

TA 36

COMMUNICATION RECORD					Task No. 001-006	
Phone In	Meeting X	Prospective Job	Past Job	Marketing	Route to:	Date: Tuesday 9/18/07
Phone Out	Other	Current Job	Admin.			Time: 8 AM
File Name: TA-36-8 Open Detonation Unit (IS)					Phone No. Luciana: 665-3435	Recorded By: Rebecca Kay
Person(s): Luciana Vigil-Holterman, Connie Gerth (Waste Management Leader), Randy Johnson (Environmental Compliance Specialist), Victor Sandoval (Team Leader for HE operations), Francis 'Poncho' Sena (Firing Site Leader for 36-8), Steve Pullen (NMED-HWB)						
Facility: LANL						
Subject: TA-36-8 (Called Kappa Site and Miney Site) Open Detonation Site Visit (2 detonation pits at this unit)						
Remarks: Connie explained that an "L" category waste is categorized by the DOE safety manual a waste whose properties can no longer be predicted therefore LANL can not transport it per DOT.						
Waste profiles are associated with custodians of magazines; change waste profiles if waste changes if code changes then custodians change too. There are about 50-100 waste profiles at OD units and about 20-30 at TA-16 (open burn unit).						
L-category waste (a DOE safety manual categorization) is a waste in which its properties can no longer be predicted therefore, it can not be transported per DOT; this waste is treated at 36-8.						
Each waste treated at the unit has a detonation train on top of it. This train consists of a configuration of various high explosives (e.g., 9407, 9501) with the largest boosters on top descending in magnitude as you get to the bottom (where the waste is located). This configuration apparently assists in facilitating the blast downwards to the ground rather than up and outwards; this aids in avoiding scatter of shrapnel, debris, etc. When asked what criteria is used to decide upon that configuration, the answer was there is no set standard to follow merely the firing site leaders' best professional judgment. It was expressed to us that the configuration depends on what you are treating. We were verbally assured that all waste is consumed in each blast. This particular treatment consisted of about 150 pounds of bare HE with 9407 and 9501 as the boosters in the detonation train (~250 pounds total booster).						
We were informed that after each and every blast, the grounds around the site are well combed to collect shrapnel or debris. However, no quantitative answer was given that informed us of how many feet or meters out from the pit are inspected. I did not observe an extensive scan of the grounds after this blast; although no metals contaminated with HE were treated during this blast. When asked how HE waste remaining on debris from the blast (e.g., shrapnel) is identified, we were informed that they visually inspect all the shrapnel they find after the blast. If after visual inspection something looks questionable, they will send it off for sampling and analysis. Yet, on this visit, there were at least half a dozen pieces, of various sizes, of shrapnel on the ground at varying distances from the pits. Admittedly, some of the shrapnel found Victor informed me that he was not sure which pit it had come from. These issues all speak to closure concerns- how many soil samples, how large a radius around the pits should be sampled, etc.						
The firing pit up the hill near the experimental area is where depleted uranium is treated, the only radioactive waste treated at this unit.						
There was no clear designation indicating the perimeter of this unit; no one could point out the boundary of the unit.						
Action Required: Steve requested the "Weapons Facilities Operations Procedure" to be sent to the HWB for review.						
Action Taken:						



LA-UR-07-6669

Approved for public release;
distribution is unlimited.

Title: Request for Waste Treatment at Dynamic and Energetic
Materials Division's Open Detonation Unit Form

Author(s): Connie J. Gerth, WS-WA
Francis C. Sena, DE-6
David T. Torres, DE-6

Intended for: New Mexico Environment Department- Hazardous Waste
Bureau



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REQUEST FOR WASTE TREATMENT AT DE OD UNIT

Requestor's Name	Phone Number	Group	Date Submitted
Program Code	Cost Code	Cost Account	Work Package

Note: Do not include classified information on this form or in the attachments

Is the waste.....	Yes	No
Stored in a <90 day storage area? (If "yes", what is the accumulation start date? _____)		
Classified? (If "yes", an ADC from your group must witness the treatment/sanitization)		
Capable of producing fragments or shrapnel?		
DU Contaminated or contains DU?		
HE contaminated debris? Include description in attached list		
Excess HE? Include description in attached list		

Comments or other information relative to this waste stream such as special handling, hazards, etc.

Attachments:

List and description of material to be treated (required) Number of pages _____

Waste profile form(s) (required) Number of pages _____

Other _____ Number of pages _____

WFO Use Only

WPF No.	Weight of Waste, Lbs.	Volume of Waste, Gal.	EPA Waste Codes

40 CFR 265 Appendix I Handling Code Subpart X: X01 Open Burning/Open Detonation

WMC SME _____ Date Reviewed _____

HE Ops SME _____ Date Reviewed _____

DE-6 Use Only

Date Treated _____ Firing Site Leader _____

Location TA36-8 TA 39-6 Shot Number _____

LA-UR-07-6670

Approved for public release;
distribution is unlimited.

Title: Weapons Facilities Operations Procedure: Waste Treatment
at Dynamic and Energetic Materials Division's Open
Detonation Units

Author(s): Connie J. Gerth, WS-WA
Francis C. Sena, DE-6
David T. Torres, DE-6

Intended for: New Mexico Environment Department- Hazardous Waste
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Procedure Number: WFO-PRO-WM-1088

Revision: 0

Effective Date: 6.15.07

Weapons Facilities Operations Procedure

Title: Waste Treatment at DE Open Detonation (OD) Units

Status: New Revision **Review Cycle:** 1 year 2 years ____ (Other)

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<input checked="" type="checkbox"/> Unclassified	<input type="checkbox"/> Restricted	Authorized Derivative Classifier:	
<input type="checkbox"/> Confidential	<input type="checkbox"/> Formerly Restricted Data	<i>John McAfee</i> (signature)	
<input type="checkbox"/> Secret	<input type="checkbox"/> National Security Information	Name: <i>John McAfee</i>	Date: <i>6-14-07</i>
<input type="checkbox"/> Unclassified Controlled Nuclear Information (UCNI)		Title: <i>Group leader</i>	
		Derived From: <i>LA 4050 Rev 8</i>	

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Revision Log

Revision No.	Date	Description of Change
0	6.15.07	<p>Original Release.</p> <ul style="list-style-type: none"> • Supersedes DX-SOP-ES-0001, <i>Operations of OB/ODs, Sanitization Operations, and the TA-36-12 Burn Ground Operations.</i> • Deleted general firing site instructions and referenced WFO-OS-ES-030, <i>General Firing Operations.</i> • Deleted references and requirements for TA-36-12 Burn Ground. • Deleted references and requirements for TA14 OB/OD units. • Deleted references and requirements for TA39-57 OD unit. • Deleted procedure for sanitizing classified parts. Refer to WFO-ASP-SB-0040, <i>Sanitization of Classified Parts.</i> • Revised request for treatment form and waste exception forms. • Incorporated waste acceptance criteria into body of document. • Added definitions to Section 7.1 (i.e., HE Ops SME, Waste Generator, Waste Transporter, and WMC SME). • Added acronyms to Section 7.2 (i.e., ADC, TSDF, WPF, and WS). • Organizational names were changed throughout the document. • Editorial changes were made throughout the document.

Procedure	Document Number: WFO-PRO-WM-1088 Title: Waste Treatment at DE Open Detonation (OD) Units	Effective date: 6.15.07 Revision: 0
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1.0 Introduction

1.1 Purpose

Waste explosives and explosives contaminated materials are hazardous wastes under the Resource Conservation and Recovery Act (RCRA). These materials require treatment prior to disposal. On-site treatment by open detonation (OD) is performed at RCRA interim status treatment, storage, disposal facilities (TSDFs) located at TA36-8 and TA39-8 operated by personnel in DE Division. This document provides the requirements, procedures, and documentation for accepting explosive wastes for treatment at these units.

1.2 Scope

- This procedure applies to all personnel at LANL who generate waste explosives and explosives contaminated materials that are treated on-site in DE operated OD units at TA36-8 and TA39-6.
- This procedure describes the process for routine acceptance of wastes for treatment at an open detonation TSDF. Emergency response operations, as determined by Emergency Management and Response (EM&R), may involve materials which do not meet the waste acceptance criteria and which are not subject to the requirements of this document.
- Explosives and explosives contaminated materials that are treated off-site are not subject to these requirements.
- The normal activities of the firing leader and firing site staff (e.g., set-up and firing the shot) are covered in separate documents, including the Operational Standards, Procedures, and IWDs, which are listed in Sections 6.1 and 6.2.

2.0 Prerequisites and Notes

2.1 Prerequisites

- Firing site leaders, firing site technicians, and other personnel who handle wastes in the OD unit during waste treatment operations must be complete and current in Training Plan 256, *RCRA Hazardous/Mixed Waste Worker Training*.
- All wastes treated by open detonation in the TSDFs must meet the current waste acceptance criteria 3.0, Waste Acceptance Criteria (WAC). The Waste Management Coordinator (WMC) Subject Matter Expert (SME) will review the request for treatment and supporting documentation to verify compliance with the WAC.
- All waste must be documented on a *Request for Treatment at a DE Open Detonation Unit* form, including supporting documentation, and accepted for treatment before an open detonation can be scheduled or performed.
- Open detonation of explosives and explosives contaminated materials is the only type of treatment allowed at the TSDF units.

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2.2 Notes

The forms referenced in this document are available on the WFO Waste Services Team web page, the DE Division web site, or from the WFO Waste Services Team Leader.

3.0 Definitions and Abbreviations/Acronyms

3.1 Definitions

Term	Definition
Debris	Solid material exceeding a 60 mm particle size (in any one dimension) that is intended for disposal and that is a manufactured object, plant matter, or natural geologic material (40 CFR 268.2(g)).
Developmental energetic material	Energetic materials synthesized in HE laboratories during research and development activities which are known to meet the definition of detonable either through testing or chemical similarity to other known explosives.
Detonation	An explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 kilometer/second at sea level) (40 CFR 265.382). Energetic materials which exhibit this property are "detonable".
Explosives contaminated material	Material and debris intended for disposal containing explosives in sufficient concentration and in configurations (e.g. > critical diameter) that cause the waste stream to be detonable at a speed greater than the speed of sound.
Explosives contaminated industrial waste (non-hazardous)	Material and debris intended for disposal containing trace amounts of explosives in concentrations and configurations which are not detonable. Materials are managed as non-hazardous administratively controlled wastes and shipped off-site for disposal.
HE Ops SME	An individual designated by Division Management who possesses the knowledge, skills, and experience to provide high explosives operational expertise, guidance, and real time support for all aspects related to explosive testing, firing, detonator production, and lab work.
Reactivity	A material exhibits the characteristic of reactivity if it is capable of detonation or explosive reaction when subjected to a strong initiating source or heated under confinement, or is readily capable of detonation or explosive reaction at standard temperature and pressure. These materials are identified by the EPA hazardous waste number D003 (40 CFR 261.23).
Waste explosives	Waste which has the potential to detonate, and bulk military propellants, which cannot safely be disposed of through other modes of treatment (40 CFR 265.382).

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Term	Definition
Waste Generator	Any individual and his/her line management (e.g., a research scientist or project manager) having direct responsibility for operations that generate waste. A waste generator may be a member of the organization responsible for the facility/site where the waste was generated. Waste generators have the responsibility for proper characterization, storage, and disposal of the waste they generate.
Waste Management Coordinator	The individual responsible for coordinating waste management activities on behalf of waste generators, line managers, Facility Managers, Field Project Leaders, the Waste Management groups, and other Laboratory organizations. This individual also coordinates resolution of waste management issues on behalf of his/her waste-generating organization and reviews documents pertaining to the management of waste.
Waste Transporter	A worker who is trained and authorized to move explosive waste from a generator's facility to the open detonation unit in accordance with IPP525, <i>Hazardous Material (Hazmat) Packaging and Transportation</i> , DOE Explosives Safety Manual M440.1, and WFO-OS-ES-039, <i>Packaging and Transportation of Hazardous Materials</i> .
WMC SME	A Waste Management Coordinator who is also HE Qualified, and familiar with the Open Detonation Part A and Part B Permit Applications.

3.2 Abbreviations/Acronyms

Term	Description
ADC	Authorized Derivative Classifier
RCRA	Resource Conservation and Recovery Act (federal hazardous waste regulations)
SME	Subject Matter Expert
TSDF	Treatment, Storage, and Disposal Facility
WAC	Waste Acceptance Criteria
WMC	Waste Management Coordinator
WPF	Waste Profile Form
WS	Waste Services

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4.0 Waste Acceptance Criteria (WAC)

Number	Standard / Expectation
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3.1 Reactive and Detonable Materials

All wastes treated by routine open detonation at the TSDFs must meet the waste acceptance criteria in this document. Emergency response operations, as determined by EM&R, may involve materials which do not meet the waste acceptance criteria and which are not subject to the requirements of this document.

All wastes accepted for on-site treatment by open detonation must exhibit the characteristic of reactivity as defined in 40 CFR 261.23 and have the potential to detonate as defined in 40 CFR 265.382. Open detonation must be an acceptable treatment for the waste.

A material exhibits the characteristic of reactivity if it is capable of detonation or explosive reaction when subjected to a strong initiating source or heated under confinement, or is readily capable of detonation or explosive reaction at standard temperature and pressure. These materials are identified by the EPA hazardous waste number D003.

Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound.

3.2 Materials Acceptable for Treatment by Open Detonation

- Materials recognized as high explosives by listing in the DOE Explosives Safety Manual DOE M 440.1; designation as Class 1 materials in the DOT Hazardous Materials Table (49 CFR 172.101); listing in division/group documents; or identification as explosives in other government or industry publications. In addition, materials must meet the definition of detonable.
- Explosives contaminated materials, including the shipping containers/packages used for transport of the materials, originating from laboratory, prep room, and production activities, if the explosives are of sufficient quantity and in configurations (e.g. > failure diameter) that cause the waste stream to be detonable.
- Developmental energetic materials synthesized in HE laboratories which are known or suspected to meet the definition of detonable either through testing or chemical similarity to other known explosives.
- Explosive wastes containing depleted uranium (DU). Waste generators are responsible for coordinating transfers and disposal/discard of accountable quantities of material with their Nuclear Materials Custodians. DU is the only radioactive material accepted for treatment in the HE treatment process.
- Explosive wastes which are also CRD or SRD. Waste generators are responsible for coordinating transfers of CRD/SRD to the firing site and providing an ADC to witness the detonation.

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Number

Standard / Expectation

- 3.2**
cont.
- Wastes that carry hazardous waste numbers in addition to D003 Reactive-explosive. These numbers and their descriptions are on *Listing of EPA Hazardous Waste Numbers in OD Permits* (see Appendix A).
 - Solids or liquids, if open detonation is appropriate for treatment of the waste.

3.3 **Materials Not Acceptable for treatment by Open Detonation**

- Materials not identified by EPA hazardous waste number D003.
- Materials not meeting the definition of detonable in 40 CFR 265.382.
- Explosives contaminated industrial waste.
- Materials which carry additional hazardous waste numbers which are not listed in the OD permit application (see *Listing of EPA Hazardous Waste Numbers in OD Permits, Appendix A*).
- Materials containing beryllium.
- Materials containing radioactive materials other than depleted uranium.
- Materials containing perchlorate-based propellants or explosives.
- Materials not amenable to treatment by open detonation.

Waste generators who have materials that do not meet the waste acceptance criteria must complete and submit a *DE OD Waste Exception Form* in addition to a *Request for Treatment at a DE OD Unit* form.

3.4 **Generator Waste Characterization**

The waste generator must accurately characterize wastes using a Waste Profile Form (WPF), Form 1346, maintain acceptable knowledge documentation, and submit a copy of the applicable WPF with the request for treatment.

- The WPF must have been processed and reviewed by Waste Services (WS), have EPA waste codes assigned, and have activation/expiration dates.
- The waste generator and/or generating group must maintain acceptable knowledge documentation records conforming to the tenets of LIG404-00-02, *Acceptable Knowledge Guidance*, and make these records available to WS and WFO support personnel reviewing treatment request forms.

3.5 **Waste Packaging**

Waste packaging must meet the following criteria:

- Marked and packaged in accordance with DOE Explosives Safety Manual M 440.1
- Marked as radioactive if waste contains DU
- Marked appropriately if classified, for example as "CRD" or "SRD"
- No removable radioactive contamination on the exterior of the package, and dose rate on contact less than 0.5 mrem/hour

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Number Standard / Expectation

3.6 Site Treatment Limits

The maximum weight of waste which can be treated by open detonation at each site is established by the interim status permits.

- TA36-8 (Minie site): 2000 pounds per detonation and 15,000 pounds annually
- TA39-6 (Ancho Canyon): 1000 pounds per detonation and 15,000 pounds annually

5.0 Process

5.1 Characterize waste on a waste profile form

Step	Responsibility	Action
1	Waste Generator	Develop acceptable knowledge documentation (AK). Complete waste profile form (WPF) in consultation with waste management coordinator. Note: Waste profile form is Form 1346.
2	Waste Management Coordinator (WMC)	Submit WPF for processing, review, and activation. Note: A waste profile is "activated" when it is no longer "pending review" and has both activation and expiration dates assigned.

4.2 Submit request for treatment

Step	Responsibility	Action
1	Waste Generator	Consult with waste management coordinator to complete <i>Request for Treatment at a DE OD Unit</i> form.
2	WMC	Submit request for treatment and supporting documentation to WMC SME for review and processing. Submit <i>DE OD Waste Exception Form</i> if waste does not meet waste acceptance criteria

4.3 Process request for treatment

Step	Responsibility	Action
1	WMC SME	Review the request for compliance with waste acceptance criteria and supporting documentation requirements. Accepts or reject the request.
1a	WMC SME	Forward accepted requests to an HE Ops SME.
1b	WMC SME	Return rejected requests to the waste generator.

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Step	Responsibility	Action
2	HE Ops SME	Review the request for operational safety. Accept or reject the request. Note: Consider rejecting any waste which might jeopardize OD unit operations or the safety of site personnel.
2a	HE Ops SME	Forward accepted requests to the TA36-8 or TA39-6 firing site leader.
2b	HE Ops SME	Return rejected requests to the waste generator. Note: Work with the waste generator to identify alternative waste treatment and disposal options.
3	Firing site leader	Review the request for treatment to determine the explosives type, quantity, and configuration necessary to treat the waste materials. Note: Consider rejecting any waste which might jeopardize OD unit operations or the safety of site personnel.

4.4 Schedule waste treatment shot

Step	Responsibility	Action
1	Firing site leader or designee	Submit a Shot Request Form, 1/1 DX-SP.1, 5/0. Consult with the HE Operations Team on fire and noise mitigation requirements. Note: Shot request forms must not contain classified information.
2	Firing site leader or designee	Notify the waste generator and WMC of the date and time of the waste treatment shot.
3	Waste generator	Arrange for the transportation of the waste to firing site on the day of the shot.

4.5 Conduct waste treatment by open detonation

Step	Responsibility	Action
1	Waste generator	Coordinate transport of wastes to the firing site on day of scheduled shot. WMC may assist generator with scheduling and transport when requested. Note: Contact firing site leader to verify shot schedule before delivering any wastes to the site.

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Step	Responsibility	Action
8	ADC	If the waste was classified, examine any remaining materials to determine if they retain classified aspects.

Notes:

- Materials which retain classified aspects are treated by subsequent open detonations until classified aspects and reactive-explosive characteristics are removed.
- Reference the procedure *Sanitization of Classified Parts*, WFO-ASP-SB-0040.

4.6 Complete waste treatment and site records

Step	Responsibility	Action
1	Firing site leader or designee	On the form <i>Request for Waste Treatment at DE OD Unit</i> , enter the date treated, location, and shot number; then sign the form. Retain records of waste treatment activities and inspections at the OD units indefinitely pending RCRA closure and post-closure requirements. Maintain the completed form in the shot record file.
2	Firing site leader or designee	Enter the waste description, date treated, and shot number on the form <i>Interim Status TSD Operating Record</i> . Note: Waste description includes EPA Hazardous Waste Numbers, WPF number, weight, volume, and form.
3	Firing site leader or designee	Complete the <i>Hazardous and Mixed Waste Facility Inspection Record Form</i> . Note: The person who signs this form must be complete and current in Training Plan 256, <i>RCRA Hazardous/Mixed Waste Worker Training</i> .
4	ADC	If the wastes treated were also classified, sign the <i>Report of Sanitization of Classified Parts (OUO)</i> form prior to leaving the site. File the original report with the shot record at the firing site. Send a copy to the waste generator as verification. Note: This form is found in WFO-ASP-SB-0040, <i>Sanitization of Classified Parts</i> , Attachment 2 and is also available on the WFO Waste Services Team web page.

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6.0 Requirement and Reference Documents

6.1 Requirements Documents

Document Number	Document Title
40 CFR 260-280	Resource Conservation and Recovery Act (RCRA) Subtitle C (Federal hazardous waste regulations)
NMAC 20.4.1	New Mexico Administrative Code, Title 20, Chapter 4, Part 1, Hazardous Waste Management
EPA ID Number NM0890010515	LANL General Part A Permit Application (Interim Status)
None	LANL Part B Permit Application Technical Area 36 Open Detonation Unit
None	LANL Part B Permit Application Technical Area 39 Open Detonation Unit
DOE M 440.1	DOE Explosives Safety Manual
LIR404-00-02	General Waste Management Requirements
LIR404-00-03	Hazardous and Mixed Waste Requirements
ISD101-8	Explosive Safety Program
IPP525	Hazardous Material (Hazmat) Packaging and Transportation
WFO-ASP-SB-0040	Sanitization of Classified Parts
DX-PRO-012	DX Division Waste Management Procedure
WFO-OS-ES-050	General Safety at Firing Sites
WFO-OS-ES-030	General Firing Operations
WFO-OS-ES-039	Packaging and Transportation of Hazardous Materials
WFO-OS-ES-043	Preparation Room Operations/Explosive Charge Handling and Assembly
HX3-PRO-GM-1049	K-1 Site Specific
DE6-SOP-OP-0017	TA-39 Firing Operations

6.2 Reference Documents

Document Number	Document Title
WFO-OS-ES-034	Allowed Energetic Material List in FD-7
49 CFR 172.101	DOT Hazardous Materials Table

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Document Number	Document Title
IWD-WFO-99-999-999-0005	On-site (Behind the Fence) Transportation of Explosives
IWD-DE6-36-008-FP-0003	Routine Firing Operations at TA-36-8 (Minie)
IWD-DE9-39-999-999-0001	Routine Firing Operations at TA-39
IWD-DE9-39-999-999-0003	Charge Handling and Preparation Operations at TA-39

7.0 Records

The following records are initiated, processed, or completed within this procedure.

Record

Waste Profile Form, Form 1346
Request for Waste Treatment at DE OD Unit
DE OD Waste Exception Form
Interim Status TSD Operating Record
Hazardous and Mixed Waste Facility Inspection Record Form
Report of Sanitization of Classified Parts (OUO)

8.0 Appendices

Appendix	Title
A	Listing of EPA Hazardous Waste Numbers in OD Permits

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Appendix A – Listing of EPA Hazardous Waste Numbers in OD Permits

All wastes treated on-site by open detonation must be characterized by EPA Hazardous Waste Number D003 Reactive-explosive. In addition the wastes may be characterized by one or more of the waste codes listed.

EPA Hazardous Waste Number	Name of Characteristic or Constituent	RCRA Regulatory Limit
D001	Ignitable	Flash point <140° F. DOT 5.1 oxidizer EPA ignitable solid
D005	Barium	100 mg/L TCLP
D006	Cadmium	1 mg/L TCLP
D007	Chromium	5 mg/L TCLP
D008	Lead	5 mg/L TCLP
D009	Mercury	0.2 mg/L TCLP
D011	Silver	5.0 mg/L TCLP
D018	Benzene	0.5 mg/L TCLP
D022	Chloroform	6.0 mg/L TCLP
D028	1,2-Dichloroethane	0.5 mg/L TCLP
D029	1,2-Dichloroethylene	0.7 mg/L TCLP
D030	2,4-Dinitrotoluene	0.13 mg/L TCLP*
D035	Methyl ethyl ketone (2-butanone)	200 mg/L TCLP
D040	Trichloroethylene	0.5 mg/L TCLP
F001	Spent halogenated solvents used in degreasing: Carbon tetrachloride; methylene chloride (dichloromethane); tetrachloroethylene; 1,1,1-trichloroethane; trichloroethylene; chlorinated fluorocarbons (CFCs)	No de minimis Includes discarded wet or dry swabs, wipes, rags, etc. containing spent solvent
F002	Spent halogenated solvents (used for other than degreasing): Chlorobenzene; ortho-dichlorobenzene; methylene chloride (dichloromethane); Tetrachloroethylene; trichloroethylene; 1,1,1-trichloroethane; 1,1,2-trichloroethane; 1,1,2-trichloro-1,2,2-trifluoroethane; trichlorofluoromethane;	No de minimis Includes discarded wet or dry swabs, wipes, rags, etc. containing spent solvent
F003	Spent non-halogenated solvents: Acetone; n-butyl alcohol; cyclohexanone; ethyl acetate; ethyl benzene; ethyl ether; methanol; methyl isobutyl ketone; and xylene.	No de minimis Does not include swabs, wipes, rags, etc. used to dryness prior to discard
F004	Spent non-halogenated solvents: Cresols; cresylic acid; nitrobenzene	No de minimis Includes discarded wet or dry swabs, wipes, rags, etc. containing spent solvent
F005	Spent non-halogenated solvents: Benzene; carbon disulfide; 2-ethoxyethanol; isobutanol; methyl ethyl ketone; 2-nitropropane; pyridine; and toluene	No de minimis Includes discarded wet or dry swabs, wipes, rags, etc. containing spent solvent