

Umatilla Chemical Depot
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UMATILLA CHEMICAL DEPOT WASTE ANALYSIS PLAN

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TABLE OF CONTENTS

1.0	FACILITY DESCRIPTION	1
2.0	HAZARDOUS WASTE GENERATION	2
3.0	HAZARDOUS WASTE DETERMINATION.....	5
	3.1. Flowchart	5
	3.2. Listed Wastes	8
	3.3. Characteristic Waste	8
	3.3.1. Ignitibility	8
	3.3.2. Corrosivity	9
	3.3.3. Reactivity	9
	3.3.4. Toxicity	9
	3.4. Generator Knowledge	10
	3.5. Sampling	10
	3.5.1. Sampling Frequency	12
4.0	HAZARDOUS WASTE MANAGEMENT	12
5.0	AGENT-FREE CRITERIA	13
6.0	REFERENCES.....	14

TABLES

Table 1. UMCD Hazardous Material Inventory	3
Table 2. Waste Characterization Methodology.....	10
Table 3. Sampling Equipment.....	11
Table 4. Sample Containers, Preservation Methods, and Holding Times.....	11
Table 5. Sampling Frequency	11
Table 6. Hazardous Waste Streams and Storage Areas	12
Table 7. Agent-Free Criteria	13

FIGURES

Figure 1. Waste Determination Process for Agent-Exposed Equipment	6
Figure 2. Agent-Free Determination Process for Agent-Related Waste	7

APPENDICES

Appendix A. Laboratory Analytical Procedures	15
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ACRONYMS

ASTM	American Society for Testing and Materials
BRAC	Base Realignment and Closure
CFR	Code of Federal Regulations
COLIWASA	Composite Liquid Waste Sampler
Cyl	Cylinder
DEQ	Oregon Department of Environmental Quality
DRMO	Defense Reutilization and Marketing Office
EPA	Environmental Protection Agency
FOUO	For Official Use Only
IRM	Industrial Risk Management Directorate
°F	Degrees Fahrenheit
Gal	Gallon
HWDP	Hazardous Waste Determination Plan
L	Liter
P	Pounds
T	Tons
MSDS	Material Safety Data Sheet
ml	Milliliter
N/A	Not Applicable
OAR	Oregon Administrative Rule
PCC	Permit Compliance Concentrations
PPE	Personal Protective Equipment
RCRA	Resource, Conservation and Recovery Act
RTM	Real Time Monitoring
SOP	Standard Operating Procedure
SW-846	EPA "Test Methods for Evaluating Solid Waste"
TCLP	Toxicity Characteristic Leaching Procedure
UMCD	Umatilla Chemical Depot
UMCDF	Umatilla Chemical Agent Disposal Facility
WAP	Waste Analysis Plan
WIL	Water-Immiscible Liquid
WIS	Water-Insoluble Solid
WML	Water-Miscible Liquid
WSS	Water-Soluble Solid

WASTE ANALYSIS PLAN

This Waste Analysis Plan (WAP), which may also be referred to as a Hazardous Waste Determination Plan (HWDP), identifies the waste streams that may be generated at Umatilla Chemical Depot (UMCD) and the procedures UMCD will follow to determine whether solid wastes are hazardous wastes. In effect, the WAP delineates the parameters that will be determined for waste storage at the UMCD prior to incineration at the Umatilla Chemical Agent Disposal Facility (UMCDF) or other waste treatment and facilities.

This WAP has been prepared consistent with:

- Title 40 of the Code of Federal Regulations Part 264.13 (40 CFR 264.13)
- Oregon Administrative Rule (OAR 340-104-0001)
- Directive from Oregon Department of Environmental Quality (DEQ) staff specifying that this plan at a minimum contain details of the following:
 - a. a description of the solid wastes currently generated
 - b. the processes that generate those solid wastes
 - c. the approximate quantities of solid waste generated
 - d. the frequency of generation
 - e. whether or not the solid wastes are hazardous
 - f. how these solid wastes are managed and disposed
 - g. the U. S. Environmental Protection Agency (US EPA) hazardous waste numbers for each solid waste

1.0 FACILITY DESCRIPTION

The UMCD is a U.S. Army installation located in north central Oregon on the border of Morrow and Umatilla Counties, approximately ten miles east of the City of Hermiston, Oregon. Situated on 19,729 acres, the UMCD has been in operation since the early 1940s. Historic operations at the UMCD have included:

- Storage and processing of vehicles, quartermaster supplies, small arms ammunition, and munition components
- Storage of conventional and chemical weapons
- Renovation and demilitarization of ammunition

In 1988, the Defense Secretary's Report on Base Realignment and Closure (BRAC) recommended the realignment of the UMCD. By October of 1995, the UMCD's realignment was complete and the operations conducted at the UMCD were significantly reduced. Currently, the remaining missions at the UMCD include:

1. Chemical munitions storage involves:
 - Safe, secure storage of on-site chemical munitions;
 - Transfer of chemical munitions to the UMCDF for demilitarization;
 - Storage and/or disposal of any agent-related secondary wastes; and
 - Closure of storage facilities upon completion of demilitarization operations.

Once all stored munitions are processed for destruction, the UMCD can proceed to close its storage facilities. The Resource Conservation and Recovery Act (RCRA) will regulate many of UMCD's closure steps involving decommissioning of facilities, any required decontamination of hazardous materials, and disposal of secondary wastes.

2. Support to chemical demilitarization involves the UMCD's assistance in:
 - The safe, cost-effective destruction of the UMCD stockpile;
 - Compliance with the Chemical Weapons Convention International Treaty;
 - Permanent closure of the Umatilla Chemical Agent Disposal Facility upon completion of operations; and
 - Compliance with all applicable environmental, safety, and public health regulations.

Once all munitions are destroyed, the chemical demilitarization facility will be decommissioned. RCRA will guide any required equipment decontamination and regulated closure.

3. Environmental management involves:
 - Compliance with applicable environmental regulations;
 - Reduction in human and ecological environmental risks posed by historical contamination;
 - Prevention of further pollution via waste minimization practices;
 - Conservation of natural and cultural resources; and
 - Preparation of environmental resources for closure and ultimate transfer.

2.0 HAZARDOUS WASTE GENERATION

There are several different processes at the UMCD that may generate hazardous wastes. Table 1 includes the generation processes, quantities generated, EPA waste codes, and management options for potential waste streams at the UMCD. Certain processes at the UMCD generate waste on a regular basis, while others operate periodically and, therefore, generate wastes sporadically. Typical generating processes at the UMCD include, but are not limited to:

- Facility and vehicle maintenance
- Chemical munitions storage
- Decontamination (decon) operations
- Administration and security operations

TABLE 1. UMCD HAZARDOUS MATERIAL INVENTORY

Potential Waste Stream	Physical State(s)	Generating Process	Operation	Annual Est. Qty Generated (pounds)	Hazards	EPA Waste Code(s)	Management Options
Enamel Paints	Liquid	Facility maintenance	Painting	500	Ignitable Toxic	D001, D035	Off-site disposal
Acetic Acid	Liquid	Chemical munitions storage	Chlorine content analysis	100	Corrosive	D002	Off-site disposal
Acetone	Liquid	Facility maintenance	RTM maintenance analysis	100	Ignitable	D001, U002	Off-site disposal
Calcium Hypochlorite (HTH)	Solid	Decon operations	Decon	100	Ignitable	D002	Off-site disposal
Chloroform	Liquid	Chemical munitions storage	Toxic chemical analysis	50	Toxic	U044, D022	Off-site disposal
Munitions and Bulk Items (GB, VX, HD)	Liquid Solid	Chemical munitions storage	N/A	N/A	Reactive Toxic	D003, D004-D011, D022, D030, D034, D039, D040, D043, P998, P999	Demilitarization
Nonmunitions Agent-Related Waste Generated from Normal Chemical Laboratory Operations	Solid	Chemical laboratory operations	Extraction and analysis	1,000	Ignitable Corrosive	F998, F999	Demilitarization Off-site disposal
	Liquid					D001, D002 F998, F999	Demilitarization Off-site disposal
Hydrochloric Acid Muriatic Acid	Liquid	Chemical munitions storage	Glassware cleaning	100	Corrosive	D002 F998, F999	Demilitarization Off-site disposal
Isopropyl Alcohol	Liquid	Chemical munitions storage	RTM maintenance analysis	100	Ignitable	D001 F998, F999	Demilitarization Off-site disposal

TABLE 1. UMCD HAZARDOUS MATERIAL INVENTORY

Potential Waste Stream	Physical State(s)	Generating Process	Operation	Annual Est. Qty Generated (pounds)	Hazards	EPA Waste Code(s)	Management Options
Nonmunitions Agent-Related Waste (HD, GB, VX)	Solid	Chemical munitions storage decontamination laboratory analysis segregation	Response to leaking munitions waste segregation	1,000	Ignitable Corrosive Toxic	F998, F999	Demilitarization Off-site disposal
	Liquid					D001, D002, D004-D011, D022, D028, D034, D039, D040, D043, F002, F003, F005 F998, F999	Demilitarization Off-site disposal
Dry-cell Batteries	Solid	Facility maintenance	Powering portable equipment	2,000	Reactive Corrosive Toxic	D002, D006, D008, D009	Recycle off -site
Mask Filter Cartridges	Solid	Chemical munitions storage	Personal protective equipment	5,000	Toxic	D007, D011	Off-site disposal
Hexane	Liquid	Chemical munitions storage	Toxic chemical analysis	50	Ignitable	D001	Off-site disposal
Paint Thinner	Liquid	Facility maintenance	Paint solvent	100	Ignitable Toxic	D001, D018	Off-site disposal
Lead-Acid Batteries	Liquid	Vehicle maintenance	Vehicle maintenance	10,000	Corrosive Toxic	D002, D008	Recycle off -site
Sodium Hypochlorite Solution 3.23%	Liquid	Decon operations	Expired shelf-life	50	Corrosive	D002	Off-site disposal
Sodium Hydroxide	Solid	Chemical munitions operations	Webster's reagent	50	Corrosive	D002	Off-site disposal
Sulfuric Acid	Liquid	Chemical munitions operations	Chlorine content analysis	100	Corrosive	D002	Off-site disposal
Starting Fluid	Liquid	Vehicle maintenance	Starting fluid	50	Ignitable	D001	Off-site disposal
Mercury Containing Lighting Wastes (Universal Waste)	Solid	Facility maintenance	Lighting	500	Toxic	D009	Recycle off -site

3.0 HAZARDOUS WASTE DETERMINATION

Under both federal and state regulation, anyone who generates a solid waste must determine if that waste is a hazardous waste using a systematic method. The UMCD will conduct hazardous waste determinations in accordance with Oregon Administrative Rule 340-102-0011, which replaces the requirements of 40 CFR 262.11.

3.1. Flowchart

Flowcharts showing the waste determination process for agent-exposed nonmunitions, agent-related personal protective equipment, tools, and miscellaneous equipment have been included as Figure 1. Figure 2 shows the agent-free waste determination process for agent-related waste.

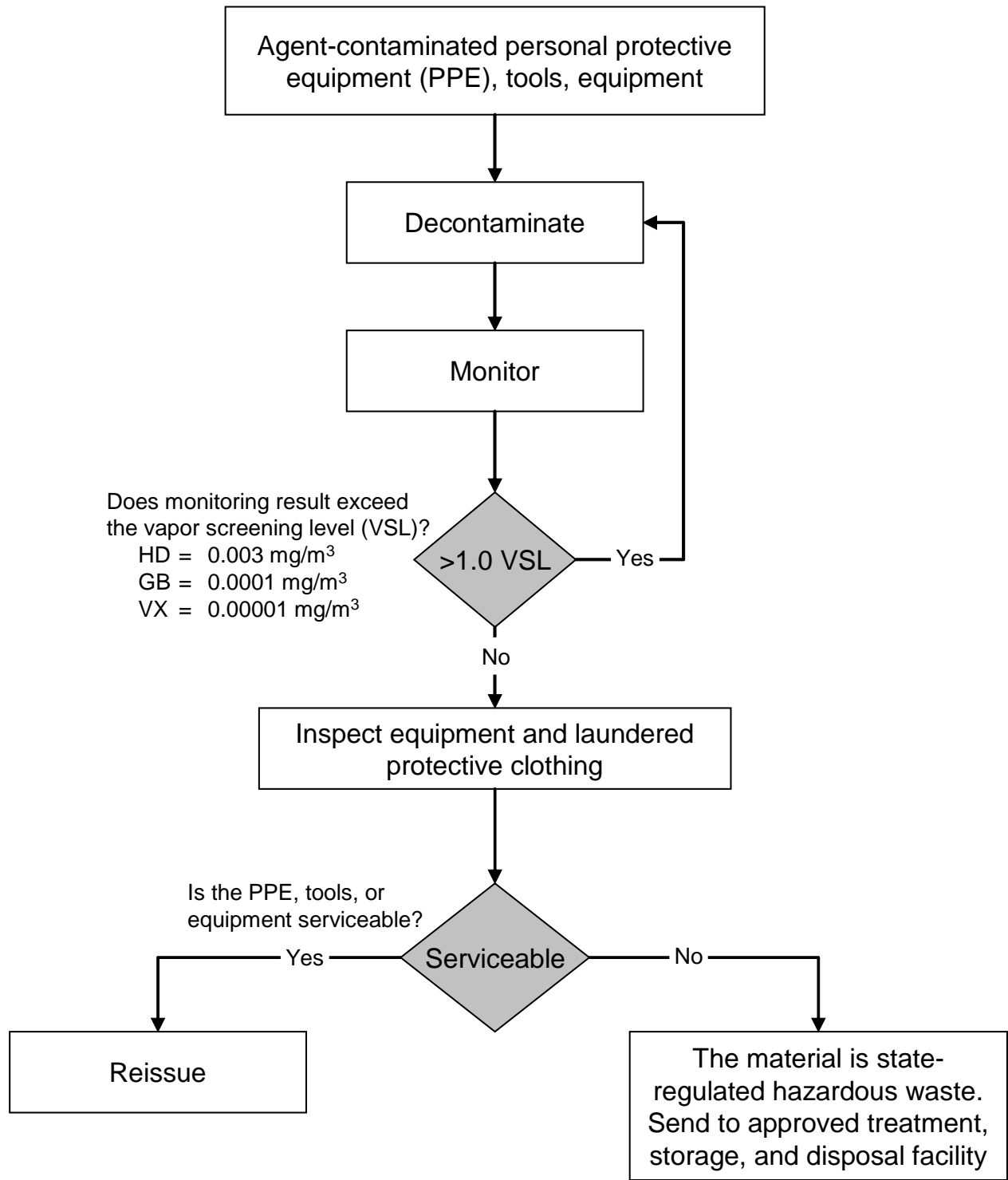


FIGURE 1. WASTE DETERMINATION PROCESS FOR AGENT-EXPOSED EQUIPMENT

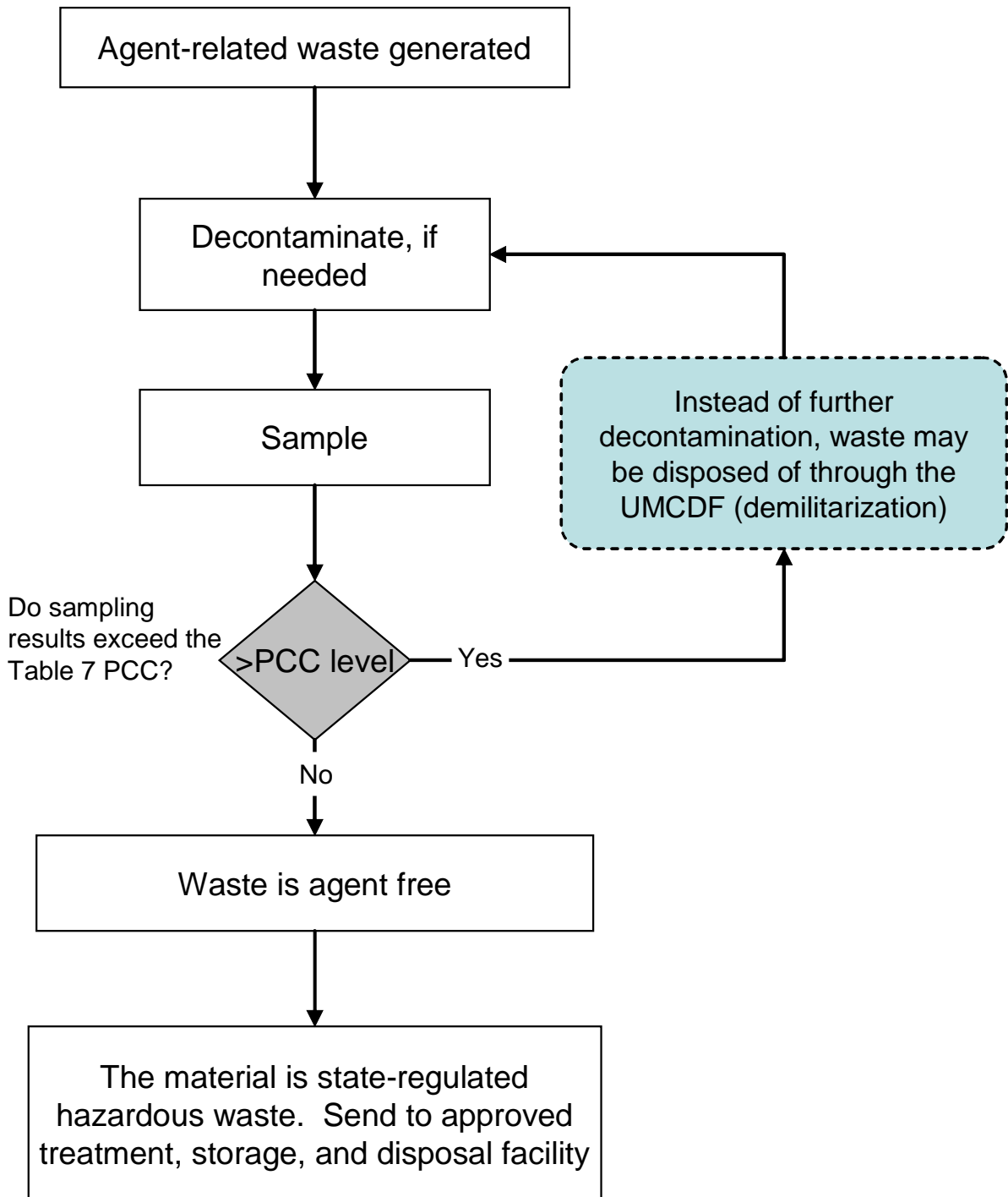


FIGURE 2. AGENT-FREE DETERMINATION PROCESS FOR AGENT-RELATED WASTE

3.2. Listed Wastes

Once a material has been determined to be a solid waste, the first step in determining whether or not it is hazardous is to check the listing of regulated wastes in 40 CFR 261.30 Subpart D. There are four separate lists included in Subpart D. All four lists should be checked:

- “U” list wastes – systemically toxic wastes (40 CFR 261.33[f])
- “P” list wastes – acutely hazardous wastes (40 CFR 261.33[e])
- “K” list wastes – specific source process wastes (40 CFR 261.32)
- “F” list wastes – nonspecific source process wastes (40 CFR 261.31)

OAR 340-102-0011 lists the following Oregon state-only waste codes:

- P998 – Blister agents (such as Mustard agent)
- P999 – Nerve agents (such as GB [Sarin] and VX)
- F998 – Residues from demilitarization, treatment, and testing of blister agents (such as Mustard agent)
- F999 - Residues from demilitarization, treatment, and testing of nerve agents (such as GB (Sarin) and VX)

3.3. Characteristic Waste

If the waste material is not listed under the criteria in Section 3.2 of regulated hazardous wastes, it must then be evaluated for hazardous waste characteristics listed under 40 CFR 261.20 Subpart C, which include:

- ignitibility
- corrosivity
- reactivity
- toxicity

3.3.1. Ignitibility

Ignitable wastes are those capable of causing or intensifying a fire during routine handling. A waste is considered ignitable if it is:

- a liquid (other than an aqueous solution containing less than 24% alcohol by volume) with a flash point of less than 140 degrees Fahrenheit (°F)
- a nonliquid capable, under standard temperature and pressure, of causing a fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited, burns vigorously and persistently
- an ignitable compressed gas as defined in 49 CFR 173.300
- an oxidizer as defined in 49 CFR 173.127

To test a waste for ignitibility, the test methods specified in Subpart C of 40 CFR 261.21, EPA Publication SW-846, or equivalent methods approved by DEQ under OAR 340-100-0021 shall be followed.

3.3.2. Corrosivity

Corrosive wastes are those capable of corroding metal containers and are typically highly acidic or highly alkaline. A waste is considered corrosive if it is:

- an aqueous waste with a pH less than or equal to 2 or greater than or equal to 12.5
- a liquid that corrodes steel at a rate greater than 6.35 millimeters (0.25 inches) per year at a test temperature of 130°F

To test a waste for corrosivity, the test methods specified in Subpart C of 40 CFR 261.21, EPA Publication SW-846, or equivalent methods approved by DEQ under OAR 340-100-0021 shall be followed.

3.3.3. Reactivity

Reactive wastes are those that are particularly unstable and likely to explode or react violently during transportation, storage, or disposal. A waste is considered reactive if it:

- is normally unstable and readily undergoes violent change without detonating
- reacts violently with water
- generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health and the environment when mixed with water
- is cyanide- or sulfide-bearing and, 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 and the environment
- is capable of detonation or explosive reaction if it is subjected to a strong initiating source (impact) or if heated under confinement
- is a forbidden explosive as defined by 49 CFR 173.51, or a Class A explosive as defined by 49 CFR 173.53, or a Class B explosive as defined by 49 CFR 173.88

To test a waste for reactivity, the test methods specified in Subpart C of 40 CFR 261.21, EPA Publication SW-846, or equivalent methods approved by DEQ under OAR 340-100-0021 shall be followed.

3.3.4. Toxicity

A solid waste is considered hazardous if it exhibits the characteristics of toxicity as defined in 40 CFR 261.24. The test method for determining toxicity is the Toxicity Characteristic Leaching Procedure (TCLP), Test Method 1311 in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846. The solid waste exhibits the characteristics of toxicity if the extract from a representative sample of the waste contains any of the contaminants listed at a concentration equal or greater than the respective value given in the Table "Maximum Concentration of Contaminants for the Toxicity Characteristics" to be found in 40 CFR Part 261. TCLP testing is required before land disposal of a hazardous waste.

3.4. Generator Knowledge

Waste generators are required to use their knowledge of the process that produces a waste material to determine if the process or the raw materials might cause the waste to be classified as hazardous. Material safety data sheets (MSDS), results from previous analysis from a waste stream, and process knowledge are used to make waste determinations where specific analytical results are not available. Because the Army is the manufacturer and generator of chemical agents, it intends to use engineering judgment and knowledge to characterize most of the chemical-agent waste in the UMCD storage areas.

3.5. Sampling

If no information is available to identify the waste material as hazardous, it will be necessary to sample the waste and have it analyzed by a certified laboratory. The wastes should be sampled and analyzed consistent with the methods identified in 40 CFR 261 or SW-846. Table 2 lists various test parameters and the rationale for selecting each, and should be used to characterize an unknown waste. Wastes generated during closure activities must be analyzed in accordance with the methods contained in Appendix A to this WAP as specified in Table 26 of Attachment 6 (UMCD Partial Closure Plan). The results of these analyses should provide sufficient information to determine how to properly manage and dispose of each waste.

These test methods were chosen from the American Society for Testing and Materials (ASTM) compendium of test methods, SW-846; standard operating procedures (SOPs) of the Army; and Permit Attachment 6. UMCD personnel or their contractors are responsible for the collection of samples for subsequent analysis by a certified laboratory as required by the US EPA and the State of Oregon.

TABLE 2. WASTE CHARACTERIZATION METHODOLOGY

Parameter	Method	Rationale
pH	US EPA SW-846 Method 9040	Determine corrosivity
Flash Point	SW846 Method 1010 or SW846 Method 1020A	Determine ignitibility
Free Liquids	Visual or US EPA SW-846 Method 9050A	Determine if free liquids are present in solid waste
Total Metals Content	US EPA SW-846 Methods 7131, 7191, 7421, 7470A, 7471A, and 6010B.	Determine metals toxicity
TCLP	US EPA SW-846 Method 1311	Determine leachability
Specific Gravity	ASTM D 5057	Determine specific gravity
Water Content	US EPA 600/4-79-020	Determine waste content
Fuel Value	ASTM D 5468	Determine recyclability of waste
VOCs	US EPA SW-846 Method 8260B	Determine organics toxicity
Chemical Agent HD (Mustard)	Process Knowledge UMCD SOP UM-0000-M-559	Determine if Mustard is present in solids or liquids
Chemical Agent GB	Process Knowledge UMCD SOP UM-0000-M-559	Determine if Chemical Agent is present in solids or liquids
Chemical Agent VX	Process Knowledge UMCD SOP UM-0000-M-559	Determine if Chemical Agent is present in solids or liquids
Halogenated VOCs	US EPA SW-846 Method 8010B	Determine organics toxicity
Pesticides	US EPA SW-846 Method 8140	Determine organics toxicity
Cyanide	US EPA 600/4-79-020 Method 335.2	Determine reactivity
Explosives	US EPA Method 8330 or 8321A	Determine concentration of explosives present in solids or liquids. Determine total secondary explosives concentration for reactivity.
Semivolatile Organics	SW846 Method 8270C	Determine organics toxicity

If sampling is required, it shall be performed using the equipment and procedures shown in Table 3. All of the sampling methods shown are consistent with “Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods,” SW-846. Personal protective equipment (PPE) (gloves, splash shields, respirators, etc.) specific to the waste being sampled shall be worn during sampling activities. The Industrial Risk Management Directorate (IRMD) will determine the level of adequate PPE.

TABLE 3. SAMPLING EQUIPMENT

Waste	Equipment	Method
Large Containers of Liquids	Composite Liquid Waste Sampler (COLIWASA)	US EPA SW-846 Method 3.2
Solids and Semisolids	Stainless Steel Scoop	US EPA SW-846 Method 3.2
Small Containers of Liquids	Pipette	US EPA SW-846 Method 3.2

The contractor that will conduct sampling will furnish, transport, and ship sample containers per DEQ, US EPA, and DOT regulations and guidance. The sampling container shall be compatible to the waste being identified. Sample container, preservation method, and holding times for various waste parameters are identified in Table 4. If a number of containers of the same waste need to be analyzed, samples will be randomly collected at the frequencies shown in Table 5.

TABLE 4. SAMPLE CONTAINERS, PRESERVATION METHODS, AND HOLDING TIMES

Parameter	Container	Preservation	Holding Time	
			Extraction	Analysis
SOLIDS				
Total Solids	1 x 4 oz glass	Cool 4° C	N/A	28 Days
Metals	1 x 4 oz glass	Cool 4° C	N/A	180 days (mercury 28 days)
VOCs	2 x 4 oz Glass, Teflon Septa, no headspace	Cool 4° C	N/A	14 days
Mustard Agent	Polyethylene bag	Cool 4° C	7 days	24 hrs
TCLP Pesticides, SVOCs	1 x 16 oz glass	Cool 4° C	14 days	40 days
Cyanide	1 x 4 oz glass	Cool 4° C	N/A	14 days
Explosives	Polyethylene bag	Cool 4° C	14 days	40 days
LIQUIDS				
Metals	1-L plastic	Cool 4° C HNO ₃ to pH<2	N/A	180 days (mercury 28 days)
VOCs	3 x 40 mL glass, Septa vial, no headspace	Cool 4° C HCl or NaHSO ₄ to pH<2	N/A	14 days
Pesticides, SVOCs	1-L amber glass	Cool 4° C	7 days	40 days
Cyanide	1-L plastic	10 M. NaOH, pH>12 Cool 4° C		14 days
Explosives	1-L Amber Glass	Cool 4° C	7 days	40 days

TABLE 5. SAMPLING FREQUENCY

Number of Containers	Number of Containers to Be Sampled
2 to 8	1
9 to 25	2
26 to 50	3
51 to 90	5
91 to 150	8

All sample containers shall be clearly labeled and contain the following information:

- name of waste
- source of the waste (building number, location, etc.)
- process that generated the waste
- a unique sample number
- name of the person performing the sample
- time and date of sampling

The sampling contractor will package the samples for shipment to the contract laboratory, fill out a chain-of custody report, and determine the required analyses.

3.5.1. Sampling Frequency

Initial characterization is required to determine if the waste exhibits any of the characteristics as specified in Part 261, Subpart C. After the waste has been determined to be a characteristic waste, sampling and analysis will only be required when a new material is introduced in the process that generates the waste or when the process itself is modified as necessary. Should such a change occur, the waste would be resampled, reanalyzed, and reclassified accordingly. If the generating process does not change, the waste will be recharacterized annually using generator knowledge or laboratory analyses to ensure the characterization is accurate and up to date. Characterization samples shall be collected from one drum from each waste stream selected randomly. Generators at the UMCD are required to certify the contents of each container. All unlabeled or undocumented hazardous wastes must be analyzed as unknowns. Also, if a discrepancy in the documentation is noted or there is some question as to the container integrity, a laboratory analysis will be obtained.

4.0 HAZARDOUS WASTE MANAGEMENT

Any wastes determined to be hazardous will be managed consistent with state and federal regulations. Wastes will be stored in containers that are compatible with that waste stream and managed for less than 90-days or in permitted storage areas. Storage areas and waste streams are identified in Table 6 below.

TABLE 6. HAZARDOUS WASTE STREAMS AND STORAGE AREAS

Facility	Function	Waste Streams
Building 5	Satellite accumulation point	Motor pool-related wastes: i.e. used oil, antifreeze, transmission fluid, hydraulic fluid, cleaning agents
Building 5	Satellite accumulation point	Paints, paint thinner, lubricants and lubricating fluids, adhesives and sealants, solvents
Building 7	Satellite accumulation point	Carpenter shop-related waste
Building 11	Satellite accumulation point	dry cell batteries and unused carbon filters
Building 31 (outside SW corner)	90-day storage area	90-day storage area for wastes generated at UMCD
Building 203	Hazardous waste storage facility	Nonagent-related hazardous waste storage facility for UMCD
Building 656	90-day storage area	Chemical protective equipment, mask filters, ink and aerosol paint
Pier 37	90-day storage area	Laboratory waste: K-Block agent-related decontamination waste, agent related lab waste (i.e., agent standards, glassware, PPE, etc.) and nonagent-related lab waste (i.e., glassware, solvents, acids,

TABLE 6. HAZARDOUS WASTE STREAMS AND STORAGE AREAS

Facility	Function	Waste Streams
		plastics, etc.)
Designated I-Block Igloos*	Bulk chemical agent	Agent
Designated K-Block Igloos*	Chemical agent munitions	Agent, leaking agent-filled munitions
Designated J-Block Igloos*	Agent-related waste storage	Agent-contaminated waste (i.e., PPE, dunnage, spent decon, lab waste

* See RCRA Permit (FOUO version) for Individual Igloo Designation

5.0 AGENT-FREE CRITERIA

In accordance with Permit Conditions I.A.I and II.C.4, waste must be agent free prior to shipping off-site for disposal. Samples will be considered agent free if they are below the permit compliance concentration (PCC) identified in Table 7. Analytical results will be recorded as concentration in unit of parts per billion (ppb). Analytical results will be recorded with decimal places truncated; rounding will not occur.

The sample matrix determination will be made in accordance with UMCDF SOP UM-0000-M-559, "Agent Extraction and Analysis." If the process stream is not listed, the matrix that the sample most resembles will be used (e.g., soils fall under the water-insoluble solid matrix). Sample analysis will be conducted by the UMCDF or their subcontractor. Sampling frequencies for agent-free determination for each waste stream will be per Table 5.

TABLE 7. AGENT-FREE CRITERIA

Waste Stream		Matrix Type	GB PCCs (ppb)	VX PCCs (ppb)	HD PCCs (ppb)
Nonmunitions agent-related waste generated from normal chemical laboratory operations	Liquid	WML	13	8	127
	Solid	WIS	16	13	152
Nonmunitions agent-related waste (GB, VX, HD)	Liquid	WIL	16	15	177
		WML	13	8	127
	Solid	WIS WSS	16	13	152
Hydrochloric acid/muriatic acid	Liquid	WML	13	8	127
Isopropyl alcohol					

WIL Water-Immiscible Liquid
 WIS Water-Insoluble Solid
 WML Water-Miscible Liquid
 WSS Water-Soluble Solid

6.0 REFERENCES

Code of Federal Regulations Title 40. Parts 260 through 264

Oregon Administrative Rules

Oregon Department of Environmental Quality, Hazardous Waste Permit, Umatilla Chemical Depot, EPA ID Number OR6213820917

Hawley, Gessner G. The Condensed Chemical Dictionary, Ninth Edition Van Nostrand Reinhold Company. New York, New York. 1977

Sittig, Marshall. Handbook of Toxic and Hazardous Chemicals and Carcinogens, Second Edition. Noyes Publications, Park Ridge, New Jersey. 1985

Verschueren, Karel. Handbook of Environmental Data on Organic Chemicals, Van Nostrand Reinhold Company, New York, New York 1977

APPENDIX A. LABORATORY ANALYTICAL PROCEDURES
 [40 CFR 270.31; OARs 340-102-0011, 340-100-0021]

The following laboratory documents are provided electronically on the compact disc (CD) attached to and made a part of this appendix.

Document #	Title	Version
TAP-01-0403-003	Method 8270 Analysis of Semivolatile Organic Compounds by Combined Gas Chromatography/Mass Spectrometry (GC/MS)	Rev. 7 03/18/11
TAP-01-0404-043	Methods 8260 and 8260-Modified Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)	Rev. 3 12/07/11
TAP-01-0405-010	Determination of Chlorinated Pesticides and PCBs by GC/ECD	Rev. 6 08/19/11
TAP-01-0405-011	Methods 8150, 8050A/B, 8151, or 8151A Determination of Chlorophenoxy Herbicides by GC/ECD	Rev. 4 08/19/11
TAP-01-0405-039	EPA Method 8015B Nonhalogenated Organics Analysis by GC-FID	Rev. 0 08/19/11
TAP-01-0406-046	SW-846 Method 6020 and 6020A Inductively Coupled Plasma-Mass Spectrometry Analysis	Rev. 15 09/07/11
TAP-01-0406-047	Method 7471A Mercury in Solid or Semisolid Waste (Manual Cold-Vapor Technique)	Rev. 10 08/17/11
TAP-01-0408-019	Nitroaromatics, Nitroamines, and Specialty Nitrates (Ordnance) Analysis by High-Performance Liquid Chromatography	Rev. 5 08/15/11
TAP-01-0605-075	Analysis of Solid and Wipe Samples for GB, VX, and HD	Rev. 8 03/09/12
TAP-01-0605-091	LCMS Analysis of Soil, Concrete, Liquid (Rinsate), and Wipe Samples for VX	Rev. 3 03/09/12
TAP-01-0605-094	LCMS Analysis of Wipe, Soil/Solid, and Liquid (Rinsate) Samples for MPA, EMPA, DIMP, DMMP, TDG, IMPA, and EA-2192	Rev. 6 03/09/12

DAAMS = Depot Area Air Monitoring System
 LCMS = Liquid Chromatography/Mass Spectrometry
 SwRI = Southwest Research Institute, San Antonio
 TAP = SwRI Test/Analytical Procedure

ELECTRONIC VERSIONS OF APPENDIX A LABORATORY DOCUMENTS

(CD)