Is the waste ignitable?
• If the waste is ignitable because it is capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes, then it is INCOMPATIBLE with the chemicals or conditions that will cause it to ignite. • If the waste is ignitable because it is an oxidizer (meaning a substance such as chlorate, permanganate, inorganic peroxide, or nitrate that yields oxygen readily to stimulate combustion), then it is INCOMPATIBLE with organic materials.
Is the waste corrosive?
• If your waste is corrosive because it is an aqueous liquid that has a pH less than or equal to 2, then your waste is INCOMPATIBLE with bases, metals, or other materials. • If your waste is corrosive because it is an aqueous liquid that has a pH greater than or equal to 12.5, then your waste is INCOMPATIBLE with acids, metals, or other materials. • If your waste is corrosive because it corrodes steel, then your waste is INCOMPATIBLE with metals.

Is the waste reactive?
• If your waste is reactive because it is normally unstable or it readily undergoes violent change without detonating, then your waste is INCOMPATIBLE with any condition or material that could trigger a reaction. • If your waste is reactive because it A) reacts violently with water; B) forms potentially explosive mixtures with water; or C) will generate toxic gases, vapors, or fumes when mixed with water, then your waste is INCOMPATIBLE with water. • If your waste is reactive because it is a cyanide or sulfide bearing waste that, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes, then your waste is INCOMPATIBLE with water. • If your waste is reactive because it is shock sensitive, then your waste is INCOMPATIBLE with sudden movement or a strong initiating force. • If your waste is reactive because it is capable of detonation or explosive reaction when heated under confinement or when at standard temperature or pressure, then your waste is INCOMPATIBLE with the conditions that may cause a reaction or chemicals that may cause heat. • If your waste is reactive because it is a DOT forbidden explosive, then your waste is INCOMPATIBLE with the conditions or chemicals that may cause it to explode.
Is the waste Used Oil?
• Used oil is INCOMPATIBLE with oxidizers, peroxides, heat, and reactive wastes.
Does the waste include plastic, vegetation, wood, paper, wheat, sawdust, or other organic matter?
• Your waste is INCOMPATIBLE with oxidizers, peroxides, heat, and reactive wastes. • When mixed with water, your waste may result in fermentation or other biological processes that will result in gas emissions, heat generation, or pressure increases.

6.0 TRAINING

All personnel involved in the process of characterization shall receive training commensurate with functions as described in P409, *LANL Waste Management*, Section 6.0. All training must be assigned and tracked using the institutional training management system, UTrain.

7.0 RECORDS

Electronic records of Waste Stream Profiles including supporting documentation are managed in WCATS. Generators must upload characterization documentation such as AK Packages, analytical data, spreadsheets, and/or calculations into WCATS. Once uploaded into WCATS, this documentation becomes part of the Laboratory's official operating record. Records are managed in accordance with P1020-1, *Laboratory Records Management*.

8.0 DEFINITIONS AND ACRONYMS

8.1 Definitions

See LANL *Definition of Terms* and IG-P409-0002, *Waste Management Glossary*.

8.2 Acronyms

AK	Acceptable Knowledge
AOC	Area of Concern
DOE	Department of Energy
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
EPC-DO	Environmental Protection and Compliance – Division Office
EPC-CP	Environmental Protection and Compliance – Compliance Programs
EPC-ES	Environmental Protection and Compliance – Environmental Stewardship
EPC-WMP	Environmental Protection and Compliance – Waste Management Programs
EXID	Excavation Permit
LANL or Laboratory	Los Alamos National Laboratory
MSDS	Material Safety Data Sheet
MTRU	Mixed Transuranic
NMSW	New Mexico Special Waste
NNSS	Nevada Nuclear Security Site
PCBs	Polychlorinated Biphenyls
PRID	Permits and Requirements Identification
PVD	Programmatic Value Determination
SDS	Safety Data Sheet
SMO	Sample Management Office
SWMU	Solid Waste Management Unit
TOS	Termination of Safeguards
TSCA	Toxic Substances Control Act
TSF	Treatment and Storage Facility
TRU	Transuranic
WCATS	Waste Compliance and Tracking System
WCSF	Waste Characterization Strategy Form
WMC	Waste Management Coordinator

9.0 REFERENCES

40 CFR Parts 260 through 268, Hazardous Waste Regulations

40 CFR Part 279, Used Oil

EPA SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods

DOE O 435.1, Radioactive Waste Management

DOE M 435.1-1, Radioactive Waste Management Manual

DOE O 458.1, Radiation Protection of the Public and the Environment

Los Alamos National Laboratory – MSDS Online, MSDS Search, <int.lanl.gov/safety/industrial_hygiene_and_safety/Chemical-safety/chemical-capability-tools.shtml>

Princeton University, Chemical Compatibility, <int.lanl.gov/safety/industrial_hygiene_and_safety/Chemical-safety/chemical-capability-tools.shtml>

Richard J. Lewis Sr., Sax's Dangerous Properties of Industrial Materials, John Wiley and Sons, U.S. Department of Transportation, 49 CFR 177.848, Segregation of Hazardous Materials

40 CFR 264 Appendix V and 265 Appendix V, Examples of Potentially Incompatible Waste

LANL Hazardous Waste Facility Permit

P409 LANL Waste Management

P409-1 LANL Waste Acceptance Criteria

SD330 Los Alamos National Laboratory Quality Assurance Program

P1020-1, Laboratory Records Management, Los Alamos National Laboratory Policy

DOE-WIPP-02-3122, "Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant"

DOE/NV-325-16-00, "Nevada National Security Site Waste Acceptance Criteria"

P300, Integrated Work Management

40 CFR Parts 700 to 799, Toxic Substances Control Act

DOE O 435.1, Chg. 1, Radioactive Waste Management

DOE M 435.1-2, Chg. 2, Radioactive Waste Management Manual

DOE O 458 .1, Chg. 2, Radiation Protection of the Public and the Environment

WIPP Hazardous Waste Facility Permit (EPA No. NM4890139088), Waste Analysis Plan

PA-AP-01146, Acceptable Knowledge Documentation Procedure

PA-FM-01016, WCATS Questionnaire

PD-P409-0001, Waste Management Compliance Assurance

FSD-P409-0100, LANL Waste Planning

AP-P409-0101, Difficult Waste Streams

FSD-P409-0301, Waste Characterization Strategy Form Preparation Procedure

FSD-P409-0302, Site Characterization for Construction, Renovation, or Demolition

AP-P409-0303, Waste Sample and Analysis Plan Procedure

AP-P409-0304, Listed Source Review Procedure for Managing Environmental Media

FSD-P409-0305, Acceptable Knowledge Package Requirements for NNSS Low-Level/Mixed Low-Level Waste

AP-P409-0306, Identifying and Assessing New or Discovered Potential Release Sites

AP-P409-0307, Waste Verification

FSD-P409-0400, Waste Determination and Categorization

FSD-P409-0800, LANL Waste Treatment Decision Making

IG-P409-0002, Waste Management Glossary

NMCA-TOS-FWI-003, Termination of Safeguards

FSD-P409-0901, Authorized Release Limits Proposal Process

RP-SVS-RIC-TBD-003, R2, Health Physics Measurements for the Unrestricted Release of Metals from LANSCE

RP-PROG-TP-206, LANSCE Metals Clearance Process

EPC-ES-TPP-001 R.2 Data Quality Objectives for Measurement of Radioactivity in or on Items for Transfer Into the Public Domain

DOE-STD-6004-2016, Clearance and Release of Personal Property from Accelerator Facilities

10.0 APPENDICES

Appendix A: Common Examples of Acceptable Knowledge Documentation

Appendix B: Waste Characterization Checklist

Appendix C: Online Characterization and Compatibility Resources

Appendix D: Analytical Methods

Appendix E: Incompatibility Table

Appendix A: Common Examples of Acceptable Knowledge Documentation

Process design documents	Final safety analysis reports	Unreviewed safety questionnaire determinations
Formal plans/procedures describing the waste generating process	Detailed process descriptions and/or narratives	Authorized procedures or other process input controls
Technical Safety Requirements	Standard Operating Procedures	Integrated Work Documents
Hazard Control Plans	Safety Data Sheets	Activity Hazard Analyses
Detailed Operating Procedures	Raw material lists	Occupational Assessments
Industrial Hygiene sampling results	Radioactive Work Permits	Proper shipping descriptions
Historical reports and/or data that can be logically linked to the waste	Historical waste stream profiles	Physics of radionuclide production
Accelerator and beam line characteristics documentation	Material and component characteristics documentation	Accelerator, facility, and/or process operational history
Consent Order site investigation reports, sampling results, work plans, description documents	National Environmental Protection Act documentation	Documentation required or identified in DOE orders, manuals, and standards
Site, project, or process walk down results	Readiness documentation	Inventory control documentation
Radiation protection survey results	Maintenance records	Documentation developed by other LANL procedures or policies
Scientific reports	Radiological decay calculations	Natural attenuation studies
Toxicological profiles	Technical basis documents	Dose to Curie calculations
Historic radiological, chemical, physical, or biological data combined with documentation proving the generating process has not changed	Inspection documentation	Process logs, laboratory notes, and batch records
Manufacturing specifications	Plans and drawings	Areas and/or buildings where each waste stream is generated
AK Reports	Listed Source Review reports	
This is not an exhaustive list. Other documents that are beneficial for identifying the radiological, chemical, physical, biological, and classification characteristics of the waste are also acceptable.		

Appendix B: Waste Characterization Checklist

Attribute	Answer	Conclusion	Analyses
Physical Nature			
Is the waste a solid, liquid, gas, sludge, or semisolid?	☐ Solid ☐ Liquid ☐ Gas ☐ Sludge ☐ Semisolid ☐ Other		
Is the waste **homogeneous** (i.e., has the same uniform appearance and composition throughout) or **heterogeneous** (i.e., consists of visibly different substances or phases)?	☐ Homogeneous ☐ Heterogeneous		
Does the waste consist of debris or excavated material?	☐ Yes ☐ No ☐ Unsure		
What is the waste's boiling point (liquids only)?			
Ignitability **DANGER: Compatibility Risk**			
Is the waste a liquid, other than an aqueous solution containing less than 24% alcohol by volume that has a flash point less than 60° C (140° F)?	☐ Yes – D001 ☐ No ☐ Unsure		
Is the waste not a liquid and is capable of causing fire through friction, absorption of moisture, or spontaneous chemical changes and when ignited, burns so vigorously and persistently that it creates a hazard?	☐ Yes – D001 ☐ No ☐ Unsure		
Is the waste an ignitable compressed gas?	☐ Yes – D001 ☐ No ☐ Unsure		
Is the waste an oxidizer? Meaning a substance such as chlorate, permanganate, inorganic peroxide, or nitrate that yields oxygen readily to stimulate combustion.	☐ Yes – D001 ☐ No ☐ Unsure		
Corrosivity **DANGER: Compatibility Risk**			
Is the waste an aqueous liquid that has a pH less than or equal to 2 or greater than or equal to 12.4?	☐ Yes – D002 ☐ No ☐ Unsure		SW846 Method 9040C
Is the waste a liquid that corrodes steel at a rate greater than 6.25 mm (0.25 inch) per year?	☐ Yes – D002 ☐ No ☐ Unsure		SW846 Method 1110A

Attribute	Answer	Conclusion	Analyses
Reactivity **DANGER: Compatibility Risk**			
Is the waste normally unstable? Does it readily undergo violent change without detonating?	☐ Yes – D003 ☐ No ☐ Unsure		
Does the waste react violently with water? **Note:** The reaction of strong acids or bases with water does not apply in this case.	☐ Yes – D003 ☐ No ☐ Unsure		
Can the waste form potentially explosive mixtures with water?	☐ Yes – D003 ☐ No ☐ Unsure		
When mixed with water, will the waste generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment?	☐ Yes – D003 ☐ No ☐ Unsure		
Is the waste a cyanide or sulfide bearing waste that, 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? **Note:** This generally refers to cyanide and sulfide salts (i.e., ionic bonded chemicals).	☐ Yes – D003 ☐ No ☐ Unsure		
Is the waste capable of detonation or explosive reaction if it is subjected to a strong initiating source? **Note:** This is also called being “shock sensitive.”	☐ Yes – D003 ☐ No ☐ Unsure		
Is the waste capable of detonation or explosive reaction if it is heated under confinement?	☐ Yes – D003 ☐ No ☐ Unsure		
Is the waste capable of detonation or explosive decomposition or reaction at standard temperature and pressure?	☐ Yes – D003 ☐ No ☐ Unsure		
Is the waste a DOT forbidden explosive (49 CFR 173.54)? Or is it a DOT Division 1.1, 1.2, or 1.3 explosive (49 CFR 173.50 and 173.53)?	☐ Yes – D003 ☐ No ☐ Unsure		
Toxicity Characteristic			
Does the waste contain any of the heavy metals, organic chemicals, herbicides, or pesticides shown in 40 CFR 261.24? If so, at what concentrations?	☐ Yes – D004-043 ☐ No ☐ Unsure		

Attribute	Answer	Conclusion	Analyses
Are any of the contaminants leachable? If so, at what concentrations?			
Does the waste contain any of the chemicals listed at 40 CFR 268.48? If so, which chemicals and at what concentrations?	☐ Yes - UHCs ☐ No ☐ Unsure		
Does the waste contain PFAS (liquids only)	☐ Yes ☐ No ☐ Unsure		
Listed Hazardous Waste **DANGER: Compatibility Risk**			
Is the waste a spent solvent or a mixture or blend of spent solvents listed in 40 CFR 261.31? Was the material used for its solvent properties? Does the waste meet any of the non-specific source descriptions shown in 40 CFR 261.31?	☐ Yes – F-Listed ☐ No ☐ Unsure		
Is the waste from any of the specific sources listed in 40 CFR 261.32?	☐ Yes – K-Listed ☐ No ☐ Unsure		
Is the waste an **acutely hazardous** commercial chemical product, off-specification chemical, container residue, or spill residue listed in 40 CFR 261.33(e)?	☐ Yes – P-Listed ☐ No ☐ Unsure		
Is the waste a commercial chemical product, manufacturing chemical intermediate, off-specification chemical, or spill residue listed in 40 CFR 261.33(f)?	☐ Yes – U-Listed ☐ No ☐ Unsure		
Does the waste contain Beryllium? If so, is it a commercial Beryllium powder or spill residue of a commercial Beryllium powder?	☐ Yes ☐ No ☐ Unsure		
Toxic Substances Control Act Wastes			
Does the waste contain PCBs (Arochlors)? If so, which ones and at what concentrations? What was the PCB source concentration? **Note:** regulations require the waste to be managed at the source concentration.	☐ Yes – TSCA ☐ No ☐ Unsure		
If the waste is aqueous, does the waste contain PCB Congeners? If so, which ones and at what concentrations?	☐ Yes ☐ No ☐ Unsure		

Attribute	Answer	Conclusion	Analyses
Does the waste consist of fluorescent light ballasts older than 2000? If so, are the ballasts labelled “No PCBs?”	☐ Yes ☐ No – TSCA ☐ Unsure		
Radioactive Wastes			
Is the waste radioactive? If so, what are the radionuclides and their concentrations? Is the waste TRU or Low-Level? Is the radioactive waste mixed with hazardous chemicals? Was the waste generated by a defense funded program?	☐ Yes ☐ No ☐ Unsure		
Universal Wastes			
Is the waste a light bulb? Herbicide? Pesticide? Battery? Mercury-containing piece of equipment? Are any of the contaminants leachable? If so, at what concentrations?	☐ Yes – Universal ☐ No ☐ Unsure		
New Mexico Special Wastes (NMSW)			
Does the waste contain asbestos?	☐ Yes – NMSW ☐ No ☐ Unsure		
Does the waste contain unbound nanoparticles?	☐ Yes – NMSW ☐ No ☐ Unsure		
Is the waste a treated, formerly characteristic hazardous waste? If so, what treatment process was used?	☐ Yes – NMSW ☐ No ☐ Unsure		
Is the waste petroleum-contaminated soil?	☐ Yes – NMSW ☐ No ☐ Unsure		

Appendix C. Online Characterization and Compatibility Resources

Site	URL	Purpose
ARCHIBUS	https://archibus.lanl.gov	Building age
Asbestos Database	https://int.lanl.gov/safety/industrial_hygiene_and_safety/asbestos/database/index.shtml	Presence of asbestos in building and room
Support for difficult waste streams	WMC-Help@lanl.gov wmmanage@lanl.gov npi6ak@lanl.gov npi7tru@lanl.gov wm-wms@lanl.gov	Contact waste management subject matter experts to request assistance in resolving difficult waste characterization issues
LANL PRS Database	http://prs.lanl.gov	Proximity to contaminated site
WCATS	https://wcats.lanl.gov/wcats/	Enter or review WSPs Request waste shipment
Integrated Review Tool	http://eswebapps/irt/home.aspx	Project review tools such as Permits & Requirements Identification (PRID), Excavation Permit Request (EXID), and Site Selection.
Electronic Code of Federal Regulations	https://ecfr.io	Federal regulations
LANL Electronic Public Reading Room	https://eprr.lanl.gov	Published documents related to LANL contaminated sites, TSDs, air permits, water permits, etc.
LANL Electronic Documents and Records Management System	https://edrms.lanl.gov	Procedures, reports, and records
40 CFR 264 Appendix V	https://ecfr.io	Examples of potentially incompatible wastes
Los Alamos National Laboratory – MSDS Online, MSDS Search	int.lanl.gov/safety/industrial_hygiene_and_safety/Chemical-safety/chemical-capability-tools.shtml	
Princeton University, Chemical Compatibility	http://int.lanl.gov/safety/industrial_hygiene_and_safety/Chemical-safety/chemical-capability-tools.shtml	Tool for assessing compatibility
49 CFR 177.848, Segregation of Hazardous Materials	https://ecfr.io	DOT table for segregating incompatible hazardous materials during transport
Online chemical hazard software system CAMEO	https://www.epa.gov/cameo	Compatibility determination functionality for chemical mixtures.
Online chemical hazard software system WISER	https://wiser.nlm.nih.gov	Compatibility determination functionality for chemical mixtures.

Appendix D: Common Analytical Methods

Constituents of Concern	Analytical Methods*
Volatile Organic Compounds	SW-846:8260B
Semi-volatile Organic Compounds	SW-846:8270C SW-846:8270D
Organic Pesticides	SW-846:8081B
Organic Herbicides	SW-846:8151A
PCBs (Arochlors)	SW-846:8082
PCB Congeners	EPA:1668C
Total Metals	SW-846:6010C, SW-846:7471A, or SW-846:6020
Total Cyanide	SW-846:9012A
High Explosives Constituents	SW-846:8330B
Asbestos	EPA 600M4
TPH-Gasoline Range Organics	SW-846:8015M_PURGEABLE
TPH-Diesel Range Organics	SW-846:8015M_EXTRACTABLE
TCLP Metals	SW-846:6020_TCLP
TCLP Organics	SW-846: 8260-B_TCLP SW-846: 8270-D_TCLP
TCLP Pesticides and Herbicides	SW-846:8081B_TCLP, SW-846:8151A_TCLP
Gross Alpha/Beta (water)	EPA:900
Gross Alpha/Beta (solid)	SW-846:9310 Direct Survey
Tritium (liquid scintillation)	EPA:906.0
Gamma spectroscopy (water)	EPA:901.1
Gamma spectroscopy (solid)	Direct Measurement In-Situ Object Counting System
Real-time radiography	Direct Measurement
Isotopic plutonium	HASL-300:ISOPU
Isotopic uranium	HASL-300:ISOU
Isotopic Thorium	HASL-300:ISOTH
Strontium-90	EPA:905.0
Americium-241 (HASL-300)	HASL-300:ISOAM-241
Cesium-137	EPA:901.1
Perchlorates	SW-846: 6850
SWWS WAC	See P409-1
RLWTF, RLWTP, TLW WAC	See P409-1
HEWTF WAC	See P409-1
PFAS	EPA:537M
Ignitability: Flash Point	SW-846:1020A, SW-846:1020C
Corrosivity: pH	EPA:150.1, SW-846:9041A, SW-846:9045C

*This list is not exclusive. Other analytical or direct measurement methods may be used if they are appropriate for the waste stream and meet the Data Quality Objectives, release criteria, etc. In addition, newer versions of the methods listed in this table may be used if they are available.

Appendix E: Incompatibility Table

DOT Hazard Class or Division	Explosives	Flam Gases	Non-flammable gases	Toxic Gases	Flammable Liquids	Flammable Solids*	Spontaneously Combustible Materials	Dangerous When Wet**	Oxidizers	Organic Peroxides	Toxic Liquids	Radioactive Materials	Acids	Bases (Alkaline)
Explosives		X	X	X	X	X	X	X	X	X	X	X	X	X
Flammable Gases	X			X					X	X	X	X		
Non-Toxic or Non-Flammable Gases	X													
Toxic Gases	X	X			X	X	X	X	X	X			X	X
Flammable Liquids	X			X				X	X	X	X		X	
Flammable Solids*	X			X				X	X	X	X		X	X
Spontaneous Combustible Materials	X			X					X	X	X		X	X
Dangerous When Wet**	X			X	X	X					X		X	X
Oxidizers	X	X		X	X						X		X	X
Organic Peroxides	X	X		X							X		X	X
Toxic Liquids	X	X			X	X	X	X	X	X			X	X
Radioactive Materials	X	X												
Acids	X			X		X	X	X	X	X	X			X
Bases	X			X		X	X	X	X	X	X		X	
Non-hazardous Organic Materials						X			X	X			X	X

X –Indicates incompatibility, never mix any of the indicated chemicals with other chemicals. Fire, excessive heat, toxic fumes, or toxic gases may be generated.

*Flammable Solids include, but are not limited to, reactive metals and metal hydrides.

**Dangerous When Wet materials include, but are not limited to, cyanide and sulfide bearing materials.

Sources:
49 CFR §177.84840 CFR Part 264, Appendix V

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Environment, Safety, Health, and Quality Directorate

Waste Management Division

Technical Procedure

Onsite Waste Management Field Tasks

Status:	☐ New	☒ Major Revision	☐ Minor Revision	
Usage Level:	☐ Reference	☐ UET	☒ Mixed; UET Sections	
Hazard Grading:	☐ N/A	☐ Low	☒ Moderate	☐ High/Complex
Safety Basis:	☒ N/A	☐ USQ	☐ USI #:	
Training:	☐ N/A	☐ Not in UTrain	☒ UTrain #:	RR 52204

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Responsible Line Manager	**Organization**	**Signature**	**Date**
Patrick Kennedy, Group Leader	WM-WMS	Signature on File	09/09/2024

Users are responsible for ensuring that they perform work to the latest approved version.

REVISION HISTORY

Document Number and Revision	Effective Date	Description of Changes
DOP-FMU64-0-028, R0	March 1999	This new document details FMU64 waste packaging and transportation procedures.
DOP-028, R1	June 2000	• Changed document number: this document supersedes DOP-FMU64-028, R0. • Update DOP to reflect radioactive waste and the revised LANL LIR405-10-01, "Packaging and Transportation." • A new form was created: FMU64-F210, R0.
DOP-028, R2	October 2002	• Add universal and asbestos waste management controls. • Include Consolidated Remote Waste Storage Site requirements and consolidation and bulking of waste. • Three new forms were added: FMU64-F373, R0 (10/02) – Consolidated Remote Waste Storage Site Disposal Request. FMU64-374, R0 (10/02)-Universal Remote Waste Storage Site Disposal Request. FMU64-F390, R0 (10/02)-Consolidated Remote Waste Storage Site Container Log.
DOP-028, R3	November 2003	Added FMU6-F554, R0, "Container Oder Form."
DOP-028, R3.1	March 2004	FMU6-F373, R0 was revised to FMU6-F373, R1 and FMU6-F374, R0 was revised to FMU6-F374, R1.
DOP-028, R3.2	June 2004	Revised form FMU6-F554, R0 to FMU6-F554, R1
SWO-DOP-0105, R0	June 2005	• Incorporate Interim Change Notices and comments from annual review. • TRU/TRM waste references removed, and comments added, minor formatting/editorial changes. • Changed document number to reflect new numbering system;

		revision number reverted back to zero.
SWO-DOP-0105, R0.1	May 2006	Added references to Attachment A throughout the document.
EP-DOP-2303, R3	04/04/2011	• This revision will incorporate additional instructions for handling, and processing drums associated with Lab packs per PFITS action 2010-3709 action #3. • Added comment on Attachment 6 WDP-HMWO Personnel will populate PO# and Lot#/Ser. # columns. • No additional hazards were identified during this revision. Rev bars will be used.
EP-DOP-2303, R3	04/04/2011	• This revision is a total rewrite and revision bars have been omitted. • No additional hazards were identified during this revision.
WM-SVS-DOP-303.0	12/09/2013	• Superseded EP-DOP-2303, R4 On-Site Waste Management. • Procedure has been moved to the Waste Management Division. • Organizational and section updates have been included.
WM-SVS-DOP-303.1	09/29/2017	• This revision satisfies the next periodic review date. • Revision cycle set to every three years. • Procedure revised to new formatting. • Complete re-write, no revision bars included. • Formality of Operations requirements incorporated.
WM-WMS-TP-015, R0	12/19/2017	Split WM-SVS-DOP-303 into 1 AP & 1 TP.
WM-WMS-TP-015, R1	08/13/2018	• Change use of Area J and L to designated waste storage area. • Change some text for clarity.
TP-P409-0700, R0	04/16/2021	• This document replaces WM-WMS-TP-015, R1 and includes the

		conversion of this document to be under the P409 Rev. 8. • It includes converting the document into a new template, assigning a new document number, and changes to section 3.2, 3.4, and updated sections 5.0 and 6.0.
TP-P409-0700, R1	12/19/2022	• Update includes correcting errors and change wording in sections to correspond with steps occur in the field. Section 4.1, step 5 was duplicated. • Section 2.0, Bullet 9 changed spelling errors and replaced “designated” with “temporary.” • Table 1 removed two columns, Waste Data Form and Land Disposal Request as these are not needed for on-site transports. • Section 4.5, Step 1 changed to read weekly wall-to-wall, removing words “when adding or removing waste. • Updated new RLMs.
TP-P409-0700, R2	09/09/2024	• Major revision to the On-Site Procedure to align with the actual on-site work being done. • Removed the lab pack work and created a new procedure for lab packing as that is not a day-to-day activity. • This procedure will capture the day-to-day activities capturing daily waste pick-ups, acceptance of waste to the TSDF, and ensuring proper storage until shipping off site.

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

This technical procedure (TP) provides requirements and instructions for onsite packaging, managing, and transporting waste/materials that originate from and are owned by the U.S. Department of Energy (DOE) and Los Alamos National Laboratory (LANL) to ensure compliance with Title 40 and Title 49 Code of Federal Regulations (CFR) requirements.

1.1 Purpose

The purpose of this document is to establish waste management process flow, identify personnel roles and responsibilities, and detail applicable waste management requirements.

1.2 Scope

This procedure applies to Waste Management-Waste Management Services (WM-WMS) operations that involve hazardous waste (regulated by the Resource Conservation and Recovery Act [RCRA]), chemical waste (regulated by the Department of Transportation [DOT]; non-RCRA), asbestos waste, universal waste, or mixed low-level (radioactive) waste (MLLW), low-level (radioactive) waste (LLW), and non-RCRA solid waste.

1.3 Applicability

- Issuing Authority (IA): WM-WMS Group Leader
- Responsible Manager (RM): WM-WMS Group Leader
- Responsible Office (RO): Waste Management Division Office

This TP applies to onsite waste management field operations performed by (WM-WMS). The requirements in this document are effective on the effective date. Compliance with identified requirements is **mandatory**.

2.0 PRECAUTIONS AND LIMITATIONS

- The hazard analysis for the activities in this TP is determined to be **moderate**.
- Activities, items, and containers **shall** satisfy approved design specifications, regulatory requirements, process-specific parameters, and procedural requirements. Activities, items, or containers that do not conform with the approved specifications and requirements are considered nonconforming, and Nonconformance Reports (NCRs) **shall** be generated in accordance with P330-6, *Nonconformance Control and Reporting*, as required.
- When a worker observes an unsafe condition or act that could pose imminent danger or other safety concern/hazard, the worker has the authority and responsibility to inform the worker engaged in the work. Either worker may request that the work activity be paused and/or stopped based on the risk posed to the individual, the employees, the environment, or the facility in accordance with P101-18, *Procedure for Pause/Stop Work*.
- Workers **must** follow the onsite representative's instructions at the generator site for all abnormal incidents.

- Personal protective equipment (PPE) must be worn when performing field operations in accordance with applicable procedures (IWDs, RWPs) and specific facility requirements. (Gloves, safety glasses, sleeved shirts, long pants, and toe protection shall be worn at a minimum.)
- After waste is packaged into a container, the container integrity **must** be verified by checking all bungs, rings, and closures pursuant to the manufacturer's closure specifications.
- Containers could have sharp edges and create pinch points when being moved; use appropriate gloves when handling.
- Waste stored at a RCRA-permitted treatment, storage, and disposal facility (TSDF) at LANL **must** be shipped to another onsite TSDF or directly offsite and must not be shipped to a temporary waste storage area onsite.
- Waste disposal requests (WDRs) must be submitted in accordance with TP-P409-0700, *Onsite Waste Management Field Tasks*.
- Proper manual lifting techniques and mechanical means must be used whenever possible and practical.
- Any requested repairs, changes, or upgrades to TA-60-0017 must be submitted via the Facility Service Request (FSR) tool.
- To comply with the intent of the as low as reasonably achievable (ALARA) program, all personnel **must** apply the principles of time, distance, and shielding when working with radiological materials.
- Before working with any LLW or MLLW, a radiological control technician (RCT) and an industrial hygienist (IH) must evaluate the work. All workers must adhere to the requirements of any radiological work permit (RWP).
- Containers that are leaking, open, or significantly defective in any way (e.g., containers that are severely rusted, bulging, or corroded) must not be accepted until the generator has corrected the problem.
- Transportation personnel **must** comply with 49 CFR regarding radiation dose rates and radiation contamination.
- This procedure is a reference document; the attachments are categorized as Use Every Time (UET).
- The checklists used in the body of this procedure are guidance intended to assist the user and are **not** a quality assurance (QA) record.

3.0 PREREQUISITE ACTIONS

The following list of required training that must completed before performing the job functions described in this TP:

- Facility specific training, as applicable or escort (all)
- WQAS-WM-WMS Technical Personnel

4.0 STEP-BY-STEP PROCESS DESCRIPTION

4.1 Intra-Site Transfer

Labeling, marking, loading and transfer of pre-packaged waste from the generator site at LANL to a designated onsite waste storage area.

Step	Action	Responsible Party
1	**PERFORM** a pre-trip DOT inspection of transport vehicle in accordance with 49 CFR; drive to waste pickup area. **WARNING** **When backing in a vehicle, blind spots and obstructed vision can result in accidents. *Use a dedicated spotter when backing in a vehicle.*** **PARK** in a safe area.	Technical personnel
2	**ENSURE** that a current copy of this procedure is used as a reference document.	Technical personnel
3	**VERIFY** that planned field activities have been scheduled on the appropriate plan-of-the-day and work schedule as applicable.	Technical personnel
4	**CONDUCT** pre-job brief.	Technical personnel
5	**ENSURE** that the following appropriate qualified and authorized personnel are available. • PIC • WM-WMS technical personnel w/commercial drivers license • WM-WGS coordinator	Technical personnel
6	**ENSURE** that the appropriate equipment, supplies, and PPE are available as follows: • **ENSURE** that the required paperwork identified in **Table 1** is included in the shipping package according to the type of waste shipped, and that each container of waste possesses the proper labels and markings. • **ENSURE** that all required labeling, marking, and placards (as applicable) are available.	Technical personnel
7	**ENSURE** that the Hazardous Waste Review (HWR) number is assigned to the EPA manifest and transfer tasks. HWR-Z number-date-00X of reviews performed that date. (Example: 318837-08072024-001)	Technical personnel
8	**COMPLETE** Receipt Checklist (Attachment 1). **NOTE: ENSURE** that the completed Receipt Checklist (Attachment 1) is with each transfer task paperwork.	Technical personnel
9	**ENSURE** that an adequate number of Driver Checklists (Attachment 2) are available.	Technical personnel

10	**MEET** the waste management coordinator (WMC), complete a site-specific safety plan for chemical and mixed waste operations (Attachment 3) and don PPE. • Long-sleeved shirt • Long pants • Toe protection • Safety glasses • Gloves (leather gloves when handling drums)	Technical personnel
11	**IF** the chemical waste contains a radioactive constituent, **THEN ENSURE** that an RCT has performed a radiation survey (see Table 2).	Technical personnel
12	**VERIFY** that the owner of the retrievable waste storage area is notified to update the **new** location. **NOTE:** WMC of TA-60-0017 will update the new location.	Technical personnel
13	**REVIEW** waste data forms and match with waste containers to properly label and mark the containers. (Reference: W numbers, weights, and accumulation start dates [ASDs] are applicable). **ENSURE** all-in-one label and indicator words are visible.	Technical personnel
14	**COMPLETE** a Driver Checklist (Attachment 2) for each container to be transported.	Technical personnel
15	**COMPLETE** the Driver section of the Receipt Checklist (Attachment 1) for each WDR to be transported. **NOTE:** If discrepancies occur and cannot be rectified immediately, **THEN REJECT** the container. **UPDATE** the shipping papers appropriately, and **DO NOT LOAD THE CONTAINER**.	Technical personnel
16	**SEGRETATE**, **LOAD**, and **SECURE** the containers on the transport vehicle following the safety practices and instructions provided in 49 CFR. **PLACARD** truck as applicable.	Technical personnel
17	**ENSURE** that the RCT surveys the consignment after radioactive waste is loaded. **OBTAIN** a copy of the health physics radioactive material survey (HPRMS) tag, container, survey, and DOT survey. See Attachment 4 for detailed requirements.	Technical personnel
18	**ENSURE** to **SIGN** and **DATE** shipping paperwork as transporter. WMC signs off as generator. **ENSURE** that above tasks are completed in WCATS.	Technical personnel
19	**TRANSPORT** waste to a designated onsite waste storage area at predetermined gate time for WM-WMS to receive into storage. **WARNING:** RCRA waste generated/stored at an onsite TSDF must not be transferred to a temporary storage area (e.g., Central Accumulation Area, Satellite Accumulation Area). Waste must go directly off site.	Technical personnel

Table 1. Various Waste Type Onsite Shipping Paper Requirements

Table Header				
Package Type	**Uniform Hazardous Waste Manifest**	**Non-Regulated Waste Manifest**	**Receipt Checklist**	**Driver Checklist**
RCRA	X		X	X
PCB	X		X	X
Asbestos		X	X	X
Universal		X	X	X
DOT, Non-Rad, Non-RCRA		X	X	X
Non-DOT, Non-RCRA, Non-RAD		X	X	X
MLLW	X		X	X
LLW		X	X	X

Table 2. Radiation Survey Determination

IF	THEN
Waste is determined to be radioactive.	The RCT **SHALL** attach an HPRMS tag to the container, including the dose rate and containment survey results.
The waste is non-radioactive waste from an RCA.	Ensure the RCT completes the free-release tag.

4.2 Waste Receipt at a Designated Onsite Waste Storage Area

Step	Action	Responsible Party
1	**ENSURE** a current copy of this procedure is being used as a reference document.	Technical personnel
2	**VERIFY** planned field activities have been scheduled on the appropriate plan-of-the day and work schedule as applicable.	Technical personnel
3	**CONDUCT** pre-job brief daily. **ENSURE** appropriate inspections (i.e., Hazardous/Mixed Waste Facility Inspection Record Form or for CAA) are completed in designated waste storage area.	Technical personnel
4	**ENSURE** that the appropriate qualified and authorized personnel are available at minimum as follows: • PIC • WM-WMS Technical Personnel	Technical personnel
5	**ENSURE** that the documentation indicated in **Table 1** is present and complete.	Technical personnel
6	**INSPECT** integrity of each waste shipment upon arrival.	Technical personnel

	NOTE: MMLW drums remain on the truck until the RCT survey results are complete.	
7	**COMPLETE** Receipt Checklist (Attachment 1) for each WDR received. **NOTE:** If discrepancies occur and cannot be rectified, then immediately reject the container.	Technical personnel
8	**IF DISCREPANCIES** exist, **THEN CORRECT** discrepancies and **DOCUMENT** on the shipping paperwork and in WCATS. Notify WMC and return container(s) immediately.	Technical personnel
9	**ENSURE** appropriate Accumulation Start Date is present in WCATS for every container that is received.	Technical personnel
10	**SIGN** and **ACCEPT** the shipping paperwork.	Technical personnel
11	**PLACE** containers in the proper storage location and complete receipt in WCATS. **Adhere** to segregation rules.	Technical personnel

4.3 Waste Inventory at a Designated Onsite Waste Storage Area

Comparison of physical inventory and WCATS operating record.

Step	Action	Responsible Party
1	**PERFORM** Wall-to-Wall Inventory Task in WCATS by scanning all containers within the selected waste storage area **DAILY** when waste is added or removed from the area or container(s). If WCATS scanners are not functioning, perform this task manually using a current inventory produced by WCATS.	Technical personnel
2	**ENSURE** accumulation start dates (ASDs) on containers are congruent with information in WCATS using the most up-to-date printed copy of the operating record from the management reports in WCATS. **ENSURE** ASD is within applicable time compliance. **NOTE:** Report any containers within 20 days of compliance date expiration to supervisor immediately.	Technical personnel
3	**RECONCILE** any discrepancies.	Technical personnel

4.4 Waste Consolidation of Lab Packs at a Designated Onsite Waste Storage Area

Combining items from numerous lab pack containers of hazardous/chemical waste with the same hazard class and/or chemical properties to create larger-sized lab packs and/or full capacity at the designated waste storage area.

Step	Action	Responsible Party
1	**IDENTIFY l**ab pack containers in designated waste storage area that are not packaged to full capacity and/or have a similar proper shipping name or characteristics.	Technical Personnel under the guidance of lab pack subject matter expert (SME)
2	**SELECT** consolidation container numbers from identified lab pack containers and generate a proposed consolidation container to submit for offsite TSDF approval.	Technical Personnel under the guidance of lab lack SME
3	**COMPLETE** scheduled consolidation once TSDF grants approval. **SCHEDULE** to complete consolidation in a designated approved area.	Technical Personnel under the guidance of lab lack SME
4	**ENSURE** a current copy of this procedure is used.	Technical personnel
5	**VERIFY** planned field activities have been scheduled on the WM-WMS plan-of-the-day and rounds are completed.	Technical personnel
6	**UPDATE** WCATS to reflect the approved consolidation. Print updated labels and markings. (Perform this step on the same day as and before field consolidation.)	Technical personnel
7	**CONDUCT** pre-job brief daily.	Technical personnel
8	**ENSURE** that the appropriate qualified and authorized personnel are available at a minimum as follows: • PIC/WM-WMS Technical Personnel	Technical personnel
9	**ENSURE** that the appropriate equipment, supplies, and personal protective equipment are available as follows: • Packaging supplies (containers, labels) • Copy of approved consolidation plan • Level D PPE at minimum	Technical personnel under the guidance of lab pack SME
10	**PERFORM** consolidation and apply new label and markings to the consolidation lab pack container(s). Remove markings and labels from empty drums. **ENSURE** indicator labels or words are transferred or updated on new labels.	Technical personnel under the guidance of lab pack SME

4.5 Repack of Containers at TA-60-0017

Repacking containers of Hazardous/Chemical waste to comply with offsite TSDF packaging guidelines.

Step	Action	Responsible Party
1	**IDENTIFY l**ab pack containers at TA-60-0017 that need to be repacked according to offsite TSDF packaging responses.	Technical personnel
2	**SCHEDULE** repackaging activity at TA-60-0017 on the WM-WMS activity schedule.	Technical personnel
3	**ENSURE** a current copy of this procedure is used.	Technical personnel
4	**VERIFY** planned field activities have been scheduled on the WM-WMS plan-of-the day and rounds are completed.	Technical personnel
5	**CONDUCT** pre-job brief.	Technical personnel
6	**ENSURE** that the appropriate qualified and authorized personnel are available at minimum as follows: • PIC/WM-WMS Technical Personnel	Technical personnel
7	**ENSURE** that the appropriate equipment, supplies, and PPE are as follows: • Packaging supplies (containers, labels) • Copy of offsite TSDF packaging responses requiring repack. • Copy of AP-P409-0702 Attachment A “Container Use and Closure Checklist.” • Level D PPE at a minimum	Technical personnel
8	**LOCATE** container(s) to be repacked and stage supplies needed for repackaging.	Technical personnel
9	**PERFORM** repack in accordance with offsite TSDF instructions. • Label and mark repackaged container appropriately. • Close container per manufacturer’s specifications. • Weigh container on a certified scale. • Complete AP-P409-0702 Attachment A, “Container Use and Closure Checklist.”	Technical personnel
10	**RECORD/UPLOAD** all information needed to reflect the repackaging and to create new container in WCATS.	Technical personnel
11	**PRINT** and **APPLY** updated labels and markings to repackaged containers at TA-60-0017.	Technical personnel

4.6 Post-Performance Activity

Step	Action	Responsible Party
1	**REVIEW** all applicable attachments for accuracy and completeness.	Technical personnel
2	**IF** any deficiencies have been identified, **THEN INITIATE** actions to correct.	Technical personnel

5.0 TRAINING

Facility-specific training required to perform these jobs is assigned and tracked using the Laboratory's training management system, UTrain. Technical staff can be escorted by WM-WGS when performing these job functions if proper oversite is maintained.

6.0 RECORDS

Records generated by this document shall be submitted to records management in accordance with P1020-1, *Laboratory Records Management*. Records generated as a result of implementing this procedure are listed below by title and type.

Record Name	QA Record	Records Repository
Uniform Hazardous Waste Manifest(s)	☒	WCATS
HPRMS or Free Release Tag (if Radioactive)	☒	WCATS
Drive Checklist – Attachment 2	☒	WCATS
Receipt Checklist – Attachment 1	☒	WCATS

7.0 DEFINITIONS AND ACRONYMS

7.1 Definitions

See LANL *Definition of Terms*.

7.2 Acronyms

See LANL *Acronym Master List*.

Acronym	Definition
ASD	accumulation start date
CAA	Central Accumulation Area
CFR	Code of Federal Regulations
DOT	U.S. Department of Transportation
HPRMS	Health Physics Radioactive Material Survey
LANL or Laboratory	Los Alamos National Laboratory
LLW	low-level waste
MLLW	mixed low-level waste

Acronym	Definition
NCR	noncompliance report
NM	New Mexico
P	Policy
PCB	polychlorinated biphenyls
PIC	person-in-charge
PPE	personal protective equipment
PSN	proper shipping name
QA	quality assurance
RCA	Radioactive Contamination Area
RCRA	Resource Conservation Recovery Act
RCT	radiological control technician
RWP	radiological work permit
SAA	Satellite Accumulation Area
SME	subject matter expert
TA	technical area
TSDF	Treatment, storage, and disposal facility
UET	use every time
WCATS	Waste Compliance and Tracking System
WDR	Waste Disposal Request
WGS	Waste Generator Services
WMC	waste management coordinator
WM-WMS	Waste Management-Waste Management Services

8.0 REFERENCES

- ADESH-AP-TOOL-118, *Attachment A Container Use and Closure Checklist*
- P101-18, *Procedure for Pause/Stop Work*
- P121, *Radiation Protection*
- P300, *Integrated Work Management*
- P315, *Conduct of Operations Manual*
- P330-6, *Nonconformance Control and Reporting*
- P409, *LANL Waste Management*
- P409-2, *Waste Acceptance Criteria for Onsite RCRA Facilities*
- P409-3, *Waste Acceptance Criteria for Onsite Wastewater Treatment Facilities*
- P409-4, *Acceptance Requirements for Offsite Waste Treatment, Storage, and Disposal Facilities*
- Title 29 CFR, 1910.120, *Hazardous Waste Operations and Emergency Response*
- Title 40 CFR, 260-279, Protection of Environment

- Title 40 CFR, 761, *Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and use Prohibitions*
- Title 49 CFR, 100-180, Department of Transportation Chapter 1, Pipeline and Hazardous Materials Safety Administration, Department of Transportation
- WCATS (Waste Compliance and Tracking System) User Manual, http://wcatshelp.lanl.gov/

9.0 ATTACHMENTS

- **Attachment 1:** Receipt Checklist
- **Attachment 2:** Driver Checklist
- **Attachment 3:** Site-Specific Safety Plan for Chemical and Mixed Waste Operations
- **Attachment 4:** Radiation Level and TI Limits for Transportation by Road

ATTACHMENT 1. RECEIPT CHECKLIST
Page 1 of 1

Los Alamos NATIONAL LABORATORY

Receipt Checklist

Shipment Information	
Manifest #/Task #	Date Received

Container Description (check each applicable box)

WCATS Container ID	WCATS Container Size / Type	W# on Lid	Container Properly Closed / Good Condition	DOT Markings / Labels	ASD Label Applied	ASD Updated in WCATS
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐

Method Codes Applied ☐ Yes

Manifest Signed (designated facility owner) ☐ Yes

TSF Operator

Comments / Discrepancies:

Driver (print name)	Z Number	Signature	Date

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ATTACHMENT 2. DRIVER CHECKLIST

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Los Alamos NATIONAL LABORATORY

Driver Checklist

Shipment Information		
Manifest #/Task #	WCATS All-in-One Label #	W# Marked on Container Lid

Container Closure and Condition

☐ Is container appropriate for the waste? ☐ Yes ☐ No (if No, reject) ☐ Rejected

☐ Is TID present? ☐ Yes TID #_____ ☐ No

☐ Are bungs tightened? ☐ Yes ☐ Not applicable

☐ Is ring closed and seated? ☐ Yes ☐ Not applicable

☐ Is lid closed? ☐ Yes ☐ No

☐ Are bolts/clasps present and tightened? ☐ Yes ☐ Not applicable

☐ Is container condition acceptable? ☐ Yes ☐ No (if No, reject) ☐ Rejected

Note Deficiencies:

DOT / RCRA Marking and Labeling

Removal of existing labels and application of appropriate All-In-One ☐ Yes ☐ No

Container is labeled with the following labels/marking per All-In-One:

☐ 2.1 ☐ 3 ☐ 4.1 ☐ 5.1 ☐ 6.1 ☐ 7 ☐ Limited Quantity
☐ 2.2 ☐ 4.2 ☐ 5.2 ☐ 6.1 PIH ☐ 8 ☐ PCB
☐ 2.3 PIH ☐ 4.3 ☐ None

Accumulation Start Date: ☐ None

Is indicator marking present and marked appropriately? ☐ Yes ☐ No ☐ Not applicable

☐ IGNITABLE ☐ REACTIVE ☐ CORROSIVE ☐ TOXIC

Placard Requirements

☐ 2.1 ☐ 3 ☐ 4.1 ☐ 5.1 ☐ 6.1 ☐ 7 ☐ PCB
☐ 2.2 ☐ 4.2 ☐ 5.2 ☐ 6.1 PIH ☐ 8 ☐ None
☐ 2.3 PIH ☐ 4.3

Certification

By signing below, the driver agrees that the securement and segregation of this load is acceptable and compliant with DOT and Federal Motor Carrier requirements. Driver confirms that a current copy of the *Emergency Response Guidebook* is on board.

Driver (print name)	Z Number	Signature	Date

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ATTACHMENT 3. SITE-SPECIFIC SAFETY PLAN FOR CHEMICAL AND MIXED WASTE OPERATIONS

Page 1 of 2

Los Alamos NATIONAL LABORATORY

Site-Specific Safety Plan for Chemical and Mixed Waste Operations

Important: The goal of this plan is to ensure the safety of personnel and the environment. This plan meets the requirements outlined in 29 CFR 1910.120.

1. Site Description		
Date	Time	
Technical Area	Building	Room
Generator	Telephone No.	CWDR No.

2. Work Area (check all that apply)

☐ Storage Room ☐ Radiation Room ☐ Loading Dock ☐ Shed
☐ Indoors ☐ Outdoors ☐ Telephone Nearby ☐ Fire Extinguisher
☐ Eyewash ☐ Safety Shower ☐ Emergency Exit Route ☐ Laboratory
☐ Other:

3. Type of Work to be Performed (check all that apply)

☐ Lab Packing ☐ Overpacking ☐ Mixed Waste ☐ PCBs
☐ Gas Cylinders ☐ Low-Level Radioactive ☐ Asbestos ☐ Bulk Drum Handling
☐ Other:

4. Special Hazards of Concern (check all that apply)

☐ Fire Risk ☐ Biohazard ☐ Tripping Hazards ☐ Shock Sensitive
☐ Unknown ☐ Extreme Temperatures ☐ Corrosive Bases ☐ Poisons
☐ Corrosive Acids ☐ Inhalation Hazards ☐ Radiation (If yes, ☐ beta, ☐ gamma, or ☐ alpha?)
☐ Other:

5. Personal Protective Equipment

Which level of protection is adequate for performing the tasks? Check Yes or No for each level and choose accordingly. **Note: Level D** protection is required at a minimum.

	Yes	No
Level D: Standard uniform/coveralls, safety shoes/boots, safety glasses/goggles, chemical resistant gloves.	☐	☐
Level C: Full-face air-purifying respirator, chemical-resistant clothing, boots, inner/outer gloves	☐	☐
Level B: Full-face SCBA, chemical-resistant clothing, boots, inner and outer gloves.	☐	☐
Level A: SCBA, full-encapsulating chemical-resistant suit, chemical-resistant boots and gloves	☐	☐

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ATTACHMENT 3. SITE-SPECIFIC SAFETY PLAN FOR CHEMICAL AND MIXED WASTE OPERATIONS (CONT)

Page 2 of 2

Site-Specific Safety Plan for Chemical and Mixed Waste Operations
(*continued*)

6. Emergency Evacuation Route and Safety Equipment Location Sketch
Label (1) eyewash, (2) safety shower, (3) fire extinguisher, (4) telephone, (5) evacuation route, and (6) muster area.

7. Important Telephone Numbers					
Emergency:	911 or 9-911	Medical Assistance:	667-0660	Radiation Protection:	667-7171
Spills:	667-2400	UI FOD Duty Officer:	699-7452	Waste Management:	664-7722

8. Certification			
Site Supervisor (print name)	Group	Signature	Date
Other Site Personnel (print name)	Group	Signature	Date
Other Site Personnel (print name)	Group	Signature	Date
Other Site Personnel (print name)	Group	Signature	Date
Other Site Personnel (print name)	Group	Signature	Date

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ATTACHMENT 4. RADIATION LEVEL AND TI LIMITS FOR TRANSPORTATION BY ROAD

Page 1 of 1

Radiation Level and TI Limits for Transportation by Road		
Type of Transport	**Non-Exclusive Use**	**Exclusive Use**
Radiation Level Limits		
Package Surface:	2 mSv/h (200 mrem/h)	2 mSv/h (200 mrem/h) Other than closed vehicles 10 mSv/h (1000 mrem/h) Closed Vehicle
Conveyance:	N/A	2 mSv/h (200 mrem/h: Outer Surfaces (Sides, Top and Undersides) of Vehicle
Occupied Position:	N/A	0.02 mSv/h (2 mrem/h: at any normally occupied area
Transportation Index (TI) Limits		
Package:	10 Road and Rail	No Limit
Conveyance:	50 Road and Rail	No Limit
Overpack:	N/A	N/A

TP-P409-0701	Revision: 3.2	Los Alamos NATIONAL LABORATORY
Effective Date: 02/25/2025	Next Review Date: 02/25/2028	

Environment, Safety, Health, and Quality Directorate

Waste Management Division – Waste Management Services

Technical Procedure

Preparing and Shipping Waste/Material Off Site

Status:	☐ New	☐ Major Revision	☒ Minor Revision	
Usage Level:	☐ Reference	☐ UET	☒ Mixed; UET Sections	Table 1, Table 2, and Table 3
Hazard Grading:	☐ N/A	☐ Low	☒ Moderate	☐ High/Complex
Safety Basis:	☒ N/A	☐ USQ	☐ USI #:	
Training:	☐ N/A	☐ Not in UTrain	☒ UTrain #:	51537

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Responsible Line Manager	Organization	Signature	Date
Patrick Kennedy, Group Leader	WM-WMS	Signature on File	02/25/2025

Users are responsible for ensuring that they perform work to the latest approved version.

REVISION HISTORY

Document Number and Revision	Effective Date	Description of Changes
WM-SVS-TP-10, R0	04/26/2017	• New document updating the following: – Superseding WM-SVS-DOP-300. – Updated Format – Updated information regarding providing QA checks.
EPC-WMS-TP-010, R1	09/26/2017	New bullet added on page 13 to clarify the role of the Authorized Shipper when filling out Attachment 2 to reflect "If waste shipment is Mixed Low Level Waste (MLLW) or Radioactive Waste, notify the driver they are not allowed transport through the Santa Clara Pueblo via Highway 30 and to seek alternative route." • Formatted Attachment 2 regarding CDL Information Action. • Updated Table of Contents • Changed document identifier to reflect organizational changes.
EPC-WMS-TP-101, R2	12/19/2017	• This revision incorporated a step-by-step format with associated roles and responsibilities to allow enhanced procedure compliance along with EUT attachments to add clarity and to address compliance issues. • The revision is written to comply strictly with the LANL Conduct of Operations manual, P315.
EPC-SWMS-TP-101, R3	07/13/2018	• This revision includes changes to better incorporate corrective actions due to non-compliance. • Removed Attachment 2, NNSS and MCEP Due Diligence Worksheet; removed Appendix 5, Due Diligence Worksheet. • Added requirements for verifying container IDs and required paperwork. • Deleted 72-hour notice and load plan requirement.
EPC-WMS-TP-010, R4	07/13/2018	• Major revision changes throughout document – no revision bars. • This procedure supersedes WM-WMS-SO-003 and it has been deactivated.

Document Number and Revision	Effective Date	Description of Changes
		• This revision includes various editorial changes throughout the document. • Attachments are removed and re-ordered as Appendices. • DOT checklist and other attachments are converted to Forms. • Role definition and assignment included. • Clarification of steps assigned to the Initial and Second Authorized Shipper.
EPC-WMS-TP-010, R4.1	07/13/2018	A Quick Change to this procedure was authorized to allow this procedure to be formatted into the ADESH template format.
EPC-WMS-TP-010, R4.2	07/13/2018	This revision is to perform an Immediate Procedure change on WM-WMS-TP-10, R4.1 to include a sentence in the Precautions and Limitations to disallow the use of cargo vans for shipments of B-25s and other bulk waste containers.
EPC-WMS-TP-010, R5	04/29/2019	• Removed Secondary Authorized Shipper Alternate Authorized User review requirements of DOT Non-Regulated Shipments. • Added Note to Table #1 in Section 4.1 • Added profile review to checklist section 4.2 • Deleted Step #10 in checklist in section 4.2 • Added Notes to Attachments A and B. • Removed Attachment E and re-sequenced the remaining Attachments. • Updated Attachment C. • Updated links to WCATS homepage and user guide.
TP-P409-0701, R0	01/28/2021	• Updated cover page to meet the requirements of FSD-315-16-001, *Technical Procedure Writers Manual*. • Minor changes in response to Issues Management record no. 2019-1311 and 2019-1347. • This document revision will transfer under the P409 documentation, supersede EPC-WMS-TP-10, R5, assigned a new document number, and updated attachments.
TP-P409-0701, R1	04/28/2021	Removed required training in Section 3.1.

Document Number and Revision	Effective Date	Description of Changes
TP-P409-0701, R2	04/05/2022	• This document supersedes TP-P409-0701 R1. • Tracking RCRA and other regulated waste storage time limits was added to this procedure and will supersede standing order WM-WMS-SO-001, Supplemental Reporting Requirements for RCRA and New Mexico Special Waste Regulated Waste Containers. • Updated document read “Authorized Shipper” and “Alternate Shipper,” instead of “Primary/Secondary.” • Section 3.2 deleted numbers 6, 7a, 7b, and are captured in 7 and 8. Also deleted 26, 26a, 26b, and 27 step-by-step. Shortened in Step 26. • Updated Section 6.0 to read shipping documents for waste are scanned, uploaded, and closed out in WCATS. • Section 7.2 added UHWM and URWM acronyms. • Updated Appendix 1, NMSW Manifest column, and removed the PCB Continuation Sheet column. An “X” was added to NMSW column under UHWM. • Added new verbiage to Appendix 2 in the Conveyance section “and 0.1 mSv.H…at any point 2 M …from the outer lateral surfaces of the vehicle…” • Attachment A and B was updated. • The records repository was changed from EDRMS to WCATS.
TP-P409-0701, R3	06/17/2024	• This document supersedes TP-P409-0701, R2. • Made changes to Table 1 to be clearer and legible. Updated Table 2 “responsible party” from Technical to Alternate Authorized shipper for lines 9 & 15. • Updated Table 3 Line 6 to be more concise. Added a step between 9 & 10 to ensure container number is visible prior to applying the all-in-one. • Updated Line 12 to Verify vs Apply. • Removed Line 15. Updated Line 18 from F to E. • Added * definitions to Appendix 1. Changed Attachment: OFF-SITE DOT COMPLIANCE

Document Number and Revision	Effective Date	Description of Changes
		CHECKLIST from a two page to a one-page document. • Eliminated unnecessary information that was repetitive and captured elsewhere. The following is what was removed: – MCEP DOT Safety Rating – MCEP Watch List – DOT regulated – Carrier Transportation security plan • Requirements Section 1 removed and replaced with Radiological monitoring. • Requirements Section 2, Radiological monitoring, replaced with CDL information. • Requirements Section 3, CDD, replaced with Truck Inspection. • Requirements Section 4, Medical Examiners Certificate, replaced with Trick Inspection. • Requirements Section 5, Truck/Truck-Tractor Inspection, replaced with Before Vehicle is Loaded. • Requirements Section 6, After Vehicle is Loaded, replaced with After Vehicle is loaded.
TP-P409-0701, R3.1	02/26/20254	• This document supersedes TP-P409-0701, R3. • Revised Table 2; included steps to ensure that written authorization is received from disposal facilities before shipment. • Added Appendices D and E as references when shipping to Waste Control Specialists and EnergySolutions, respectively. • Added step to Table 3 for shippers to take photos of marking, labeling, placarding, and load securement before shipment release.
TP-P409-0701 R3.2	02/25/2025	• Added clarification to section 1.2. Previously read “This procedure is NOT to be used to ship transuranic waste.” Changed to "This procedure is NOT to be used to ship transuranic waste to the Waste Isolation Pilot Plant (WIPP)”

TABLE OF CONTENTS

LIST OF TABLES

1.0 INTRODUCTION

This technical procedure (TP) provides instructions for shipping waste/materials originating from and owned by the U.S. Department of Energy (DOE) and Los Alamos National Laboratory (LANL) to commercial or federally owned, operated, or licensed waste treatment, storage, and disposal facilities (TSDFs). Federal facilities include those owned/operated and/or licensed by the DOE and the Nuclear Regulatory Commission (NRC).

1.1 Purpose

The purpose of this procedure is to provide requirements for preparation and shipping waste off site by Waste Management-Waste Management Services (WM-WMS) technical personnel and authorized shippers.

1.2 Scope

Waste/materials managed under this procedure include

- U.S. Department of Transportation (DOT)–regulated hazardous materials,
- hazardous and hazardous-exempt wastes as regulated under the Resource Conservation and Recovery Act (RCRA) as amended,
- material defined as universal waste,
- material defined as New Mexico Special Waste, and
- DOE/NRC-regulated radioactive and nonradioactive wastes and materials.

1.3 This procedure is NOT to be used to ship transuranic waste to the Waste Isolation Pilot Plant (WIPP)Applicability

This procedure applies to operations performed by trained and qualified personnel in the WM-WMS Group and applicable subcontractors.

2.0 PRECAUTIONS AND LIMITATIONS

- B-25s, B-12s, ST-45s/ST-90s, and other bulk waste containers will not be shipped in van-type truck transports without approval from the WM-WMS group leader or designee.
- Activities, items, and containers MUST satisfy approved design specifications, regulatory requirements, process specific parameters, and procedural requirements.
- This procedure is NOT to be used to ship transuranic waste.
- Activities, items, or containers that do not conform to the approved packaging specifications and requirements are considered nonconforming. Nonconformance Reports (NCRs) MUST be generated in accordance with P330-6, *Nonconformance Control and Reporting*, as required.
- Workers MUST NOT ship any containers that are leaking, open, or significantly defective in any way (e.g., containers that are severely rusted, bulging, or corroded).

- At the generator site, workers MUST follow the on-site representative's instructions for all abnormal incidents.
- Transportation personnel MUST comply with 10 CFR, 40 CFR, and 49 CFR and, if copies of these documents are used in the field, ensure that they are current versions.
- In accordance with P101-18, *Procedure for Pause/Stop Work*, workers have the authority and responsibility to pause or stop work if unusual or unexpected conditions are encountered that present hazards to the individual, the employees, the environment, or the facility.
- Personal protective equipment (PPE) will be worn in accordance with applicable radiological work permits (RWPs); EPC-WMS-IWD-010, *Integrated Work Document (IWD) Part 1, Activity Specific Information*; and specific facility requirements.
- Workers will wear proper footwear with slip-resistant soles to reduce slips, trips, and falls. Workers will use handrails when using stairs. Workers will use established pathways when available to avoid walking on uneven or unstable surfaces.
- To prevent radiation exposure and contamination release, a radiological control technician (RCT) will monitor and control personnel and equipment before exiting Radiological Control Areas (RCAs).
- Drivers transporting radioactive waste MUST NOT use New Mexico State Highway 30 through Santa Clara Pueblo.
- All tanker shipments of low-level waste (LLW) liquids will be shipped, at a minimum, in accordance with the packaging requirements set forth in 49 CFR 173.411 (b)(4) and (5), *Industrial packages*, for portable tanks and cargo tanks. This requirement includes all shipments of LLW liquids that do not meet DOT's classification of Radioactive (Class 7).
- When shipping radioactive LLW or mixed low-level waste (MLLW) to or from TA-60-0017, the WM-WMS building manager or designated qualified WM-WMS technical personnel must ensure that quality assurance requirements of 10 CFR 830.121, Quality Assurance Program (QAP) (see SD330, *Los Alamos National Laboratory Quality Assurance Program*), are implemented for less-than-Hazard-Category-3 (HC-3) nuclear facilities through the Waste Compliance and Tracking System (WCATS). Less-than-HC-3 nuclear facilities must track and account for radioactive materials to ensure that the facility inventory remains below nuclear HC-3 thresholds as defined in DOE-STD-1027-92 Chg. 1, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports.
- WM-WMS technical personnel may ship DOT nonregulated shipments that do not require a uniform radioactive waste manifest (URWM; NRC 540, 541) or a uniform hazardous waste manifest (UHWM).

3.0 PREREQUISITE ACTIONS

3.1 Tracking RCRA and Other Regulated Waste Storage Time Limits

The WM-WMS group leader is responsible for implementing the tracking of regulatory waste storage time limits for waste generated by the Laboratory. A WCATS 30-60-90 report will be generated weekly as a tool to assist with this responsibility. The 30-60-90 report is used to compare the container "age" from accumulation start date (ASD) and evaluate against regulatory storage limits. The WM-WMS team leader will ensure that trained personnel generate these reports. The WM-WMS group leader will review these reports and highlight any issues that could prevent shipping within the regulatory timeframes. A summary of any potential issues will be reported to the WM Division leader.

NOTE 1: Prerequisite actions may be completed in any order on the checklist.

3.2 Planning and Coordination

NOTE 2: Before performing steps in the following sections, all training and certifications must be current, including facility-specific training as applicable and Hazardous Materials Packaging and Transportation (HMPT) training.

Using Table 1, OBTAIN WCATS manifest numbers and printed name in appropriate responsibility column(s) from all individuals assigned to perform work under this TP.

Table 1. Planning for Shipment

WCATS Manifest Numbers(s) for Assigned Shipment:						
Name (print)	Z Number	Technical Personnel*	Authorized Shipper*	Alternate Authorized Shipper*	Person in Charge*	WM-WMS Manager**

*Initial as applicable

**WM-WMS manager must review all DOT-regulated shipments.

Using Table 2, document that all pre-shipment requirements have been met.

- Use the columns to track action steps. Responsible individuals must add their Z numbers and initial each step as validation that the step has been completed.
- The Authorized Shipper and the Alternate Authorized Shipper must be two different individuals.

Table 2. Pre-Shipment Checklist

Step	Action	Responsible Party	Initial and Date
1	**Ensure** that the most current version of this procedure is readily available.	WM-WMS Technical Personnel	
2	Using email, generator list, phone call, etc., **obtain** a list of WCATS-approved containers to be shipped.	WM-WMS Technical Personnel	
3	**Ensure** that termination of safeguards verification has been received from SAFE-NMCA, as applicable.	WM-WMS Technical Personnel	
4	**Ensure** that applicable generator licenses and permits are present and current in accordance with Appendix A, *Generator Licenses and/or Permits*.	WM-WMS Technical Personnel	
5	**Ensure** that written confirmation for "Shipment Authorization" is received before the shipment is released and that a copy of the shipment authorization is included in the shipment documentation.	WM-WMS Technical Personnel	
6	**Complete** the Special Nuclear Material Exception as required by the TSDF, as applicable.	WM-WMS Technical Personnel	
7	**Ensure** that a draft copy of the shipping paperwork package and associated supporting documentation is prepared, as applicable, in accordance with Appendix B, *Required Shipping Documents*.	WM-WMS Technical Personnel	
8	**Ensure** that the offsite TSDF has reviewed the draft of the shipping package and approves receipt of shipment. **NOTE 3:** Approved via email or phone call. Only applies to commercial facilities. Does not apply to NNSS shipments.	WM-WMS Technical Personnel	
9	**Assemble** documentation of the TSDF review with any changes made.	WM-WMS Technical Personnel	
10	**Review** shipping documentation.	Alternate Authorized Shipper	
11	**Review** shipping documentation (only DOT-regulated shipments).	WM-WMS Manager	
12	**Assign** a Hazardous Waste Review (HWR) number, which includes the reviewer's Z number, date, and shipment number	Alternate Authorized Shipper	

Step	Action	Responsible Party	Initial and Date
	reviewed that day. (Example: 318837-0207219-001).		
13	**Ensure** that the shipment schedule has been approved.	WM-WMS Technical Personnel	
14	**Schedule** and/or confirm a Motor Carrier Evaluation Program (MCEP) –approved waste transporter, as applicable.	WM-WMS Technical Personnel	
15	**Ensure** that the NNSS Truckload Motor Carrier Due Diligence Worksheet is completed according to waste certification official email (for NNSS shipments only).	WM-WMS Technical Personnel	
16	**Ensure** that the final shipping paperwork with HWR number is generated in accordance with Appendix B, *Required Shipping Documents*.	Alternate Authorized Shipper	
17	**Ensure** that the WCATS Container ID, Container Size/Type, and manifest number from WCATS are complete on Attachment 1, *Off-Site Container Checklist*.	WM-WMS Technical Personnel	

4.0 STEP-BY-STEP PROCESS DESCRIPTION

NOTE 1: Field Shipping Operations must complete in the order presented; however, steps may be repeated as many times as required to complete each portion of the evolution.

Use the right-most column in the following table to track action steps. Responsible individuals **MUST** initial and date each step as validation that the step has been completed.

Table 3. Field Shipment Checklist

Step	Action	Responsible Party	Initial and Date
1	**Ensure** that a current copy of this procedure is used.	Person in Charge	
2	**Ensure** that all steps in Section 3.0, *Prerequisite Actions*, are completed.	Person In Charge	
3	**Ensure** that field activities have been scheduled on the plan-of-the-day and work schedule.	Person in Charge	
4	**Ensure** that the minimum appropriate qualified and authorized personnel are available as follows: • Authorized Shipper • Driver qualified for waste type to be shipped	Authorized Shipper	

Step	Action	Responsible Party	Initial and Date
5	**Conduct** pre-job brief for hands-on field activities, including the associated IWD(s).	Person in Charge	
6	**Ensure** that the appropriate equipment is available: • Transport vehicle appropriate for waste to be shipped • Container handling equipment as needed (e.g., forklift, hand truck) • The waste generating facility has performed the pre-shipment radiological survey (as applicable)	Person in Charge	
7	**Ensure** that PPE is available: Level D PPE at a minimum.	Person in Charge	
8	**Complete** Sections I through VI of the *Off-Site DOT Compliance Checklist* (Attachment 2), before shipment release.	Authorized Shipper	
9	Before applying label, **ensure** that the WCATS number on container matches the WCATS number on all-in-one label.	Authorized Shipper	
10	Before loading, **ensure** that containers in the field are marked, labeled, and prepared for compliant shipment. **NOTE 2:** Use the *Off-Site Container Checklist* and shipping papers to perform this step.	WM-WMS Technical Personnel	
11	**Complete** the "Load Verified" column on the *Off-Site Container Checklist* (Attachment 1).	WM-WMS Technical Personnel	
12	**Complete** the *Off-Site Container Checklist*.	Authorized Shipper	
13	**Apply** tamper-indicating devices (TIDs) as required (49 CFR 173.412 (a)). **NOTE 3:** Ensure that the package(s) are loaded to protect the TIDs from damage.	WM-WMS Technical Personnel	
14	**Load** waste onto transport vehicle following proper DOT segregation.	Authorized Shipper	
15	**Complete** *Off-Site Container Checklist* before shipment release.	WM-WMS Technical Personnel	

Step	Action	Responsible Party	Initial and Date
16	**Ensure** that RCT performs a radiological shipment survey of the truck to comply with 49 CFR (in accordance with Appendix C, *Radiation Level and TI Limits for Transportation by Road*) and collects documentation before shipment release.	Authorized Shipper	
17	**Complete** and sign the *Off-Site DOT Compliance Checklist* (Attachment 2).	Authorized Shipper	
18	**Complete** *NNSS Carrier's Driver Packet* (Attachment 3) before shipment release (for NNSS shipments only).	Authorized Shipper	
19	**Brief** driver on shipping paperwork in accordance with Appendix B, *Required Shipping Documents*.	Authorized Shipper	
20	**Sign** shipping papers and documentation.	Authorized Shipper	
21	**Ensure** that copies of required documentation as listed in Appendix B, *Required Shipping Documents*, have been made.	Authorized Shipper	
22	**Provide** shipping paperwork package to driver.	Authorized Shipper	
23	**Take** photos of shipment marking, labeling, placarding, and load securement. Retain photos on shipper's LANL-issued device until the shipment is accepted at receiving facility. If shipment issues arise, photos must be approved by a derivative classifier before release. If there are no issues upon receipt, photos may be deleted.	Authorized Shipper	
24	**Release** driver.	Authorized Shipper	
25	**Provide** notification or documentation of executed shipment to LANL Emergency Management and Response Office (EM&R) and LOG-PT (and for MLLW only, to WMP-STP via 24seven@lanl.gov, pntops@lanl.gov, and wmp-stp@lanl.gov).	WM-WMS Technical Personnel	
26	**Notify** the Nuclear Material Control and Accountability Group (for Special Nuclear Material accountability shipments only).	WM-WMS Technical Personnel	

Step	Action	Responsible Party	Initial and Date
27	**Scan** and upload all shipping papers and supporting shipment documentation manifest into WCATS.	WM-WMS Technical Personnel	

5.0 TRAINING

Refer to Section 3.1. All training must be assigned and tracked using the Laboratory's training management system, UTrain.

6.0 RECORDS

WM-WMS will authenticate that the waste generator shipping/transporting documents for waste acceptance are scanned, uploaded, and closed out in WCATS. WCATS is an official repository for shipping and transporting waste documents and is also the official waste operating records system for the Laboratory.

As a result of implementing this procedure, the following records generated are maintained in WCATS in accordance with P1020-1, *Laboratory Records Management*:

- TP-P409-0701-Form-002 Attachment 2, *Off-Site DOT Compliance Checklist*
- Off-Site Container Checklist (generated from WCATS)
- LDR
- Uniform Hazardous Waste Manifest
- DOT Shipping Papers
- New Mexico Special Waste (NMSW) Manifest
- PCB Continuation Sheet
- NRC540/541 Manifest
- Exclusive Use Instructions, Attachment 4 (as applicable)
- Highway 30 Travel Prohibition, Attachment 5 (as applicable)
- NNSS Driver's Packet
- State of Washington Driver Packet, Attachment 6 (as applicable)
- Tables 1, 2, and 3 of this procedure

NOTE 1: Close out (manifest profile return status) in WCATS for waste generator shipping/ transporting waste files, including the UHWM. Upload into WCATS the return certificate of waste disposal or waste destruction and any associated documents.

7.0 DEFINITIONS AND ACRONYMS

Definitions

See LANL *Definition of Terms*.

Acronyms

See LANL *Acronym Master List*.

Acronym	Definition
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
HWR	Hazardous Waste Review
IWD	integrated work document
LANL, Laboratory	Los Alamos National Laboratory
LLW	low-level (radioactive) waste
MLLW	mixed low-level waste
NMSW	New Mexico Special Waste
NNSS	Nevada National Security Site
NRC	Nuclear Regulatory Commission
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RWP	radiological work permit
TID	tamper-indicating device
TP	technical procedure
TSDF	treatment, storage, and disposal facility
UET	use every time
UHWM	uniform hazardous waste manifest
URWM	uniform radioactive waste manifest
WCATS	Waste Compliance and Tracking System
WM-WMS	Waste Management-Waste Management Services

8.0 REFERENCES

- EPC-WMS-IWD-010, Integrated Work Document (IWD) Part 1, Activity Specific Information for Off-Site Waste Shipments
- P101-18, *Procedure for Pause/Stop Work*
- P121, *Radiation Protection*
- P315, *Conduct of Operations Manual*
- P330-6, *Nonconformance Control and Reporting*
- P409, *LANL Waste Management*
- P1020-1, *Laboratory Records Management*
- WCATS (Waste Compliance and Tracking System)
- WCATS (Waste Compliance and Tracking System) User Guide

- WM-WMS-FORM-001, *Off-Site DOT Compliance Checklist*
- WM-WMS-IWD-010, *Preparing and Shipping Waste Off-Site*

9.0 ATTACHMENTS AND APPENDICES

9.1 Attachments

NOTE 1: The following links will take you to the Electronic Document and Records Management System (EDRMS) login page. You will need to be granted access before logging in to view documents by your local computer support. Print forms from EDRMS to ensure you are working with the most recent form.

- **Attachment 1:** Off-Site Container Checklist
- **Attachment 2:** Off-Site DOT Compliance Checklist
- **Attachment 3:** NNSS Carrier's Driver Packet
- **Attachment 4:** Exclusive Use Instructions
- **Attachment 5:** Highway 30 Travel Prohibition
- **Attachment 6:** State of Washington Driver Packet

9.2 Appendices

- **Appendix A:** Generator Licenses and/or Permits
- **Appendix B:** Required Shipping Documents
- **Appendix C:** Radiation Level and TI Limits for Transportation by Road
- **Appendix D:** Waste Control Specialists Waste Acceptance Criteria Table 1-30
- **Appendix E:** EnergySolutions WAC Classification Tables from UAC R313-15-1009 Table 1

ATTACHMENT 1 – OFF-SITE CONTAINER CHECKLIST

Page 1 of 1

OFF-SITE CONTAINER CHECKLIST

Planned Ship Date: _____

Hazardous Waste Review (HWR) #(s) _____

Destination: _____ Origin: _____

WCATS Container ID	Container Size/Type	Manifest # From WCATS	Container Checkoff		
			Load Verified	Authorized Shipper	Loaded On Truck

Authorized Shipper	Print Name:	Z Number:	Signature:	Date:
EPC-WMS Technical Personnel or Technician	Print Name:	Z Number:	Signature:	Date:
EPC-WMS Technical Personnel or Technician	Print Name:	Z Number:	Signature:	Date:

TP-P409-0701 Form-001-R2 Attachment 1 09/2024

ATTACHMENT 2 – OFF-SITE DOT COMPLIANCE CHECKLIST
Page 1 of 2

OFF-SITE DOT COMPLIANCE CHECKLIST

Waste Type:	Destination:	Date Shipped:

Please check the appropriate box and provide requested information.
DO NOT release vehicle until any discrepancies and/or safety concerns are resolved (as applicable). Complete Sections **I** through **VI** prior to release of shipment.

Carrier Name:	DOT ID Number:	EPA ID Number:

Requirement	Primary Authorized Shipper		
	Yes	No	N/A
I. Radiological Monitoring:			
Has material been radiologically surveyed by an RCT and both container and DOT Final survey provided?			
II. Commercial Driver License (CDL) Information:			
Is the driver's CDL current (all shipments)? Class A_____Class B_____Class C_____			
CDL appropriate to the waste shipment endorsement? ❑ H- Hazardous Materials ❑ N-Tanker ❑ X-Tanker/Hazardous			
III. Truck Inspection:			
Truck Plate State: / Truck Plate Number: / Vehicle number:			
Is the transport vehicle's annual inspection current? Date Exp.:			
IV. Trailer Inspection:			
Trailer plate state: / Trailer plate number: / Vehicle number:			
Is the transport trailer's annual inspection current? Date Exp:			
Has the vehicle safety walk around been performed prior to loading?			
V. Before Vehicle is Loaded:			
Has the Authorized Shipper visually inspected the container closure for transportation?			
Has the Authorized Shipper ensured that all container (s) markings and labeling are in accordance with applicable US Department of Transportation regulations?			
VI. After Vehicle is Loaded:			
Have placards been supplied to the driver and applied to the trailer?			
❑ 2.1 ❑ 2.2 ❑ 2.3 PIH ❑ 3 ❑ 4.1 ❑ 4.2 ❑ 4.3 ❑ 5.1 ❑ 5.2 ❑ 6.1 ❑ 6.1 PIH ❑ 7 ❑ 8 ❑ Dangerous ❑ Bulk ❑ Universal waste label(s)			
Have Polychlorinated Biphenyls (PCBs) been applied to the trailer, if applicable?			
For radiological shipments shipped 'Exclusive Use Only,' have Exclusive Use Instructions been provided to the Driver?			
Does shipment contain shipments "in transit"?			

List Manifest Number(s) for All Manifest(s) on Shipment:

					Driver Initials & Date
Driver certifies documented hours of service records have been maintained.					
Driver certifies daily vehicle inspection reports completed.					
Driver certifies all issues with the vehicle have been resolved prior to loading.					
Driver certifies securement of this load is acceptable and compliant with DOT and FMCSA requirements.					
Driver has a current ERG Guidebook and/or ERG paperwork for all hazardous materials loaded as applicable.					

Driver Signature: _____Printed Name_____Date_____

Driver Contact Number: _____ Time Shipment Departed: _____

Authorized Shipper Signature: _____Printed Name_____Z Number_____ Date_____

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET
Page 1 of 6

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NNSS CARRIER'S DRIVER PACKET

NNSS Shipment No:

IN THE EVENT OF AN INCIDENT, CALL
LANL Emergency Management & Response (505) 667-2400

1. Shipping documents attached to this form contain the information prescribed by DOT regulations. These documents must accompany all drivers of this shipment. Accessibility of these documents must be in accordance with 49 CFR 177.817.
2. Radioactive Material: Exclusive Use Instructions/Dedicated Service Shipment. Under the "Exclusive Use Instructions/DedicatedService Instructions," you will conform to the requirements specified in the Exclusive Use Instructions/Dedicated Service Form provided as Exhibit 1.
3. You also must be aware of the following:
   a. Vehicle placarding, if necessary, is provided and affixed by the shipper. The driver is responsible for replacing any placards that are lost or damaged during transit.
   b. Certain shipments of radioactive materials cannot be transported through or on certain highway facilities, i.e., tunnels and bridges.
   c. In the event of an accident or emergency, the carrier is to take the appropriate emergency response actions. The carrier will also make notifications as indicated on shipping papers in the event of a delay, accident or other emergency enroute.
   d. Additional security precautions may be in effect. See Exhibit 3.
   e. Routing to the Nevada National Security Site is required to avoid specific areas. The WCO briefing will cover the route, restrictions and provide instructions.
4. Driver Qualification. You have been informed that the Federal Motor Carrier Regulations (DOT) requires specific driver qualifications, if not accepted, for carriers of hazardous materials.
   a. All drivers are required to provide verification and maintain a valid driver's license and medical card. This meets the requirements of Federal Motor Carrier, Table 2, 383.51, 7.
   b. All drivers SHALL carry with them official (stamped or embossed) documentation showing proof of US Citizenship.

ACKNOWLEDGEMENT OF RECEIPT AND ACCEPTANCE OF EXCLUSIVE USE/DEDICATED USE REQUIREMENTS AND ROUTE RESTRICTIONS:

Driver Name:	Carrier:
Driver Signature:	Truck No.
Date of Shipment:	Trailer No.

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET (CONT)
Page 2 of 6

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NNSS CARRIER'S DRIVER PACKET

Exhibit 1:

❑ **Exclusive Use Instructions** ❑ **Dedicated Service Instructions**

(Check as applicable)

RESPONSIBILITY

These written instructions are provided to the carrier named on the shipping papers for the above-referenced shipment and are to be maintained with said shipping papers. It is the shipper's responsibility to ensure that these instructions are conveyed to its driver(s) and administrative personnel, as appropriate for the duration of the movement to the destination.

INSTRUCTIONS

1. Maintain exclusive use/dedicated service of this vehicle for the duration of the movement. No other freight is to be loaded with this shipment except as directed by the consignor.
2. All loading or unloading of freight in this shipment shall be done only by, or as directed by, the consignor or consignee.
3. The carrier is to move this shipment without delay, but in accordance with the legal statutes of transit jurisdictions.
4. Stops enroute with tractor unmanned are to be minimized to the extent practical and limited to accepted safe-haven areas (i.e., another DOE site, military base, locked area, or guarded area). Shipper must approve any stops more than ten hours, and unmanned trailer stops while enroute.
5. The carrier is to take positive steps enroute and during necessary stops to segregate this shipment from other freight, buildings, and personnel, to minimize potential exposures.
6. To maximum extent practical, the carrier, when movement is by highway, is to use interstate or limited-access divided highways and avoid high-density urban areas, especially where circumferential interstate highways are available to allow avoidance of travel through the highest populated portion of an urban area.
7. The carrier is to make periodic inspections of equipment, load, and placarding at appropriate intervals enroute to ensure maintenance of shipment safety controls.

SPECIAL INSTRUCTIONS

- If provided by highway, the carrier's driver(s) are to maintain visual contact with escort(s) and obey all traffic signs.
- Low-level radioactive waste under transport to the Nevada National Security Site (NNSS) is required to be routed around certain potential hazards as discussed by the LANL WCO/AWCO during the driver briefing. For example, transport through Santa Clara-Puebo via Hwy 30 is NOT permitted (Att.5). Failure to conform to route restrictions will result in loss of future opportunities to transport waste to the NNSS.
- Radiation surveys enroute will be made only with acceptable monitoring devices and the consignor or consignee will be notified that such monitoring has been done and by whom. Radiation surveys taken at destination by authorized personnel of the consignee will be provided to the carrier on request or the carrier will be notified if there are contamination levels that would warrant taking the conveyance out of service.
- Conveyance vehicles used for transporting radioactive materials under exclusive use conditions in accordance with 49 CFR 173.427 that are taken out of service shall be decontaminated and surveyed with radiation detection instruments before being returned to service. The carrier shall ensure the vehicle has met the DOT (Department of Transportation) Return to Service Limits as required by 49 CFR 173.443(c) and 49 CFR 177.843(a) as applicable, and notify the consignor listed on the bill of lading that the truck-trailer/railcar has been returned to service.

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET (CONT)

Page 3 of 6

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NNSS CARRIER'S DRIVER PACKET

SPECIAL INSTRUCTION (CONTINUED)

Survey requirements for the conveyance, following unloading of materials at destination, are marked:

- ☐ No consignor-specified survey requirements. Additional surveys are required when there are indications that contamination may be present due to damaged packaging or other evidence of leaking in accordance with 49 CFR 173.443(e).
- ☐ Before returning the conveyance to exclusive use service, the carrier shall verify the consignee performs surveys to ensure the 49 CFR 173.443(c) contamination and radiation limits are met. The carrier shall return the exclusive use trailer to origin, as directed by the consignor.
- ☐ After using the exclusive use provisions of 49 CFR 173.443(c) and before returning the conveyance to general use service, free release, or unrestricted use, the carrier shall verify the consignee performs surveys to ensure it is below the definition of contamination in 49 CFR 173.401 as well as US DOE/NNSA, Agreement State, or NRC survey limits, as appropriate.
- ☐ If the Shipment is Highway Route Controlled, the carrier must comply with DOT 397.101(b) requirements.

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET (CONT)
Page 4 of 6

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NNSS CARRIER'S DRIVER PACKET

EXHIBIT 2: EMERGENCY INSTRUCTIONS

1. Immediately notify LANL Emergency Management & Response (505) 667-2400 any time of day or night. Office is manned 24 hours a day, 7 days a week.
2. Contact state police and/or the local law enforcement agency for assistance.
3. DO NOT OPEN OR UNCOVER CONTAINER(S).
4. Evacuate personnel to a safe distance upwind of the emergency site and await arrival of emergency responders.
5. Isolate the area from traffic and spectators.
6. Sealed containers, if lying on roadway, may be moved to the side of the road or right of way. DO NOT ATTEMPT TO MOVE AND/OR REPACKAGE MATERIAL FROM ANY OPEN CONTAINER UNTIL AUTHORIZED TO DO SO BY AUTHORITIES.
7. Obtain names and addresses of all persons involved. Write down a description, sequence, and time of all aspects of the emergency.
8. Make no statements to the press, news media, or the general public unless authorized by the shipper or other proper authorities.
9. The Nevada National Security Site (NNSS) Waste Certification Official (WCO) shall be notified should a delay (e.g., weather, vehicle breakdown, traffic or route delay) occur for low-level waste (LLW), mixed low-level waste (MLLW), or classified waste that is in transit to the NNSS, per the WCO briefing and instructions provided.

NOTIFICATION PROCESS

- In the event of a delay, Motor Carriers of LLW, MLLW/Classified waste loads in transit to the NNSS shall make timely notification to the NNSS Operations Control Center (OCC) 702-295-0311 and must contact The LANL Authorized Shipper:

  Name: _____

  Phone Number: _____

- The Authorized Shipper shall contact the LANL WCO so that the LANL WCO can make the required notifications per the WCO briefing and instructions provided.

  Name: _____

  Phone Number: _____

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET (CONT)
Page 5 of 6

NNSS CARRIER'S DRIVER PACKET

EXHIBIT 3: EN-ROUTE SECURITY MEASURES

As a transporter of government-owned material, you have an important job with heavy responsibility. You transport materials all over the United States, on our highways, through our communities, and past our churches and schools. Many of these materials are hazardous and have the potential of being used as a weapon of mass destruction. You must be extra vigilant and aware to keep our nation safe and secure.

Many precautions can be implemented prior to transport of the material. They are the same precautions you have been taking for years, but now more than ever, these precautions should be considered mandatory.

- Conduct a pre-trip vehicle inspection.
- Know what you are hauling.
- Keep easy-access emergency numbers.
- Keep the Emergency Response Guidebook in the cab.
- Make sure placards and markings match the load you are hauling.
- Be sure the shipping papers match your load.

You may be faced with dangers and obstacles while transporting the shipment to its destination. Caution and awareness are needed every step of the way. Protect your vehicleand its load while underway.

- Follow the designated route. If a deviation is necessary, notify dispatch immediately.
- Always be aware of surroundings.
- Avoid highly populated areas whenever possible.
- Ensure that all hazardous materials are delivered expeditiously.
- Always lock your vehicle when stopped or unattended.
- Avoid tunnels and bridges.
- Be aware of other vehicles at all times. Is anyone following you?
- Be aware of suspicious drivers.
- Never remove placards or markings, unless instructed to do so.
- Cooperate with regulatory and/or law enforcement personnel.
- Do not answer any stranger's questions about your load or destination.

Remember that drivers and shippers are partners. Cooperate with facility employees to ensure safe deliveries. Do your part to keep facilities secure.

- Be cautious and alert at the delivery site.
- Follow posted speed limit signs.
- Be aware of any suspicious activities.

ATTACHMENT 3 – NNSS CARRIER'S DRIVER PACKET (CONT)

NNSS CARRIER'S DRIVER PACKET

EXHIBIT 4: ACCESSING THE NNSS

The following information is provided to prepare the carrier for the process that will beemployed by the consignee at the Nevada National Security Site.

- The badging area is located at Gate 100, on the main entrance road. The NNSS is a secure US Government reservation with restrictions on persons and items allowed to enter. The WCO briefing will cover the required information and provide instructions.

Note:

Privately owned global positioning system (GPS) must be turned off. All vehicles are subject to search.

- Hours of operation for receiving waste at the NNSS Radioactive Waste Management Site (RWMS) are 0700 to 1400 hours Pacific Time, Mondays through Thursdays (except holidays).
- If a shipment arrives after 1400 hours, NNSS no longer permits on-site staging of loaded trailers for security reasons. Loads must be staged elsewhere as permitted under DOT and applicable DOE requirements. Classified loads may require additional consideration. You must notify the LANL Authorized Shipper who must notify the LANL WCO.
- Shipment off-loading may be subject to delays at any time, due to NNSS operational schedule.

ATTACHMENT 4 – EXCLUSIVE USE INSTRUCTIONS

Page 1 of 2

EXCLUSIVE USE INSTRUCTIONS

TRIAD-LANL Shipment #: _____

These written instructions are provided to the motor carrier named on the shipping papers for the above-referenced shipment and are to be maintained with said shipping papers. It is the shipper's responsibility to ensure that these instructions are conveyed to its driver(s) and administrative personnel, as appropriate, for the duration of the movement to final destination.

1. Maintain exclusive use of this vehicle for the duration of the movement. No other freight is to be loaded with this shipment except as directed by the consignor.
2. All loading and unloading of freight in this shipment shall only be performed by, or as directed by, the consignor or consignee.
3. The carrier is to move this shipment without delay, but in accordance with the legal statutes of transit jurisdictions.
4. Stops en route are to be minimized to the extent practical. TRIAD-LANL must approve stops in excess of 10 hours.
5. If driver does stop and leave the vehicle, it shall be locked upon exiting and the driver shall maintain sight of the vehicle while stopped as practical, and upon return, the driver shall inspect the load for integrity of seals and evidence of vehicle tampering.
6. If there is any evidence of conveyance/container tampering, a security breach of the container, or any suspicious behavior in or around this conveyance/container, the driver shall immediately notify the shipper as identified on the shipping papers and the notify the consignor located on the bill of lading.
7. The carrier is to make positive steps en route and during necessary stops to segregate this shipment from other freight, buildings, and personnel, so as to minimize potential exposure.
8. The carrier is to make periodic inspection of equipment, load securement, and placarding at appropriate intervals en route to ensure maintenance of shipment safety controls.
9. To the maximum extent practical, the carrier is to use interstate or limited access divided highways and avoid high-density urban areas, especially where circumferential interstate highways are available to allow avoidance of travel through the highest populated portion of an urban area.
10. Hazard class "7" shipments are not permitted on Highway 30 through Santa Clara Pueblo. The carrier will use an alternate route for these shipments.

ATTACHMENT 4 – EXCLUSIVE USE INSTRUCTIONS (CONT)

Page 2 of 2

EXCLUSIVE USE INSTRUCTIONS

SPECIAL HANDLING INSTRUCTIONS

1. Conveyance vehicles used for transporting radioactive materials under exclusive use conditions in accordance with 49 CFR 173.427 that are taken out of service shall be decontaminated and surveyed with radiation detection instruments before being returned to service. The carrier shall ensure the vehicle has met the DOT (Department of Transportation) return to service limits as required by 49 CFR 173.443(c) and 49 CFR 177.843(a), as applicable, and notify the consignor listed on the bill of lading that the truck-trailer/railcar has been returned to service.
2. Survey requirements for the conveyance, following unloading of materials at destination, are marked:
   - ☐ No consignor-specified survey requirements. Additional surveys are required when there are indications that contamination may be present due to damaged packaging or other evidence of leaking in accordance with 49 CFR 173.443(e).
   - ☐ Before returning the conveyance to exclusive use service, the carrier shall verify the consignee performs a survey to ensure the 49 CFR 173.443(c) contamination and radiation limits are met. The carrier shall return the exclusive use trailer to origin, as directed by the consignor.
   - ☐ After using the exclusive use provisions of 49 CFR 173.443(c) and before returning the conveyance to general use service, free release or unrestricted use, the carrier shall verify the consignee performs surveys to ensure it is below the definition of contamination in 49 CFR 173.403 as well as U.S. DOE/NNSA, Agreement State, or NRC survey limits, as appropriate.
3. Additionally, the carrier shall contact the consignor within one hour of any delay, accident or other emergency while en route or while loading or unloading the containers. Notification of an accident shall include, as applicable: location, date and time of accident, resultant damage or injury, person(s) involved, probable cause, condition of the load, if hazardous material, hazardous waste, or contaminated waste was released and the amount. Any other pertinent information concerning the accident also should be included (i.e., weather conditions, distance to water sources, government agencies on the scene, and a telephone number where communication can be maintained).

Transporter: _____ **Date:** _____

Driver: _____ _____

Print Name **Signature**

ATTACHMENT 5 – HIGHWAY 30 TRAVEL PROHIBITION

Page 1 of 1

HIGHWAY 30 TRAVEL PROHIBITION

Driver Instructions:

If Transporting Radioactive Waste From LANL,
Do Not Travel on New Mexico State Road 30
through the Santa Clara Pueblo.

ATTACHMENT 6 – STATE OF WASHINGTON DRIVER PACKET

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STATE OF WASHINGTON DRIVER PACKET

STATE OF WASHINGTON DRIVER FORMS

Driver's Port of Entry Instructions
For the State of Washington

Issued for shipments to: Perma-Fix Northwest, Inc.

Notice: The material you are expecting to ship to Perma-Fix Northwest Richland, Inc. must enter the state at one of two entry points. The driver will be required to stop for an inspection of the vehicle to insure compliance with the State of Washington and Department of Transportation requirements for vehicles carrying hazardous materials. The transport vehicle will not be allowed entry into the state until the vehicle passes this inspection. The shipment cannot be accepted at ATG without a certificate of inspection from one of these checkpoints.

1.) Weigh Station at Plymouth (I-82) Phone (509) 764-7045
2.) Weigh Station at Spokane (I-90) Phone (509) 868-4600

The driver must notify one of these checkpoints by phone 4 hours prior to entering the state. A personal monetary fine of $100 can be levied for failure to stop at one of the above checkpoints. A lengthy delay may also be expected in addition to the $100 fine. Please make all drivers aware of these requirements before leaving your facility.

STATEMENT OF CERTIFICATION

I have read and understand the above statements concerning the proper delivery or pick-up of radioactive materials

Name of Driver | Driver Signature | Date

ATTACHMENT 6 – STATE OF WASHINGTON DRIVER PACKET (CONT)

Page 2 of 2

STATE OF WASHINGTON DRIVER PACKET

STATE OF WASHINGTON DRIVER FORMS (RHF 31 D Form)
RADIOACTIVE WASTE SHIPMENT CERTIFICATION FOR SHIPMENTS TO THE
COMMERCIAL RADIOACTIVE WASTE DISPOSAL FACILITY OR RADIOACTIVE WASTE PROCESSOR

The following certification, completed as applicable, is made to the state of Washington:

Certification is hereby made to the state of Washington that the radioactive waste described on manifest/bill of lading No._____
has been inspected and it has been determined that the materials are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to the applicable federal and state regulations, laws, rules, and licenses.

The undersigned shall indemnify and hold harmless the state of Washington from any and all claims, suits, losses, charges, and expenses on account of injuries to any and all persons whomsoever, and any and all property damage arising or growing out of or in any manner connected with this shipment to the extent that the claims, suits, losses, charges, or expenses are caused in whole or in part by negligent acts or omissions of the undersigned.[1]

Except for any violation of applicable state or federal statute or regulation or license condition respecting packaging and shipment, inspection and acceptance of any item or container or material covered by this certification by the state of Washington or a duly authorized contractor shall release the party who executed this certificate from any and all requirements of indemnification and hold harmless from injury or loss.

SECTION A:
GENERATOR:_____
(Company or Agency Name)
PERMIT NUMBER:_____
VOLUME OF WASTE IN THIS SHIPMENT:_____

BY:_____ TITLE:_____
(Printed Name)

SIGNATURE:_____ DATED_____

SECTION B:
BROKER:_____
(Company Name)
PERMIT NUMBER:_____
VOLUME OF WASTE IN THIS SHIPMENT:_____

BY:_____ TITLE:_____
(Printed Name)
SIGNATURE:_____ DATED:_____

SECTION C:

CARRIER:_____
(Company Name)
VOLUME OF WASTE IN THIS SHIPMENT:_____

BY:_____ TITLE:_____
(Printed Name)
SIGNATURE:_____ DATED:_____

DOH RHF-31D
Updated 3/01

1 Federal government agencies entering into this certification are subject to all applicable federal law including, but not limited to, the Federal Tort Claims Act and the Anti-Deficiency Act.

APPENDIX A – GENERATOR LICENSES AND/OR PERMITS

Page 1 of 1

Generator License and/or Permits				
Ship to State	**Permit**	**Form**	**Duration**	**WM-WMS Ensure that:**
Tennessee	Radioactive Waste License-for-Delivery	RHS 8-30	Yearly	Permit # on Manifest and permit is current
Utah	Generator Site Access Permit (GSAP)	On-Line: https://secure.utah.gov/gsapa/apply.html	Yearly	GSAP # on Manifest and permit is current
Texas	Radioactive Material License	RC Form 252-2	Yearly	Transporter holds current license
Washington	RADIOACTIVE WASTE SHIPMENT CERTIFICATION FOR SHIPMENTS TO THE COMMERCIAL RADIOACTIVE WASTE DISPOSAL FACILITY OR RADIOACTIVE WASTE PROCESSOR	DOH RHF-31D and Perma-Fix Northwest Hazardous Materials Driver's Instructions	Each Shipment	DOH RHF-31D is completed and given to the driver. Give driver Perma-Fix Northwest Hazardous Materials Driver's Instructions and explain State of Washington Port of entry requirements.

APPENDIX B – REQUIRED SHIPPING DOCUMENTS

Page 1 of 1

Package Type	LDR	Uniform Hazardous Waste Manifest	DOT Shipping Papers	NRC 540/541 Manifest	Exclusive Use Instructions (as applicable)	Highway 30 Travel Prohibition (as applicable)	NNSS Driver's Packet	State of Washington Driver Forms (as applicable)
RCRA	X	X						
PCB		X						
Asbestos			X**					
Universal			X					
DOT Regulated			X					
Non-Regulated Material			X					
MLLW	X	X		X*	X	X		X
LLW			X*	X*	X	X		X
LLW/PCB		X		X	X	X		
NMSW		X	X**					
Shipments to NNSS			X			X	X	

*As applicable, not required for NNSS

**If manifest is not provided by disposal TSDF

APPENDIX C – RADIATION LEVEL AND TI LIMITS FOR TRANSPORTATION BY ROAD

Page 1 of 1

Radiation Level and TI Limits for Transportation by Road		
Type of Transport:	**Non-Exclusive Use**	**Exclusive Use**
Radiation Level Limits		
Package Surface:	2 mSv/h (200 mrem/h)	2 mSv/h (200 mrem/h) Other than closed vehicles 10 mSv/h (1000 mrem/h) Closed Vehicle
Conveyance:	N/A	2 mSv/h (200 mrem/h: Outer Surfaces (Sides, Top and Undersides) of Vehicle and 0.1 mSv/h (10 mrem/h) at any point 2 m (6.6 feet) from the outer lateral surfaces of the vehicle (excluding the top and underside of the vehicle); or in the case of a flat-bed style vehicle, at any point 2 m (6.6 feet) from the vertical planes projected by the outer edges of the vehicle (excluding the top and underside of the vehicle)
Occupied Position:	N/A	0.02 mSv/h (2 mrem/h: at any normally occupied area
Transportation Index (TI) Limits		
Package:	10 Road and Rail	No Limit
Conveyance:	50 Road and Rail	No Limit
Overpack:	N/A	N/A

APPENDIX D – WASTE CONTROL SPECIALISTS WASTE ACCEPTANCE CRITERIA TABLE 1-30

Radionuclide	Class A Limit		Class B Limit		Class C Limit	
C-14	0.8	Ci/m³	[1]	Ci/m³	8	Ci/m³
C-14 in Activated Metals	8	Ci/m³	[1]	Ci/m³	80	Ci/m³
Ni-59 in Activated Metals	22	Ci/m³	[1]	Ci/m³	220	Ci/m³
Radionuclide	**Class A Limit**		**Class B Limit**		**Class C Limit**	
Nb-94 in Activated Metals	0.02	Ci/m³	[1]	Ci/m³	0.2	Ci/m³
Tc-99	0.3	Ci/m³	[1]	Ci/m³	3	Ci/m³
I-129	0.008	Ci/m³	[1]	Ci/m³	0.08	Ci/m³
Alpha-emitting transuranic radionuclides with half-lives greater than five (5) years	10	nCi/g	[1]	nCi/g	100	nCi/g
Pu-241	350	nCi/g	[1]	nCi/g	3,500	nCi/g
Cm-242	2,000	nCi/g	[1]	nCi/g	20,000	nCi/g
Ra-226[2]	10	nCi/g	[1]	nCi/g	100	nCi/g

[1] There are no limits established for these radionuclides in Class B wastes
[2] This isotope is not listed in the classification tables in 10 CFR Part 61 but is required by the state of Texas to be included in classification determination

Table 2 – 30 TAC §336.362 Appendix E, Table II, Class A, B and C Waste - Short Lived Isotopes

Radionuclide	Class A Limit		Class B Limit		Class C Limit	
Total radionuclides with half-lives less than five (5) years	700	Ci/m³	[3]	Ci/m³	[3]	Ci/m³
H-3	40	Ci/m³	[3]	Ci/m³	[3]	Ci/m³
Co-60	700	Ci/m³	[3]	Ci/m³	[3]	Ci/m³
Ni-63	3.5	Ci/m³	70	Ci/m³	700	Ci/m³
Ni-63 in Activated Metals	35	Ci/m³	700	Ci/m³	7,000	Ci/m³
Sr-90	0.04	Ci/m³	150	Ci/m³	7,000	Ci/m³
Cs-137	1	Ci/m³	44	Ci/m³	4,600	Ci/m³

[3] There are no limits established for these radionuclides in Class B or C wastes. Practical considerations such as effects of external radiation and internal heat generation on transportation, handling, and disposal will limit the concentrations for these wastes. These wastes shall be Class B unless the concentrations of other radionuclides in Table 2 determine the waste is Class C independent of these radionuclides.

APPENDIX E – ENERGYSOLUTIONS WASTE ACCEPTANCE CRITERIA CLASSIFICATION TABLES FROM UAC R313-15-1009 TABLE 1

Page 1 of 1

Radionuclide	Ci/m^3	nCi/g
C-14	8	
C-14 (act)	80	
Ni-59 (act)	220	
Nb-94 (act)	0.2	
Tc-99	3	
I-129	0.08	
Alpha-emitting transuranics > 5 year half-life		100
Pu-241		3,500
Cm-242		20,000
Ra-226		100
C-14		100
C-14 (act)		3,500

ATTACHMENT 3

List of Waste Containers with Aqueous Film-Forming Foam Containing Per- or Polyfluoroalkyl Substances

EWP-25-022
LA-UR-25-26136

Date: July 7, 2025

Container ID	Labelled ID	Waste Type	Status	Origin Date	WSP ID	Waste Stream Name	Volume	Manifest #
855532	W855532	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855531	W855531	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855529	W855529	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855533	W855533	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855526	W855526	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855528	W855528	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855525	W855525	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855522	W855522	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855534	W855534	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855524	W855524	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855527	W855527	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240665FLE
855530	W855530	SW-OTHER	DECOMMISSIONED	2/6/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855506	W855506	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855512	W855512	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855508	W855508	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
855513	W855513	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855510	W855510	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855511	W855511	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
855509	W855509	SW-OTHER	DECOMMISSIONED	2/6/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
859619	W859619	SW-OTHER	DECOMMISSIONED	9/29/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
859618	W859618	SW-OTHER	DECOMMISSIONED	9/29/2020	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
859620	W859620	SW-OTHER	DECOMMISSIONED	9/29/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
859621	W859621	SW-OTHER	DECOMMISSIONED	9/29/2020	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
861464	W861464	SW-OTHER	DECOMMISSIONED	2/3/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
861465	W861465	SW-OTHER	DECOMMISSIONED	2/3/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
861466	W861466	SW-OTHER	DECOMMISSIONED	2/3/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240664FLE
861463	W861463	SW-OTHER	DECOMMISSIONED	2/3/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240665FLE
861462	W861462	SW-OTHER	DECOMMISSIONED	2/3/2021	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
862829	W862829	SW-OTHER	DECOMMISSIONED	4/1/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	275 gal	019240665FLE
865459	W865459	SW-OTHER	DECOMMISSIONED	7/21/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	320 gal	019240664FLE
865460	W865460	SW-OTHER	DECOMMISSIONED	7/21/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
865458	W865458	SW-OTHER	DECOMMISSIONED	7/21/2021	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	320 gal	019240664FLE
865467	W865467	SW-OTHER	DECOMMISSIONED	7/22/2021	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE

Container ID	Labelled ID	Waste Type	Status	Origin Date	WSP ID	Waste Stream Name	Volume	Manifest #
869052	W869052	SW-OTHER	DECOMMISSIONED	1/14/2022	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240666FLE
869051	W869051	SW-OTHER	DECOMMISSIONED	1/14/2022	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
869053	W869053	SW-OTHER	DECOMMISSIONED	1/14/2022	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
872905	W872905	SW-OTHER	DECOMMISSIONED	6/22/2022	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
872906	W872906	SW-OTHER	DECOMMISSIONED	6/22/2022	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
874080	W874080	SW-OTHER	DECOMMISSIONED	7/21/2022	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
874079	W874079	SW-OTHER	DECOMMISSIONED	7/21/2022	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
878085	W878085	SW-OTHER	DECOMMISSIONED	12/5/2022	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
878803	W878803	SW-OTHER	DECOMMISSIONED	1/12/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
878802	W878802	SW-OTHER	DECOMMISSIONED	1/12/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
878804	W878804	SW-OTHER	DECOMMISSIONED	1/12/2023	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
883433	W883433	SW-OTHER	DECOMMISSIONED	7/11/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240664FLE
883434	W883434	SW-OTHER	DECOMMISSIONED	7/11/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
884450	W884450	SW-OTHER	DECOMMISSIONED	8/2/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
884449	W884449	SW-OTHER	DECOMMISSIONED	8/2/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
884447	W884447	SW-OTHER	DECOMMISSIONED	8/2/2023	49325	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
886588	W886588	SW-OTHER	DECOMMISSIONED	10/9/2023	49312	PFAS FIRE SUPPRESSION FOAM AND WATER	330 gal	019240663FLE
890420	W890420	SW-OTHER	DECOMMISSIONED	1/4/2024	54037	PFAS AFFF AND WATER	330 gal	019240663FLE
890421	W890421	SW-OTHER	DECOMMISSIONED	1/4/2024	54040	PFAS AFFF AND WATER	330 gal	019240663FLE