# Romic Environmental Technologies Corp.
# CAD 009 452 657

# East Palo Alto, California
# TSD Facility

# Attachment C to Closure Plan

# Site Security and Emergency Preparedness

**Site Security and Emergency Preparedness**

## 1.0 Purpose

This Plan describes the activities Romic will implement during closure which are designed to:

- Prevent unknowing and/or unauthorized entry into former facility active areas
- Prevent threats to human health or the environment that may arise from deterioration or damage to facility equipment or structures
- Detect and address such deterioration or damage if it occurs

## 2.0 Emergency Contact Information

| | | | |
|---|---|---|---|
| On Site Security Group | (510) 377-2733 | | |
| East Palo Alto, CA - Police Department | (650) 853-3160 | or | 911 |
| Menlo Park, CA - Fire Department | (650) 688-8400 | or | 911 |
| Stanford Hospital | (650) 723-4000 | | |

Directions to Stanford Hospital
1. Start out going SW on Bay Rd toward Pulgas Av. - 0.6 mi
2. Turn left onto University Av / CA-109 S. Continue to follow University Av. – 2.8 mi
3. University Av. becomes Palm Dr. - 0.3 mi
4. Turn Right onto Arboretum Rd. - 0.5 mi
5. Turn Left onto Sand Hill Rd. - 0.6 mi
6. Turn Left onto Pasteur Dr. - 0.3 mi
7. End at Stanford Hospital - 300 Pasteur Dr # L217 Stanford, CA 94305

Estimated Time: 15 minutes Estimated Distance: 5.1 miles

## 3.0 Site Security

Romic will provide 24 hr a day, 7 days a week, 365 days a year on site security. Unless otherwise noted, all of the below measures will be maintained until certification of facility closure.

### 3.1 Physical Security Measures

The Romic facility is surrounded by an 8 ft. high chain link fence topped with three separate braids of barbed wire. All of the facility perimeter gates are continuously locked, with the exception of the main facility gate located at 2081 Bay Road.

The main facility gate is motorized and is controlled by remote action. It is also continuously closed and locked, with the exception of opening and closing to allow ingress or egress. The main facility gate is monitored by a video camera and can be opened from within the offices of the facility or at the gate using handheld remote devices.

Romic has posted warning signs at each approach to the facility. These signs are legible from 25 feet away and display the following message:

**Caution**
**Hazardous Waste Area**
**Unauthorized Personnel Keep Out**

### 3.2 Non-physical Security Measures

It is understood that the facility will not be left unmanned at any time during the closure process. Romic will maintain a security service onsite at all times. The personnel and/or security guard onsite will be responsible for preventing, detecting, and addressing unauthorized entry, as well as monitoring the ongoing status of the facility for any potential problems or issues.

Visitors entering the facility will be required to identify themselves at the gate, sign in at the reception area, and wear a temporary visitor's badge.

Romic will limit access to the former active areas of the facility until closure activities are initiated. Such access will be granted to persons required and/or authorized to be in the active area. Visitors required to enter the active area will be provided a briefing on conditions, potential hazards, and site safety rules and regulations. Contractors working in the active areas will be provided a more detailed briefing specific to the activities they will be performing to include site specific hazardous communication requirements.

After closure activities start, access control will be determined by the Site Project Manager (PM). The PM will schedule the training and logistics associated with operational management. The delineation of areas requiring strict access control may change as closure activities progress.

## 4.0 Inspections

Romic will conduct regular inspections to verify that physical security measures are in place, necessary systems are operating, and waste containment structures have not been compromised. Some of these inspections will be performed by the PM and his team once closure activities have commenced.

Units and equipment will be inspected in accordance to the schedule in Table 1 below. inspections may be modified upon the initiation of closure activities specific to each unit.

**Table 1**
**Inspection Schedule**

| Unit/Equipment | Frequency | Types of Problems |
|---|---|---|
| | | |
| Facility fencing | Weekly | Damage, deterioration |
| Gates | Daily | Locks damaged, front gate remote control not working, gate open |
| Warning signs | Weekly | Sign illegible, damaged |
| Offices | Daily | Damage, forced entry |
| Tanks storing decontamination fluids or other liquids | Daily | Leaks, corrosion, deterioration |
| Tanks with no material, only *de minimis* residual material, or | Weekly | Leaks, corrosion, deterioration |

| Unit/Equipment | Frequency | Types of Problems |
|---|---|---|
| hard packed residues | | |
| Tank containment areas with any tanks storing decontamination fluids or other liquids | Daily | Damage, cracks |
| Tank containment areas with no tanks storing decontamination fluids or other liquids | Weekly | Damage, cracks |
| Container storage units | Weekly | Damage, cracks in containment |
| Containers of site generated hazardous waste | Weekly | Leaks, damage |
| Telephones | Weekly | Malfunction, inability to call outside |
| Fire extinguishers | Monthly | Discharged, low charge |

**Emergency Preparedness**

The Site Specific Hazardous Communication plan designed to provide specific guidance during the day to day operations of an active TSDF will not be considered an appropriate method of emergency management during closure activities.

Therefore a new emergency preparedness plan will be developed and made a part of the “Site Specific Health and Safety Plan”. This “Site Specific Health and Safety Plan” plan will be produced and implemented within 30 days of Closure Plan approval by the Environmental Contractor chosen to close the site.

# Romic Environmental Technologies Corp.
# CAD 009 452 657

# East Palo Alto, California
# TSD Facility

# Attachment D to Closure Plan

# Closure Cost Estimate

## Introduction

Romic Environmental Technologies, Inc. (Romic) is located at 2081 Bay Road in East Palo Alto, San Mateo County, California, approximately 1/2-mile west of San Francisco Bay. The facility consists of an irregularly shaped parcel, which contains approximately 14 acres. Hazardous waste operations at the Facility occurred on approximately 1.8 acres of the 14 acres.

Hazardous waste operations were conducted primarily on the central portion of the Facility, which included warehouses for storing and handling waste, tank farms, and distillation processing equipment, a fuel blending operations area, and a field services chemical warehouse. The wastewater treatment plant is located on the south-central portion of the property. The administration, laboratory, maintenance buildings, and parking lots are also located on the southern portion of the property. The site is paved with concrete with a narrow strip of unpaved area along the perimeter.

The Facility and adjacent properties are zoned by the city of East Palo Alto for both Light and Heavy Industrial activities. The Facility is bordered to the north by a salvage yard; to the east by vacant land owned by the Mid-Peninsula Regional Open Space District; to the southeast and southwest by a salvage yard; to the south by Bay Road and beyond Bay Road an electrical substation and a former chemical manufacturer (facility now vacant). The land use beyond these industrial areas is mixed commercial and residential. The residences are located primarily to the south and west, approximately 1/4-mile from the Facility.

## Facility Purpose

The Facility was designed to accommodate a need for commercial hazardous waste treatment and related storage and was primarily engaged in resource recovery. The Facility was originally permitted to transfer, treat, and store EPA and California hazardous wastes. Industrial wastes were shipped to the Facility for recycling and treatment. These industries were varied and included, but were not limited to the following:

- Dry cleaning
- Printing
- Electronics
- Aerospace
- Paint
- Automotive

In addition, the Facility received household hazardous waste (e.g., motor oil, paints, cleaners, etc.) from household waste collection events. Many of these events took place in and around the San Mateo County and throughout the City and County of San Francisco.

Specific examples of wastes types that were managed at the Facility included halogenated and non-halogenated solvents, freon and freon substitutes, waste oils, sludge's, oxidizers, corrosive wastes, resins/adhesives, debris/solids, soils, wastewaters, resin bed media, paints, aerosols, batteries, fluorescent tubes, and chemical lab packs.

The Facility did not accept the following types of hazardous waste for treatment or processing:

- Radioactive wastes
- Explosives
- Wastes containing polychlorinated biphenyls (PCBs) in excess of 50 parts per million (ppm)
- Etiological wastes
- Pathogenic wastes
- Organophosphates

The facility received, stored, and processed waste in either bulk loads (e.g., tanker trucks, roll-off boxes, etc.) or containers (e.g., 55-gallon drums, totes, etc.). The wastes were transported to the Facility by properly licensed transporters. Wastes received at the Facility were sampled and analyzed to evaluate the chemical and physical properties of each waste stream, and to match the conformity of the load with pre-submitted waste profile information.

All containers manifested to the facility were inspected and assigned a unique tracking number which was placed on the container using a bar code label. Once received the containers were temporarily placed in a designated storage area prior to transfer to the assigned process area. The storage areas were equipped with secondary containment and designed to segregate incompatible wastes (e.g., strong acids vs strong bases).

During operation the Facility reclaimed, recycled, treated, and stored hazardous waste using the following management processes:

**Closure Steps**

1. Inventory Elimination
2. Tank System Decontamination
3. Secondary Containment Decon
4. Container Storage Area Decon
5. Process Systems Decontamination
6. Ancillary Equipment Decontamination
7. Cement/Soil Sampling Analysis
8. Development of Closure Report

**Closure Cost Estimation**

On May 28, 2004 the Department of Toxic Substances Control provided Romic with a revised closure cost estimate based on the USEPA CostPro program, which calculated the total closure cost estimate to be as follows:

| | |
|---|---|
| $5,475,581.00 | for existing processing |
| $1,169,633.00 | for future installed units and equipment. |
| $6,644,593.00 | Total Estimated Closure Cost |

Romic has currently re-calculated the associated Closure Costs and have determined that the new estimated values fall in line with the breakdown of cost explanations outlined in your estimation dated 05/28/2004, with the following exceptions.

- Romic did not purchase or install additional processing units and related equipment
- Romic has already processed and/or disposed of all existing waste stream inventories associated with the container storage area and tank systems
- Add an inflation factor of 1.103

  NOTE: The implicit price deflator for gross national product for 2003, the most recent full year figure that had been published as of April, 2004, was 105.671. The implicit price deflator for gross national product for 2006, the most recent full year figure published as of this time, is 116.558.

The new calculated costs associated with facility closure are as follows:

| | |
|---|---|
| Original Cost Estimate | $6,644,633.00 |
| Minus future installed units and equipment | <$1,169,633.00> |
| Minus inventory elimination costs | <$2,737,217.00> |
| Plus Closure Reporting Costs | $100,000.00 |
| Revised Cost Estimate | $2,837,783.00 |
| Add an Inflation factor of 1.103 | |
| **Total Closure Cost Estimate** | **$3,130,074.70** |

Attached please find copies of the Revised Closure Costs estimates as determined by The DTSC.

Inventory of Equipment and Structures (Authorized and Non-Authorized

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Mgmt Unit** | **Equip. ID** | **Location** | **Permitted Capacity** | **Design Capacity** | **Material of Construction** | **Classification:Permitted/ Consent Order/Other** | **Permit status: RCRA/CA** | **Current Status** | **Waste Managed** | **Management Method** | **Unit Closure Start Date** | **Decon Performance Criteria** | **Decon Method-Planned** | **Decon Method-Used** | **Decon Location** | **Decon Confirmation** | **Final Disposition** | **BOL / Manifest** | **Removal From Site Date** | **Receiving Party** |
| | | | Gallons | Gallons | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | |

# Bay Enterprises

## Attachment F
## Sampling and Analysis Plan

*for the*

# Romic Environmental Technologies Corp.
# TSD Facility
# East Palo Alto, California
# CAD009452657

**Revised Edition April 7, 2008**

## Table of Contents

## 1 Introduction

This Sampling and Analysis Plan (SAP) presents procedures for the collection, analysis, and evaluation of solid and liquid samples as part of the Bay Enterprises' ("Bay") Closure Plan. These procedures are for the collection, analysis and evaluation of:

1. Concrete chip samples from decontaminated equipment and structures during closure

2. Decontamination rinse water from the cleaning of equipment, structures and concrete surfaces.

This SAP has been developed to conform to applicable provisions of the United States Environmental Protection Agency's SW-846 and California Code of Regulations, Title 22 - Chapter 11.

## 2 Sampling Personnel Roles and Responsibilities

The responsibilities of key sampling plan personnel are as follows:

Closure Project Manager – Responsible for overall project execution and quality. The Closure Project Manager is responsible for management of personnel and contractors assigned with the tasks of closing the former Romic facility, including training of staff, oversight, and supervision of waste sampler. The Closure Project Manager will direct sampling activities and be responsible for assuring that representative samples are collected and delivered to the laboratory using appropriate chain-of-custody procedures.

Closure Quality Assurance Manager – Responsible for reviewing, monitoring, auditing, and evaluating sampling activities and laboratory performance during closure activities. The Quality Assurance Manager is also responsible for the quality of data gathered, oversight, and assessments conducted in accordance with this plan, and maintenance of the plan data base.

Analytical Department Manager – Responsible for managing all day-to-day analytical activities. The Analytical Department Manager will direct the Closure project process control, environmental and contract laboratories and will be responsible for the timely reporting of data to ensure uninterrupted operation of the closure activities.

All personnel will be responsible for identifying problems that may arise in the collection and reporting of plan data and for overseeing the implementation of the necessary corrective actions. Personnel will inform the supervisors of any such problems and corrective actions. Problems that cannot be resolved immediately will be reported to the Quality Assurance (QA) Manager, who tracks, reviews, and verifies the effectiveness of the corrective actions.

## 3 Sampling Purpose and Rationale

The purpose of sampling is to insure all Hazardous Waste Management Unit (HWMU) equipment, tanks, structures, buildings, along with concrete containment and pad surfaces have met the Decontamination Performance Standards (DPS) found in **Appendix A** of the Closure Plan. This would also include non permitted facility structures and concrete pad areas.

Hazardous wastes once received and processed at the Former Romic facility included spent solvents, antifreeze, and other waste containing certain volatile organic compounds (VOC's),

semi volatile organic compounds (SVOC's), petroleum distillates such as motor or equipment oil, ethylene glycol, corrosives and heavy metals to include arsenic, barium, cadmium, chrome 3 and 6, copper, lead, mercury, nickel, selenium, silver.

PCB's in the form of di-electric fluids common in electrical ballasts and light transformers were known to be present in some lab pack and commodity pack containers received and opened exclusively at HWMU #5 South Storage Building, and HWMU #5 Sampling Area. Samples collected from concrete surfaces in these areas will therefore be tested for a range of aroclors.

The former Romic did not receive or process reactive waste or any type of organophosphate pesticides and accordingly no sampling for organophosphate will be conducted.

Characterization of the rinse water used to decontaminate equipment and related structures is the only practical and consistent means to determine presence of toxicity or corrosivity characteristics after decontamination of equipment, structures and concrete. If the rinse water exhibits characteristics of toxicity or corrosivity, or if it is contains or is mixed with listed hazardous waste, then it will be handled and disposed of as a hazardous waste. If the rinse water does not exhibit the characteristics of toxicity and corrosivity, and does not contain or is mixed with listed hazardous waste, then it will be handled and disposed of as a non-hazardous waste.

For porous materials such as concrete and a variety of structural materials, chip samples provide an acceptable, accurate means to determine the presence of contamination which may have come in contact and penetrated into the material.

## 4 Sample Types

Two types of surface and volumetric sampling will be conducted for verification of decontamination during closure activities.

1. Chip Samples:
2. Rinse Water Samples

## 5 Sample Locations and Frequency

Sample locations and related frequency are outlined in Appendix C of the Closure Plan. Sampling location plot maps will be made part of the closure plan report.

### 5.1 Equipment and Structural Surfaces

Samples will be collected from equipment and structures having undergone decontamination in accordance with the decontamination procedures listed in the Closure Plan. The collection of a chip or rinsate wash sample will be based on the following criterion

The hazardous waste characteristics of the equipment
The type and severity of exposure to hazardous waste or hazardous materials during operation
Equipment surface type and porosity
Equipment size, regularity of exterior surface and internal configuration

## 6 Testing Parameters

Testing parameters for determining the presence of contamination on or in various media throughout the site have been selected based on, 1) Knowledge of former Romic's hazardous waste processing, 2) the type of known or suspected hazardous constituents expected to be present, or 3) the hazardous constituents reasonably expected to remain on surfaces after decontamination. Testing parameters for each sampling activity or task is listed on Table 1 below.

**Table 1**
**Testing Parameters**

| Analyte | Matrix | Test Method | Detection Limits |
|---|---|---|---|
| Arsenic | Solid | 6010B/7471 | 0.01 ppm |
| Barium | | | 0.01 ppm |
| Cadmium | | | 0.01 ppm |
| Chromium | | | 0.01 ppm |
| Lead | | | 0.01 ppm |
| Mercury | | | 0.01 ppm |
| Selenium | | | 0.01 ppm |
| Silver | | | 0.01 ppm |
| Arsenic | Liquid | 6010B/7471 | 0.001 ppm |
| Barium | | | 0.001 ppm |
| Cadmium | | | 0.001 ppm |
| Chromium | | | 0.001 ppm |
| Lead | | | 0.001 ppm |
| Mercury | | | 0.001 ppm |
| Selenium | | | 0.001 ppm |
| Silver | | | 0.001 ppm |
| Copper and/or copper compounds | Solid/Liquid | CAL TTLC | 0.01 ppm |
| CAM 17 Metals * | | | 0.01 ppm |
| Copper and/or copper compounds | Solid/Liquid | CAL STLC | 0.001 ppm |
| CAM 17 Metals * | | | 0.001 ppm |
| VOCs Analytes * | Solid/Liquid | EPA 8260/524.2/624 | 0.001 ppm |
| Chloromethane | | | 0.001 ppm |
| Bromomethane | | | 0.001 ppm |
| Vinyl chloride | | | 0.001 ppm |
| Chloroethane | | | 0.001 ppm |
| Methylene chloride | | | 0.001 ppm |
| Trichlorofluoromethane (Freon 11) | | | 0.001 ppm |
| Dichlorodifluoromethane (Freon 12) | | | 0.001 ppm |
| Acetone | | | 0.001 ppm |
| Carbon Disulfide | | | 0.001 ppm |
| Methyl Ethyl Ketone | | | 0.001 ppm |
| Methyl-tertbutyl ether | | | 0.001 ppm |
| 1,1-Dichloroethene | | | 0.001 ppm |
| 1,1-Dichloroethane | | | 0.001 ppm |
| 1,2-Dichloroethene (total) | | | 0.001 ppm |
| Chloroform | | | 0.001 ppm |
| 1,2-Dichloroethane | | | 0.001 ppm |
| 2-Butanone | | | 0.001 ppm |
| 1,1,1-Trichloroethane | | | 0.001 ppm |
| Carbon tetrachloride | | | 0.001 ppm |
| Bromodichloromethane | | | 0.001 ppm |

| | | | |
|---|---|---|---|
| 1,2-Dichloropropane | | | 0.001 ppm |
| cis-1,3-Dichloropropene | | | 0.001 ppm |
| Trichloroethene | | | 0.001 ppm |
| Dibromochloromethane | | | 0.001 ppm |
| 1,1,2-Trichloroethane | | | 0.001 ppm |
| Benzene | | | 0.001 ppm |
| trans-1,3-Dichloropropene | | | 0.001 ppm |
| Bromoform | | | 0.001 ppm |
| 4-Methyl-2-pentanone | | | 0.001 ppm |
| 2-Hexanone | | | 0.001 ppm |
| Tetrachloroethene | | | 0.001 ppm |
| Toluene | | | 0.001 ppm |
| 1,1,2,2-Tetrachloroethane | | | 0.001 ppm |
| Chlorobenzene | | | 0.001 ppm |
| Ethylbenzene | | | 0.001 ppm |
| Styrene | | | 0.001 ppm |
| SVOC analytes * | Solid/Liquid | EPA 8270/525/625 | 0.001 ppm |
| 4-Nitroaniline | | | 0.001 ppm |
| 4-Nitrophenol | | | 0.001 ppm |
| Benzyl alcohol | | | 0.001 ppm |
| 4-Bromophenyl phenyl ether | | | 0.001 ppm |
| Azobenzene | | | 0.001 ppm |
| 2,4-Dimethylphenol | | | 0.001 ppm |
| 4-Methylphenol | | | 0.001 ppm |
| 1,4-Dichlorobenzene | | | 0.001 ppm |
| 4-Chloroaniline | | | 0.001 ppm |
| Bis(2-chloroisopropyl)ether | | | 0.001 ppm |
| Phenol | | | 0.001 ppm |
| Bis(2-chloroethyl)ether | | | 0.001 ppm |
| bis(2-Chloroethoxy)methane | | | 0.001 ppm |
| Bis(2-ethylhexyl)phthalate (DEHP) | | | 0.001 ppm |
| di-n-Octyl phthalate | | | 0.001 ppm |
| Hexachlorobenzene | | | 0.001 ppm |
| 1,2,4-Trichlorobenzene | | | 0.001 ppm |
| 2,4-Dichlorophenol | | | 0.001 ppm |
| 2,4-Dinitrotoluene | | | 0.001 ppm |
| 1,2-Diphenylhydrazine | | | 0.001 ppm |
| Dimethyl phthalate | | | 0.001 ppm |
| Dibenzofuran | | | 0.001 ppm |
| 2,4-Dinitrophenol | | | 0.001 ppm |
| 4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol) | | | 0.001 ppm |
| 1,3-Dichlorobenzene | | | 0.001 ppm |
| 4-Chloro-3-methylphenol | | | 0.001 ppm |
| 2,6-Dinitrotoluene | | | 0.001 ppm |
| N-Nitroso di-n-propylamine | | | 0.001 ppm |
| Aniline | | | 0.001 ppm |
| Benzoic acid | | | 0.001 ppm |
| Hexachloroethane | | | 0.001 ppm |
| 4-Chlorophenyl phenyl ether | | | 0.001 ppm |
| Hexachlorocyclopentadiene | | | 0.001 ppm |
| Isophorone | | | 0.001 ppm |
| Diethyl phthalate | | | 0.001 ppm |
| Di-n-butyl phthalate | | | 0.001 ppm |

| | | | |
|---|---|---|---|
| Butyl benzyl phthalate | | | 0.001 ppm |
| N-Nitrosodiphenylamine | | | 0.001 ppm |
| Carbazole | | | 0.001 ppm |
| Hexachlorobutadiene | | | 0.001 ppm |
| Pentachlorophenol | | | 0.001 ppm |
| 2,4,6-Trichlorophenol | | | 0.001 ppm |
| 2-Nitroaniline | | | 0.001 ppm |
| 2-Nitrophenol | | | 0.001 ppm |
| 3,3-Dichlorobenzidine | | | 0.001 ppm |
| Benzidine | | | 0.001 ppm |
| 2-Methylphenol | | | 0.001 ppm |
| 1,2-Dichlorobenzene | | | 0.001 ppm |
| 2-Chlorophenol | | | 0.001 ppm |
| 2,4,5-Trichlorophenol | | | 0.001 ppm |
| Nitrobenzene | | | 0.001 ppm |
| 3-Nitroaniline | | | 0.001 ppm |
| Aroclor 1016 ** | Liquid/Solid | EPA 8082 | 0.01 ppm |
| Aroclor 1221 | | | 0.01 ppm |
| Aroclor 1232 | | | 0.01 ppm |
| Aroclor 1242 | | | 0.01 ppm |
| Aroclor 1248 | | | 0.01 ppm |
| Aroclor 1254 | | | 0.01 ppm |
| Aroclor 1260 | | | 0.01 ppm |

* The full list of VOC and SVOC analytes including CAM 17 metals shown above are for testing of concrete to be left in place as described in Appendix A5

** Testing of PCBS is limited to concrete surfaces associated with the South Storage Building

## 7 Quality Assurance Objectives

The quality assurance objectives of this plan are to develop and implement procedures for obtaining and evaluating quality data that can be used to assess the nature and extent of contamination and will be consistent with objectives outlined in the closure plan specifically by;

1. Verifying the effectiveness of the Decontamination Performance Methods (DPM) used for the decontamination of equipment, structures, and surfaces

2. Properly characterizing decontamination wash water for disposal

To achieve these objectives analytical data must have an appropriate date quality indicators and are identified, handled, and transported in a manner that does not alter the representative data from the actual site conditions.

## 8 Data Quality Indicators

Data quality indicators for the plan include “PARCC” (precision, accuracy, representativeness, completeness, and comparability) goals, and level of confidence requirements, as described in the following subsections.

### 8.1 Precision

Precision refers to the degree of agreement between duplicates expressed as relative percent difference (RPD). Precision criteria are based on an evaluation of potential field and laboratory performance on samples of similar matrices.

### 8.2 Accuracy

Accuracy refers to the agreement between the amount of the analyte measured by the test method and the amount actually present expressed as percent recovery of surrogates and matrix spikes. Like precision, accuracy criteria are based on an evaluation of potential laboratory performance on samples of similar matrices.

### 8.3 Representativeness

Representativeness is the degree to which the sample data represent a characteristic of the measured population. It is a qualitative parameter most influenced by the design and effectiveness of the sampling plan and the proficiency of the sampling personnel. The procedures specified in this plan are designed to assure representative samples are collected and handled in a manner that assures the results from analysis of the samples correctly characterize the media sampled.

### 8.4 Completeness

Completeness is expressed as the percentage determined from the number of acceptable results compared to number of expected results. Where necessary, samples will be reanalyzed, or if insufficient sample material remains, additional samples will be collected and analyzed to meet this requirement.

### 8.5 Comparability

Comparability is a qualitative term that expresses the measure of confidence that one data set can be compared to another and can be combined for the decision(s) to be made. Compare sample collection and handling methods, sample preparation and analytical procedures, holding times, stability issues, and QA protocols.

The precision, accuracy, representativeness, completeness and comparability indicator values for this plan are shown in Table 2 below.

**Table 2**
**Data Quality Indicator Values**

| Data Quality Indicator | Goal |
|---|---|
| Precision | ±50% RPD for Field Duplicates<br>±35% RPD for Laboratory Duplicates |
| Accuracy | 80+% Recovery |
| Representativeness | NA |
| Comparability | NA |
| Completeness | 95% |

For this SAP, laboratory precision will be ensured through the analysis of laboratory duplicate samples and the total precision of the sampling and analysis process will be assessed by the collection and analysis of field duplicate samples, as described in Section 12.1. Analytical accuracy will be ensured through the use of matrix spike samples conducted by the laboratory in accordance with the laboratory sample QA/QC plan. Representativeness of the surface samples will be ensured by;

1. use of a sample grid
2. collecting a statistically significant number of samples
3. consistent sampling procedures

## 9 Field Quality Assurance and Control

This section provides the sampling and analysis procedures and for each medium, including collection methodologies, sampling equipment decontamination procedures, sample container handling, preservation and packaging methods, documentation, and custody requirements. These requirements ensure that appropriate methods are employed and documented.

### 9.1 Sample Collection Methodologies

This section describes the sample collection methods for chip and liquid (rinsate) samples.

Chip

Chip sampling will be performed on porous surfaces such as concrete pads, cylinder block, building structural drywall, wood, paint, and roofing materials.

Chip samples will be obtained by chiseling out the top 2 cm of a 10 cm x 10 cm area and will represent an area of no more that 100 cm2. The chip samples will be placed into appropriate laboratory pre-cleaned sample containers. All sampling equipment will be decontaminated before each using procedures listed in Section 9.2.

Liquids

Liquid samples will be collected by pouring rinsate water as it is being generated directly into the sample container. The sample container should be filled completely, excluding any headspace, and with a minimum of aeration. If transfers between containers, such as beakers or flasks, are required, these will be minimized to the extent possible. Disposable or laboratory-supplied clean containers will be used for the transfers if possible. Samples of wash water will be collected from within a vessel used to collect the wash water using a dipper as described in Chapter 9 of EPA SW-846 3rd Edition, 1986.

VOC Collection Method Summary

a. Low concentration soil method - generally applicable to soils and other solid samples with VOC concentrations in the range of 0.5 to 200 µg/kg. Volatile organic compounds (VOCs) are determined by collecting an approximately 5-g sample, weighed in the field at the time of collection, and placing it in a pre-weighed vial with a septum sealed screw-cap that already contains a stirring bar and a sodium bisulfate preservative solution. The vial is sealed and shipped to a laboratory or appropriate analysis site. The entire vial is then placed, unopened, into the instrument carousel. Immediately before analysis, organic-free reagent water, surrogates, and internal standards (if applicable) are automatically added without opening the sample vial. The vial containing the sample is heated to 40°C and the volatiles purged into an appropriate trap using an inert gas combined with agitation of the sample.

Purged components travel via a transfer line to a trap. When purging is complete, the trap is heated and back flushed with helium to desorb the trapped sample components into a gas chromatograph for analysis by an appropriate determinative method.

b. High concentration soil method - generally applicable to soils and other solid samples with VOC concentrations greater than 200 µg/kg. The sample introduction technique in Sec. 2.1 is not applicable to all samples, particularly those containing high concentrations (generally greater than 200 µg/kg) of VOCs which may overload either the volatile trapping material or exceed the working range of the determinative instrument system (e.g., GC/MS, GC/FID, GC/EC, etc.). In such instances, this method describes two sample collection options and the corresponding sample purging procedures.

i. The first option is to collect a bulk sample in a vial or other suitable container without the use of the preservative solution described in Sec. 2.1. A portion of that sample is removed from the container in the laboratory and is dispersed in a water-miscible solvent to dissolve the volatile organic constituents. An aliquot of the solution is added to 5 mls of reagent water in a purge tube. Surrogates and internal standards (if applicable) are added to the solution, then purged using Method 5030, and analyzed by an appropriate determinative method. Because the procedure involves opening the vial and removing a portion of the soil, some volatile constituents may be lost during handling.

ii. The second option is to collect an approximately 5-g sample in a pre-weighed vial with a septum-sealed screw-cap (see Sec 4) that contains 5 mls of a water-miscible organic solvent (e.g., methanol). At the time of analysis, surrogates are added to the vial, then an aliquot of the solvent is removed from the vial, purged using Method 5030 and analyzed by an appropriate determinative method.

c. High concentration oily waste method - generally applicable to oily samples with VOC concentrations greater than 200 µg/kg that can be diluted in a water-miscible solvent. Samples that are comprised of oils or samples that contain significant amounts of oil present additional analytical challenges. This procedure is generally appropriate for such samples when they are soluble in a water-miscible solvent.

i. After demonstrating that a test aliquot of the sample is soluble in methanol or polyethylene glycol (PEG), a separate aliquot of the sample is spiked with surrogates and diluted in the appropriate solvent. An aliquot of the solution is added to 5 mls of reagent water in a purge tube, taking care to ensure that a floating layer of oil is not present in the purge tube. Internal standards (if applicable) are added to the solution which is then purged using Method 5030 and analyzed by an appropriate determinative method.

ii. Samples that contain oily materials that are not soluble in water-miscible solvents must be prepared according to Method 3585 as shown in Table 2.1 below.

**Table 2.1**
**Summary of VOC Sampling Method 5035 Options**

| Collection Method | Description |
|---|---|
| Field measurement | Measure 5 grams +/- 0.5 grams in the field<br>Samples collected in 40-ml vials pre-wieght with magnetic stirring strip and appropriate preservatives |
| Terra Core Sampler | Use sampling tool designed to collect approximately 5 grams of soil.<br>Samples collected in 40-ml vials pre-wieght with magnetic stirring strip and appropriate preservatives |
| Encore Sampler | Use sampling tool designed to collect the appropriate amount of soil.<br>Three samplers required by laboratories per interval in which a sample is collected. |

### 9.2 Decontamination Procedures

Proper decontamination of sampling equipment is essential to prevent accidental cross-contamination of samples. Sample collection equipment items that will require decontamination is limited to stainless steel or tempered carbon steel chisels used to obtain chip samples. A decontamination area will be designated and equipped with the necessary equipment (wash buckets, brushes, spray bottles, distilled water, towels, etc.).

The following procedures will be used for the decontamination of non-disposable soil sampling equipment.

1. Scrub with a brush and potable water to remove visible contamination
2. Rinse with clean distilled water
3. Dry with disposable towels

### 9.3 Sample Preservation and Storage

Following collection, the samples will be properly stored to prevent degradation of their integrity. Table 3 below summarizes the preservation and holding time requirements for analyses of the chip and liquid samples. (See table 3 on next page)

**Table 3**
**Summary of Sample Container Preservation and Holding Times**

| Analyte/Method | Sample Matrix | Sample Container | Preservation | Maximum Holding Time |
|---|---|---|---|---|
| Volatile organic constituents (SW-846 Method 8260) | Solid | See Table 2.1 | Cool to 4°C | 14 days |
| Volatile organic constituents (SW-846 Method 524.5/624) | Liquid | See Table 2.1 | Na2S2O3, HCl to pH < 2, Cool to 4°C | 14 days |
| Semi-Volatile organic constituents (SW-846 Method 8270) | Solid | 8-ounce clear wide mouth glass bottle | Cool to 4°C | 14 days |
| Semi-Volatile organic constituents (SW-846 Method 525/625) | Liquid | 2-1-liter amber Boston Round glass bottle | Cool to 4°C | 7 days |
| Metals (SW-846 Method 6010B) | Solid | 8-ounce clear wide mouth glass bottle | HNO3 to pH < 2 | 6 months |
| Metals (SW-846 Method 6010B) | Liquid | 1-liter high density polyethylene bottle | HNO3 to pH < 2 | 6 months |
| Metals Mercury (SW-846 Method 7470/7471 | Solid | (1) 4 oz. glass jar | Cool at 4°C | 28 days |
| Metals Mercury (SW-846 Method 245.1 | Liquid | 1-500ml plastic bottle | Refrigerate at 4°C; add 1 mL conc. HNO3 | 28 days |
| PCBs (8082) | Liquid | 1 liter Amber Glass Jar | Cool to 4°C | 7 days |
| PCB's (8082) | Solid | 100g (4 to 8 oz glass jar) | Cool to 4°C | 14 days |

### 9.4 Sample Packaging and Transporting Procedures

This section describes the procedures for packaging and transporting the samples from the point of collection to actual delivery to the designated testing laboratory.

1. All samples will be cooled to 4°C during storage and prior to transfer to the laboratory
2. All sample containers (solids and liquids) will be checked to insure lids are securely fastened

3. Samples must be placed into a leak proof cooler that can contain 100% capacity of all the sample containers
4. Glass sample jars must be packaged right side up with compatible and non flammable absorbent material cushioning to prevent breakage during transport
5. For more than one sampling container a chain of custody form must be secured to the top of each cooler that represents the entire contents and only the contents described on the chain of custody form

### 9.5 Sample Documentation and Custody Requirements

Each sample and/or measurement will be properly documented to facilitate timely, correct, and complete analysis of data. The documentation system is used to identify, track, and monitor each sample from the point of collection through final data reporting. Chain-of-custody is necessary if there is a possibility that the analytical data, or any conclusions based upon analytical data will be used in litigation. A sample is considered to be in a person's custody if it is: 1) in a person's physical possession, 2) in view of the person after taking possession, or 3) secured by that person so that no one can tamper with it.

### 9.6 Field Sample Custody and Documentation

Sample custody and documentation are necessary to demonstrate the integrity of the sample from time of collection until delivery to the process or offsite analytical laboratory. The documentation required includes logbooks, sample labels, custody seals, and chain-of-custody forms.

#### 9.6.1 Logbooks

Logbooks will document where, when, how, and from whom any vital program information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. At a minimum, the following sampling information will be recorded:

- Sample location, station location, and description
- Sample number
- Sampler's name(s)
- Date and time of sample collection
- Designation of sample as composite or grab
- Type of sample (i.e., matrix)
- Type of sampling equipment used
- Type of preservation used
- Recipient laboratory(s)

All entries in logbooks will be in indelible ink and corrections will be made by striking out erroneous information and initializing the change.

#### 9.6.2 Sample Container Labeling

All samples collected will be labeled in a clear, precise way for proper identification in the field and for tracking in the laboratory. The samples will have identifiable and unique numbers. At a minimum, the sample labels will contain the following information:

- Facility name
- Sample container number
- Date of collection
- Time of collection
- Analytical parameter
- Method of preservation

Examples of sample container numbers will appear for each sample are shown in Table 4 shown in Section 9.6.3.

### 9.6.3 Sample Identification

Sample identification will be used to identify what is in each sample and will consist of the type of sample (Chip or Rinse), HWMU number, Equipment ID, and either the physical location or grid intercept point. Examples of how identification will appear for each sample are shown in Table 4 below

**Table 4**
**Sample and Sample Container Identification Examples**

| Sample Container Number | Sample Identification |
|---|---|
| R0001 | Rinse, Unit #18 Tank 31, final rinsewater |
| R0002 | Chip, Unit #5, grid sample, 14 |
| R0003 | Rinse, Unit #23, column drain, interior final rinsewater |
| R0004 | Rinse, Unit #17, AES-1, exterior final rinsewater, dup |

Duplicate samples will be given a three digit field of “dup” following the sample identification.

### 9.6.4 Custody Seals

Custody seals will be used to preserve the integrity of each sample container and cooler from the time it is collected until it is opened by the offsite laboratory. A custody seals will be placed on each sample container after collection such that it must be broken to open the container. Two or more custody seals will be signed, dated, and placed on the front and back of the sample cooler prior to transport.

### 9.6.5 Chain-of-Custody Records

Chain-of-custody forms will be used for all samples delivered to the process laboratory and offsite laboratories to ensure that the integrity of the samples is maintained. Each form will include the following information:

- Sample number
- Date of collection
- Time of collection
- Analytical parameter
- Method of preservative
- Number of sample containers

### 9.6.6 Recipient Laboratory

Signatures of parties relinquishing and receiving the sample at each transfer point.

### 9.6.7 Laboratory Custody

The laboratory is to document all transfers of each sample within the laboratory system (e.g., the transfer of the sample from the sample custodian to the analyst for obtaining a sample aliquot and then the transfer of the sample back to the sample custodian). Additionally, all transfers of all sample extracts and digests will be recorded. This may be accomplished through the use of a sample preparation sheet with a signature block for documenting the transfer of the samples or by using a separate digest/extract custody transfer form.

## 10 Analytical Methods and Requirements

Analytical method and quality control requirements are specified in the Decontamination Performance Standards (DPS) found in **Appendix A** of the Closure Plan. The laboratory selected for closure sampling must be a California-certified laboratory for the specific test methods used during closure sampling.

## 11 Laboratory Quality Assurance/Quality Control Samples

Laboratory quality assurance requirements are specified in the laboratory Quality Assurance Program Plan.

## 12 Field Quality Control Samples

QC samples will consist of field duplicate samples.

### 12.1 Field Duplicate Samples

Duplicate samples will be collected for use as a measure of the precision of the sample collection and analysis process. The duplicate will be submitted with minimal indication of the site it was taken from. Duplicates will be prepared following standard sampling and preparation techniques as described in this section. Duplicates will be collected and submitted to the laboratory at a frequency of one per day or 5 percent (i.e., 1 per 20) of routine samples, whichever is more frequent. The relative percent difference (RPD) between field duplicate pairs will be evaluated against the precision criteria to determine data acceptability.

### 12.2 Trip/Travel Blanks

Trip or travel blanks evaluate potential sample contamination from volatile organic compounds (VOC's) that may be present in the air on-site or in sample shipping containers. A trip blank consists of laboratory distilled or de-ionized water in a closed container. The blank accompanies the empty sample bottles to the field as well as the samples returning to the lab for analysis; it is not opened until the lab analyzes it with the actual site samples. When needed, one trip blank should be prepared by the sample laboratory and analyzed upon return for each sampling event.

### 12.3 Allowances for Duplicate and Split Samples

State and federal regulatory agencies may collect duplicate and split sample for testing.

## 13 Special Training Requirements/Certification

Personnel directly involved in sample collection, handling, analysis, and data evaluation will be provided with a copy of this SAP. The management of the participating field or laboratory organization will establish personnel qualifications and training requirements for the project. The Closure Project Manager will ensure each person participating in the project has the education, training, technical knowledge, and experience, or a combination thereof, to enable that individual to perform assigned sampling functions. Training will be provided for each staff member as necessary to perform his or her functions properly. Personnel qualifications will be documented in terms of education, experience, and training, and periodically reviewed to ensure adequacy to current responsibilities. Examples of topics for which training is required, as applicable to the position, include:

- Safety
- Quality Assurance Project Plan
- SOPs
- General field sampling techniques
- Specific sampling protocols
- Equipment calibration and maintenance
- Corrective action
- Data reduction and validation
- Reporting
- Records management
- Demonstration of proficiency

### 13.1 Documentation and Records

The following sections describe required documentation and records for training, field, and laboratory activities.

### 13.2 Training Activities

Training will be documented and records kept on file and readily available for review. Documentation of training may be accomplished by 1) including a summary of the training and the topics or items covered at the top of the attendance sheet, and/or 2) including a copy of the slides, handouts, etc. used in the training session.

### 13.3 Facility and Laboratory Activities

Records provide the direct evidence and support for the necessary technical interpretations, judgments, and discussions concerning program activities. These records, particularly those that are anticipated to be used in permitting documents, will directly support current or ongoing technical studies and activities and provide the historical basis for later reviews and analyses. Records will be legible, identifiable, and retrievable and protected against damage, deterioration, or loss. The discussion in this section outlines procedures for record-keeping.

The conductance of sampling and analyses will include appropriate record-keeping procedures that satisfy relevant technical and legal requirements.

Records will consist of bound notebooks with numbered pages, sample collection forms, personnel qualification and training forms, sample location figures/drawings, equipment maintenance and calibration forms, chain-of-custody forms, sample analysis request forms, and change request forms. All records will be written in indelible ink.

Procedures for reviewing, approving, and revising records will be clearly defined, with the lines of authority included. All documentation errors will be corrected by drawing a single line through the error so it remains legible and will be initialed by the responsible individual, along with the date of change. If appropriate, the reason for the change will also be indicated. The correction will be written adjacent to the error.

Records will include but will not be limited to the following.

#### 13.3.1 Sample Collection

To ensure maximum utility of the sampling effort and resulting data, documentation of the sampling protocol, as performed, is essential. Sample collection records will contain, at a minimum, the names of persons conducting the activity, sample number, sample location, equipment used, ambient conditions, documentation of adherence to protocol, and unusual observations. The actual sample collection record will be one of the following: a bound field notebook with numbered pages, a preprinted form or digitized information on a computer tape or disc.

#### 13.3.2 Chain-of-Custody Records

The chain-of-custody, which involves the possession of samples from the time they are obtained until they are disposed of or shipped off site, will be documented and will include the following information: (1) the project name; (2) name and signature of samplers; (3) the sample number, date, and time of collection, grab or composite sample designation, and requested analysis; and (4) name and signature of individuals involved in sample transfer

#### 13.3.3 QC Samples

Documentation for identification of QC samples, such as equipment rinsate and concrete chip blanks and duplicate samples will be maintained.

#### 13.3.4 Deviations

All deviations from procedural documents and the SAP will be maintained in the operating record. A nonconformance record will be generated for each and every deviation.

#### 13.3.5 Reports

A copy of all reports issued and any supporting documentation will be retained.

## 14 Assessment and Oversight

Reports to the Closure Project Manager will include the program progress, a summary of key performance indicators, a summary of the nonconformance and corrective actions, surveillance and audit findings, and data validation reports. Each report, as appropriate, will include a section that provides an overall assessment of the sampling and laboratory programs.

## 15 Data Validation and Usability

This section describes the data assessment and oversight program, including procedures for data review, validation, and verification and reconciliation with data quality objectives.

### 15.1 Data Review, Validation, and Verification Requirements

Validation and verification procedures should include:

- Review field data forms at the end of each day for completeness and reasonableness (field and lab personnel)
- Comparison of database values to raw field data (approval process conducted by lead field staff and split sample database review conducted by the Project Manager)
- Review of database values before conducting analysis and presentation (Project Manager)

### 15.2 Reconciliation with Data Quality Objectives

As soon as possible after each sampling event, calculations and determinations for precision, completeness, and accuracy will be made and corrective action implemented if needed.

If data quality indicators do not meet the project's specifications, data should be flagged and assigned an appropriate data quality level. Re-sampling may occur.

The cause of the failure should be evaluated. If the cause is found to be equipment failure, calibration and/or maintenance techniques will be reassessed and improved. If the problem is found to be sampling team error, team members will be retrained. Any limitations on data use will be detailed in reports, when submitting data to DTSC and other documentation as needed. If failure to meet project specifications is found to be unrelated to equipment, methods, or sample error, then the SAP should be revised.

## APPENDIX A
## DECONTAMINATION PERFORMANCE STANDARDS (DPS)

### Section Contents

## 1. Decontamination Performance Standards for Resale of Solvent Distillation Systems, Tanks, and General Equipment

**Rationale:** The rationale for this standard is based on a re-sell disposition solely to active EPA permitted treatment, storage, and disposal facilities licensed by the state of California and/or other states or by the USEPA and using numerical criterion and established definitions for California and/or federal hazardous waste.

**Criteria**: Following is the criterion which must be achieved for items to be re-sold.

- No characteristics of ignitibility by means of OVM monitoring and VOC/SVOC representative testing
- No visual evidence of contamination, and numerical limits for the following regulated analytes
- RCRA metals less than the below maximum concentrations:

| Contaminant (TCLP) | PPM |
|---|---|
| D004 Arsenic | 5 |
| D005 Barium | 100 |
| D006 Cadmium | 1 |
| D007 Chromium | 5 |
| D008 Lead | 5 |
| D009 Mercury | 0.2 |
| D010 Selenium | 1 |
| D011 Silver | 5 |

- Additional California TTLC metals less than the below maximum concentrations:

| CA TTLC Metals | PPM |
|---|---|
| Copper and/or copper compounds | 2,500 |
| Nickel and. nickel compounds | 2,000 |

- Must not exceed TCLP for the following VOC and SVOCs

| Organic Contaminant | PPM |
|---|---|
| D018 Benzene | 0.5 |
| D019 Carbon Tetrachloride | 0.5 |
| D021 Chlorobenzene | 100 |
| D022 Chloroform | 6 |
| D023, D024, D025 Creosol , o,m,p | 200 |
| D026 Creosol | 200 |
| D027 1,4-Dichlorobenzene | 7.5 |
| D028 1,2-Diclllhoroethyane | 0.5 |
| D029 1,1-dichloroetheylene | 0.7 |
| D030 2,4-Dinitrotoluene | 0.13 |

| | |
|---|---|
| D032 Hexachlorobenzene | .13 |
| D033 Hexachlorobutadiene | 0.5 |
| D034 Hexachloroethane | 3.0 |
| D035 Methyl ethyl ketone | 200 |
| D036 Nitrobenzene | 2.0 |
| D038 Pyridene | 5.0 |
| D039 Tetrachloroethylene | 0.7 |
| D040 Trichloroethylene | 0.5 |
| D043 Vinyl Chloride | 0.2 |

## 2. Decontamination Performance Standards for Scrap

**Rationale:** Rationale is based on disposition solely to industrial or commercial scrap metal and metal salvagers licensed by the state of California and/or other states and using numerical criterion and established definitions for California and federal hazardous waste.

**Criteria**: Following is the criterion which must be achieved for items to be shipped as scrap.

- No characteristics of ignitibility by means of OVM monitoring and VOC/SVOC representative testing
- No visual evidence of contamination
- No visual evidence of contamination, and numerical limits for the following regulated analytes

RCRA metals less than the below maximum concentrations:

| Contaminant (TCLP) | PPM |
|---|---|
| D004 Arsenic | 5 |
| D005 Barium | 100 |
| D006 Cadmium | 1 |
| D007 Chromium | 5 |
| D008 Lead | 5 |
| D009 Mercury | 0.2 |
| D010 Selenium | 1 |
| D011 Silver | 5 |

- Additional California TTLC metals less than the below maximum concentrations:

| CA TTLC Metals | PPM |
|---|---|
| Copper and/or copper compounds | 2,500 |
| Nickel and. nickel compounds | 2,000 |

## 3 Decontamination Performance Standard for Non Hazardous Waste Disposal

**Rationale:** Rationale is based solely on criteria for minimum material acceptance by a subtitle D landfills operating in the state of California and other states.

**Criteria**: Following is the criterion which must be achieved for items to be disposed of as non-hazardous waste.

- No characteristics of ignitibility by means of OVM monitoring and VOC/SVOC representative testing
- No free liquids
- No visual evidence of contamination, and numerical limits for the following regulated analytes
- RCRA metals less than the below maximum concentrations:

| Contaminant (TCLP) | PPM |
|---|---|
| D004 Arsenic | 5 |
| D005 Barium | 100 |
| D006 Cadmium | 1 |
| D007 Chromium | 5 |
| D008 Lead | 5 |
| D009 Mercury | 0.2 |
| D010 Selenium | 1 |
| D011 Silver | 5 |

- Must not exceed TCLP for the following VOC and SVOCs

| Organic Contaminant | PPM |
|---|---|
| D018 Benzene | 0.5 |
| D019 Carbon Tetrachloride | 0.5 |
| D021 Chlorobenzene | 100 |
| D022 Chloroform | 6 |
| D023, D024, D025 Creosol , o,m,p | 200 |
| D026 Creosol | 200 |
| D027 1,4-Dichlorobenzene | 7.5 |
| D028 1,2-Diclllhoroethyane | 0.5 |
| D029 1,1-dichloroetheylene | 0.7 |
| D030 2,4-Dinitrotoluene | 0.13 |
| D032 Hexachlorobenzene | .13 |
| D033 Hexachlorobutadiene | 0.5 |
| D034 Hexachloroethane | 3.0 |
| D035 Methyl ethyl ketone | 200 |
| D036 Nitrobenzene | 2.0 |
| D038 Pyridene | 5.0 |

| | |
|---|---|
| D039 Tetrachloroethylene | 0.7 |
| D040 Trichloroethylene | 0.5 |
| D043 Vinyl Chloride | 0.2 |

- Selected and prescribed surfaces must not exceed the following maximum concentrations for Polychlorinated Biphenyls if left in place

| Contaminant | PPM |
|---|---|
| Aroclor 1016 | 0.1 |
| Aroclor 1221 | 0.1 |
| Aroclor 1232 | 0.1 |
| Aroclor 1242 | 0.1 |
| Aroclor 1248 | 0.1 |
| Aroclor 1254 | 0.1 |
| Aroclor 1260 | 0.1 |

- Selected and prescribed surfaces must not exceed the following maximum concentrations for Polychlorinated Biphenyls if disposed of as non hazardous waste

| Contaminant | PPM |
|---|---|
| Aroclor 1016 | 50 |
| Aroclor 1221 | 50 |
| Aroclor 1232 | 50 |
| Aroclor 1242 | 50 |
| Aroclor 1248 | 50 |
| Aroclor 1254 | 50 |
| Aroclor 1260 | 50 |

## 4. Decontamination Performance Standard for Hazardous Waste Disposal

**Rationale:** Rationale is based solely on criteria for minimum material acceptance by Class C landfills operating in the state of California and other EPA hazardous waste landfills in other states operating under 40CFR Part 264.

**Criteria**: Following is the criteria which must be achieved for items to be shipped as RCRA or California Hazardous Waste.

- No characteristics of ignitibility
- No free liquids
- Must meet specific TSD acceptance criteria under permit waste and analysis plan

## 5. Decontamination Performance Standards for Surfaces Left in Place

**Definition:** This performance standard applies to Brick, Concrete, Pavement, Rock, Wood surfaces should the following criteria be met.

**Rationale:** Rationale is based on EPA Treatment Standards for Hazardous Debris 40 CFR 268.45 (Table 1)

**Criteria**: Following is the criterion which must be achieved for surfaces to be left in place after one or more of the following decontamination methodologies have been employed.

1. High pressure water spray
2. High pressure steam and water spray
3. Scarification, grinding, and planing

- For visual confirmation when viewed without magnification, surface shall be free of all visible contaminated soil and hazardous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area, and;

- If removal of at least 0.6 cm of the surface layer then treatment to a clean debris surface as stated above for visual confirmation, and;

- RCRA and CAM 17 metals listed in tables A5-1 and A5-2 respectively be less than the maximum TCLP and STLC concentrations.

  NOTE:

  1. Metals will be tested initially using EPA method 6010 (totals).

  2. Should any one analyte be found present greater than the maximum value indicated in either table then the analyte will be retested for TCLP or STLC. A TCLP will be conducted for RCRA contaminants and STLC will be conducted for all other analytes.

  3. Should any 10 consecutive concrete chip sample test results (in any one containment or non containment area) show ND for any of the following inorganic compounds then testing for that analyte will be suspended.

## Table A5-1
## List of RCRA Metals

| RCRA Contaminant | TCLP mg/L | Maximum values for with a TCLP must be conducted |
|---|---|---|
| D004 Arsenic | 5 | 100 mg/kg or greater |
| D005 Barium | 100 | 2000 mg/kg or greater |
| D006 Cadmium | 1 | 20 mg/kg or greater |
| D007 Chromium | 5 | 100 mg/kg or greater |
| D008 Lead | 5 | 100 mg/kg or greater |
| D009 Mercury | 0.2 | 4 mg/kg or greater |
| D010 Selenium | 1 | 20 mg/kg or greater |
| D011 Silver | 5 | 100 mg/kg or greater |

## Table A5-2
## List of CAM 17 Metals

| SUBSTANCE | STLC (mg/L) | Maximum values for with a STLC must be conducted |
|---|---|---|
| Antimony | 15 | 150 mg/kg or greater |
| Arsenic | 5.0 | 50 mg/kg or greater |
| Barium | 100 | 1000 mg/kg or greater |
| Beryllium | 0.75 | 7.5 mg/kg or greater |
| Cadmium | 1.0 | 10 mg/kg or greater |
| Chromium 6 | 5.0 | 50 mg/kg or greater |
| Chromium | 5.0 | 50 mg/kg or greater |
| Cobalt | 80 | 800 mg/kg or greater |
| Copper | 25 | 250 mg/kg or greater |
| Lead | 5.0 | 50 mg/kg or greater |
| Mercury | 0.2 | 2 mg/kg or greater |
| Molybdenum | 350 | 3,500 mg/kg or greater |
| Nickel | 20 | 200 mg/kg or greater |
| Selenium | 1.0 | 10 mg/kg or greater |
| Silver | 5.0 | 50 mg/kg orgreater |
| Thallium | 7.0 | 70 mg/kg or greater |
| Vanadium | 24 | 240 mg/kg or greater |
| Zinc | 250 | 2,500 mg/kg or greater |

- Must not exceed detectable levels for VOCs and SVOCs; or, if an EPA listed waste than must not exceed TCLP Maximum Concentrations indicated in respective Tables A5-3 and A5-4 below

NOTE:

1. There is no EPA approved methodology for the collection of concrete (Chip) samples for VOC and SVOCs and therefore the lack of VOC or SVOC presence in any one test result may not reflect actual presence of contamination.

2. The following VOC and SVOC lists include analytes not reasonably expected to be present in concrete.

3. Should any 10 consecutive concrete chip sample test results (in any one containment or non containment area) show ND for any of the listed organic compounds then testing for that analyte will be suspended.

**Table A5-3**
**List of Volatile Organic Compounds (8260b)**

| ANALYTE | TCLP Level (mg/L) |
|---|---|
| Chloromethane | |
| Bromomethane | |
| Vinyl chloride | 0.2 |
| Chloroethane | |
| Methylene chloride | |
| Trichlorofluoromethane (Freon 11) | |
| Dichlorodifluoromethane (Freon 12) | |
| Acetone | |
| Carbon Disulfide | |
| Methyl Ethyl Ketone | 200.00 |
| Methyl-tertbutyl ether | |
| 1,1-Dichloroethene | |
| 1,1-Dichloroethane | |
| 1,2-Dichloroethene (total) | |
| Chloroform | 6.0 |
| 1,2-Dichloroethane | 0.5 |
| 2-Butanone | |
| 1,1,1-Trichloroethane | |
| Carbon tetrachloride | 0.5 |
| Bromodichloromethane | |
| 1,2-Dichloropropane | |
| cis-1,3-Dichloropropene | |
| Trichloroethene | |
| Dibromochloromethane | |
| 1,1,2-Trichloroethane | |
| Benzene | 0.5 |
| trans-1,3-Dichloropropene | |
| Bromoform | |
| 4-Methyl-2-pentanone | |
| 2-Hexanone | |
| Tetrachloroethene | |
| Toluene | |
| 1,1,2,2-Tetrachloroethane | |
| Chlorobenzene | 100 |
| Ethylbenzene | |
| Styrene | |

**Table A5-4**
## List of Semi Volatile Organic Compounds (8270c)

| ANALYTE | TCLP Level (mg/L) |
|---|---|
| 4-Nitroaniline | |
| 4-Nitrophenol | |
| Benzyl alcohol | |
| 4-Bromophenyl phenyl ether | |
| Azobenzene | |
| 2,4-Dimethylphenol | |
| 4-Methylphenol | |
| 1,4-Dichlorobenzene | 7.5 |
| 4-Chloroaniline | |
| Bis(2-chloroisopropyl)ether | |
| Phenol | |
| Bis(2-chloroethyl)ether | |
| bis(2-Chloroethoxy)methane | |
| Bis(2-ethylhexyl)phthalate (DEHP) | |
| di-n-Octyl phthalate | |
| Hexachlorobenzene | |
| 1,2,4-Trichlorobenzene | |
| 2,4-Dichlorophenol | |
| 2,4-Dinitrotoluene | 0.13 |
| 1,2-Diphenylhydrazine | |
| Dimethyl phthalate | |
| Dibenzofuran | |
| 2,4-Dinitrophenol | |
| 4,6-Dinitro-2-methylphenol (4,6-Dinitro-o-cresol) | |
| 1,3-Dichlorobenzene | |
| 4-Chloro-3-methylphenol | |
| 2,6-Dinitrotoluene | |
| N-Nitroso di-n-propylamine | |
| Aniline | |
| Benzoic acid | |
| Hexachloroethane | |
| 4-Chlorophenyl phenyl ether | |
| Hexachlorocyclopentadiene | |
| Isophorone | |
| Diethyl phthalate | |
| Di-n-butyl phthalate | |
| Butyl benzyl phthalate | |
| N-Nitrosodiphenylamine | |
| Carbazole | |
| Hexachlorobutadiene | |
| Pentachlorophenol | 100.0 |
| 2,4,6-Trichlorophenol | 2.0 |

**Table A5-4**
**List of Semi Volatile Organic Compounds (8270c) continued**

| ANALYTE | TCLP Level (mg/L) |
|---|---|
| 2-Nitroaniline | |
| 2-Nitrophenol | |
| 3,3-Dichlorobenzidine | |
| Benzidine | |
| 2-Methylphenol | |
| 1,2-Dichlorobenzene | |
| 2-Chlorophenol | |
| 2,4,5-Trichlorophenol | 400.0 |
| Nitrobenzene | 2.0 |
| 3-Nitroaniline | |

- Remaining concrete surfaces left in place in HWMU #2 (South storage building) must not exceed the following maximum concentrations for Polychlorinated Biphenyls

| Contaminant | PPM |
|---|---|
| Aroclor 1016 | 0.1 |
| Aroclor 1221 | 0.1 |
| Aroclor 1232 | 0.1 |
| Aroclor 1242 | 0.1 |
| Aroclor 1248 | 0.1 |
| Aroclor 1254 | 0.1 |
| Aroclor 1260 | 0.1 |

# APPENDIX B
# DECONTAMINATION PERFORMANCE METHODS (DPM)

## Section Contents

# 1 CONCRETE SURFACES

## A Decontamination Performance Method for Containment Pads for Leaving In Place

### Decontamination Scope

The scope of decontamination is to conduct wet decontamination work within the physical confines of the HWMU in order to render concrete surfaces free of contamination and to allow for in-place clean closure.

Decontamination work will consist of applying a low phosphate surfactant mix with water on all concrete surfaces. Solution should stay on the concrete for approximately 30 minutes. This is to be followed with a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours. Blank or blind sumps will be the last areas to be cleaned.

A one yard square surface should be exposed to direct pressure spray for a minimum of 1 minute. Washing should be conducted so as to allow spent decontamination water to gravity flow into existing sump(s).

Heavily stained or discolored concrete surfaces should be pre-soaked for 1 to 2 hours after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

Spent decontamination solution and rinsate will be pumped to a designated wash water holding tank located outside the HWMU. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

### Decontamination Location

Decontamination will be conducted in-place and within the confines of the secondary containment wall or berm.

### Decontamination Set Up

A visual inspection of concrete surfaces to include sumps, floors and walls or berms will be made to ascertain the safest and most effective decontamination approach.

Gradients and slope will be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Decontamination set up considerations will include the placement of control zone locations, spray barriers or protective sheeting, placement of washing equipment and supplies, water sources and wash water collection points, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Any metallic or non porous items such as grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that would require disassembly for thorough cleaning of concrete will be demolished and placed into containers for decontamination as miscellaneous equipment or disposal as hazardous waste.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Electrical hazards
- Working in close proximity to heavy portable equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Non-Containment Pads Leaving in Place

## Decontamination Scope

The scope of decontamination is to conduct wet decontamination work on non-containment concrete surfaces outside of HWMU's in order to render concrete surfaces free of contamination and to allow for in-place clean closure.

Stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system.

Decontamination work will consist of applying a low phosphate surfactant mix with water on all concrete surfaces. Solution should stay on the concrete for approximately 30 minutes. This is followed by a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours closest to the outer edge of the concrete pad towards the center of the facility.

A one yard square surface should be exposed to direct pressure spray for a minimum of 30-45 seconds. Washing should be conducted so as to allow spent wash solution to gravity flow towards stormwater collection sumps.

Heavily stained or discolored concrete surfaces should be pre-soaked for 1 to 2 hours after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down gradient will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

Spent decontamination solution and rinsate will be pumped from low lying areas around stormwater collection points or other low areas to a designated wash water holding tank located outside the HWMU. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump off wash water concurrently with washing to a holding tank located elsewhere on-site.

## Decontamination Location

Decontamination will be conducted within the confines of the non-containment area as described above.

## Decontamination Set Up

A visual inspection of concrete surfaces and outer edges of the pad will be made to ascertain the safest and most effective decontamination approach.

Gradients and slope will be considered when determining where to allow pressure wash or rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Temporary berming made of weighted down 4" x 4' timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

Additional decontamination set up considerations will include the placement of control zone locations, spray barriers or protective sheeting, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Any metallic or non porous items such as grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that impede the application or flow of decontamination solution or would require disassembly for proper cleaning will be demolished and placed into containers for decontamination as miscellaneous equipment or disposed of as hazardous waste.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Electrical hazards
- Working in close proximity to heavy portable equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## C Decontamination Performance Method for Concrete Scarification or Removal as Hazardous Waste

### Decontamination Scope

This decontamination performance method is to be performed only after initial or confirmation surface testing has been conducted that identifies areas for surface removal or subsequence cleaning.

The scope of decontamination is to conduct wet decontamination work on and around impacted concrete to protect surrounding surfaces during impacted concrete removal.

This method also serves to provide means to scarb and remove scarbed impacted concrete out to non impacted surrounding surfaces followed by re-clean scarbed surfaces for confirmation testing.

Decontamination work will consist of applying a low phosphate surfactant and water solution on concrete surfaces subject to scrabbing and concrete that is to be removed to include a 10 foot buffer zone in all directions including walls and berms. If buffer area extends beyond the concrete area of scarb or removal then a protective liner or barrier will be erected sufficient to protect from cross contamination. Solution should stay on the concrete for approximately 30 minutes.

If decontamination is conducted inside a containment area then spent decontamination water should be collected in the nearest down gradient sump. If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of liquid into the stormwater collection system.

During concrete scarbing or removal, sufficient decontamination solution should be sprayed (using a hand hose sprayer) directly on the work area to prevent the generation of airborne dust particles and keep loose concrete from being ejected beyond the 10 foot buffer zone.

For concrete being cut for removal insure that the amount of solution does not pool or drain into the cut in sufficient quantities to penetrate into underlying soil. This can be accomplished by vacuuming standing solution during cutting.

Immediately vacuum up remaining free standing liquid after scarbing or cutting stops. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Scarbed areas including the 10 foot buffer zone will then be pressure washed using the same solution and vacuumed concurrently.

If concrete has been completely removed then loose debris remaining within the buffer area is to be vacuumed up before applying replacement concrete or asphalt.

**Decontamination Location**

As initial or confirmatory testing indicates need for concrete scrabbing or removal.

**Decontamination Set Up**

A visual inspection of concrete surfaces and outer edges of the pad will be made to ascertain the safest and most effective decontamination approach.

Gradients and slope will be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Temporary berming made of weighted down 4" x 4' timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, spray barriers or protective sheeting. To include the placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Any metallic or non porous items such as grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that impede the application or flow of decontamination solution or would require disassembly for proper cleaning will be demolished, removed and placed into containers for decontamination as miscellaneous equipment or disposed of as hazardous waste.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Electrical hazards
- Potential impact from loose or dislodged debris from washing Working in close proximity to heavy portable equipment
- Exposure to high pressure water and pressurized equipment

## D DPM for Concrete Surfaces Exhibiting Low or High pH

### Decontamination Scope

This decontamination performance method is to be performed only when initial field testing using pH strip paper reveals a concrete surface exhibiting a pH at or below 4 or at 10 or higher.

The scope of decontamination is to conduct wet decontamination work on concrete surfaces to remove the characteristic of DOT corrosivity prior to standard concrete cleaning or removal as prescribed under **DPM 1A**, **DPM 1B**, or **DPM 1C**.

*Low pH (4 or lower)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) lower than 4.0 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Leave all metallic fixtures and equipment originally located within the concrete area subject for neutralization in place. Remove and dispose of all insulation, heat trace, and porous materials within the area to be neutralized.

2. Using a hand held pump sprayer apply a prepared solution of sodium bicarbonate and water (pH of 10+) directly to all surfaces within the containment area. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface for 15 minutes. Repeat application so as to keep surfaces wet.

3. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH above 4 but below 10. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 1A**, **DPM 1B**, or **DPM 1C**. Repeat steps 1, 2 and 3 as necessary.

*High pH (10 or higher)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) higher than 9 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.

1. Leave all metallic fixtures and equipment originally located within the concrete area subject for neutralization in place. Remove and dispose of all insulation, heat trace, and porous materials within the area to be neutralized.

2. Using a hand held pump sprayer apply a prepared solution of citric acid (dry) and water (pH of 3-) directly to all surfaces within the containment area. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface no longer than 5 minutes. Repeat application so as to keep surfaces wet.

3. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH below 10 but above 4.0. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 1A**, **DPM 1B**, or **DPM 1C**. Repeat steps 4, 5 and 6 as necessary.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in place including all areas of overspray and within the confines of the secondary containment area. Structural fixtures will be dismantled and decontaminated within the confines of secondary containment. All decontamination work and verification of decontamination will be concluded prior to equipment removal for final disposition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection and pH testing of floors and structural surfaces for evidence of surface corrosion and to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include control zone locations, placement of temporary berming around non containment concrete areas, spray barriers or protective sheeting, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Gradients and slope will also be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent decontamination water to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

For non-containment areas, temporary berming made of weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for contact with residual corrosive salts on concrete surfaces
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Flying concrete or debris from power washing
- Working in close proximity to heavy portable equipment
- Exposure to high pressure water and pressurized equipment

# 2 FRAMEWORKS

## A Decontamination Performance Method for Open Aboveground Framework for Resale

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal framework to a state free of contamination suitable for resale. Under this performance standard “resale” means the reuse of the framework for its original intended purpose as a supporting or protective structure for hazardous waste management units or industrial use only.

Under this performance standard, “framework” means non mechanical structural metal designed to support or hold in place one or more process assemblies and associated mechanisms and having been in contact or potential contact with hazardous waste.

Decontamination will consist of applying a low phosphate surfactant mix with water on painted or non painted metal surfaces starting on the highest portion of framework working downward. Solution should stay on the surface for approximately 30 minutes. This is followed by a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down A one foot surface area should be exposed to direct pressure spray for a minimum of 15 seconds.

Heavily stained, discolored, or corroded surfaces may need to be pre-soaked for 1 to 2 hours after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Framework Disassembly**

The disassembly of framework will be conducted using overhead cranes or hoists and performed only after completion of all framework decontamination activities. An overhead crane or trackhoe will be used and lift broken down portions of framework and set directly onto a highway transport unit for off site transportation.

Transportation of framework to the designated off site location will be consistent with all applicable 49CFR transportation requirements for general bulk commodities.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of one or more secondary containment areas or concrete pad having temporary containment berming.

**Decontamination Set Up**

A visual inspection of safe accessible portions of framework will be conducted to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include the erection of scaffolding, positioning of man lifts, and fall protection measures.

Additional decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming and protective sheeting, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If working adjacent to unprotected surfaces, temporary berming such as weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting or plastic barriers maybe placed or erected to keep wash water contained.

Any metallic or non porous items such as non-sellable grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that may impede the application or flow of decontamination solution or proper cleaning will be removed and set aside for decontamination as miscellaneous equipment or disposed of as scrap or hazardous waste.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Electrical hazards
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Open Aboveground Framework for Scrap

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal framework to a state free of contamination suitable as non hazardous scrap. Under this performance standard “scrap” implies that the metal framework will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

Under this performance standard, “framework” means non mechanical structural metal designed to support or hold in place one or more process assemblies and associated mechanisms and having been in contact or potential contact with hazardous waste.

Decontamination work will consist of pressure washing painted or non painted metal surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down

A one foot surface area should be exposed to direct pressure spray for a minimum of 5 seconds.

Heavily stained, discolored, or corroded surfaces may need to be pre-soaked for 30 minutes to 1 hour with a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Heavily corroded sections of framework may require cutting using cold or hot cutting methods should it be determined to be more cost effective to remove and dispose as hazardous waste.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area.

A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Framework Demolition**

The demolition of framework for scrap will be conducted using overhead cranes or hoists and performed only after completion of all framework decontamination activities. An overhead crane or trackhoe will be used and lift broken down or cut up portions of framework and set directly onto a highway transport unit or bulk container for off site transportation for recycling.

Transportation of framework to the designated recycler will be consistent with all applicable 49CFR transportation requirements for bulk recyclable materials.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of one or more secondary containment areas or concrete pad having temporary containment berming.

**Decontamination Set Up**

A visual inspection of safe accessible portions of framework will be conducted to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include the erection of scaffolding, positioning of man lifts, and fall protection measures.

Additional decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming and protective sheeting, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If working adjacent to unprotected surfaces, temporary berming such as weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting or plastic barriers maybe placed or erected to keep wash water contained.

Any metallic or non porous items such as non-sellable grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that may impede the application or flow of decontamination solution or would require disassembly for proper cleaning will be demolished, removed and placed into containers for decontamination as miscellaneous equipment or disposed of as hazardous waste.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Electrical hazards
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# 3 PIPING

## A Decontamination Performance Method for Piping for Resale

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal piping to a state free of contamination suitable for resale. Under this performance standard “resale” means the reuse of the piping for its original intended purpose for conveying hazardous waste within a hazardous waste management unit of for industrial use only.

Under this performance standard, “piping” means any rigid metallic or chlorinated plastic pipe or tube including mechanical valves, unions, flanges, manifolds, and associated gaskets and intended for the transference of chemicals and having contact or potential contact with characteristic or listed hazardous materials.

Piping sections to be considered for decontamination for resale must meet the following decontamination criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Removable metallic items such as clamps, heat strips, tape and blind flanges must be removed and discarded as scrap or hazardous waste.
3. Piping must be broken down into sections at each flange, union, or interlocked disconnection points.
4. Each section must be marked or tagged with a number or ID corresponding with adjoining sections along with type of waste conveyed and direction of flow.
5. Each section must have no significant erosion, corrosion, cracks, or bulging evident. If so then that section must be discarded as scrap or hazardous waste.
6. Each section must have no material plugging evident. If so then that section must be discarded as non hazardous or hazardous waste.
7. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will consist of pressure washing disconnected sections of un-insulated painted or non painted metal pipe surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) inserted into and through each section using a mole or rotor washing brush.

Heavily stained, discolored, or corroded pipe exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

A one foot linear surface area should be exposed to direct pressure spray for a minimum of 10-15 seconds.

A single rinse application using a pressurized clean water nozzle (at or above 2500 psi) inserted into and through each section will be sufficient to remove decontamination wash solution residues. A minimum of 5 seconds per one square foot of surface is also acceptable.

A final inspection of rinsed materials is to be made to insure no free liquids are present or allowed to drain free liquids if encountered.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated rinse water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of the secondary containment area or concrete pad having temporary containment berming.

**Decontamination Set Up**

A check of pipe markings or tags plus a visual inspection of each interior and exterior piping section will be conducted to ascertain safe and most effective decontamination approach. Decontamination set up considerations will include the erection of piping decontamination stands and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of storm water collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Contact with hazardous Liquids

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Piping as Scrap

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal piping to a state free of contamination suitable for scrap or recycling. Under this performance standard “scrap” implies that the metal piping will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

Under this performance standard, “piping” means any rigid metallic or chlorinated plastic pipe or tube including mechanical valves, unions, flanges, manifolds, and associated gaskets and intended for the transference of chemicals and having contact or potential contact with characteristic or listed hazardous materials.

Piping sections to be considered for decontamination for scrap or recycling must meet the following decontamination criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Heavily contaminated and removable metallic items such as clamps, heat strips, tape and blind flanges are to be removed as hazardous waste.
3. Piping must be broken down into sections at each flange, union, or interlocked disconnection points.
4. Each section must have no material plugging evident. If so then that section must be discarded as non hazardous or hazardous waste.
5. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will consist of pressure washing disconnected sections of un-insulated painted or non painted metal pipe surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) inserted into and through each section using a mole or rotor washing brush.

Heavily stained, discolored, or corroded pipe exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

A one foot linear surface area should be exposed to direct pressure spray for a minimum of no more than 10 seconds.

A single rinse application using a pressurized clean water nozzle (at or above 2500 psi) inserted into and through each section will be sufficient to remove decontamination wash solution residues. A minimum of 5 seconds per one square foot of surface is also acceptable.

A final inspection of washed materials is to be made to insure no free liquids are present or allowed to drain free liquids if encountered.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated rinse water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of a secondary containment area or concrete pad having temporary containment berming.

**Decontamination Set Up**

A check of markings or tags plus a visual inspection of each interior and exterior piping section will be conducted to ascertain safe and most effective decontamination approach. Decontamination set up considerations will include the erection of piping decontamination stands and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, staging of scrap receiving bins, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Contact with hazardous liquids

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## C Decontamination Performance Method for Piping as Non-Hazardous Waste

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal piping to a state free of contamination sufficient for disposal as a non-hazardous waste acceptable for hazardous waste landfill. Under this performance standard “non-hazardous waste” means material suitable for disposal to a subtitle D landfill.

Under this performance standard, “piping” means any rigid metallic or chlorinated plastic pipe or tube including mechanical valves, unions, flanges, manifolds, and associated gaskets and intended for the transference of chemicals and having contact or potential contact with characteristic or listed hazardous materials.

Piping sections to be considered for decontamination as non-hazardous waste must meet the following decontamination criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting to size.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Piping must be broken down into sections at each flange, union, or interlocked disconnection points, or;
3. Cut into sections on longer than 6 feet in length and allowing for the complete drainage of free liquids.
4. Each section must have no material plugging evident. If so then that section must be discarded as hazardous waste.
5. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or fill voids with absorbent material.

Decontamination work will consist of pressure washing disconnected sections of un-insulated painted or non painted metal pipe surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) inserted into and through each section using a mole or rotor washing brush.

The goal of decontamination is only to remove as much visual evidence of contamination so as not to result in exceeding **DPS 3 (non hazardous waste)**

A final inspection of washed materials is to be made to insure no free liquids are present or allowed to drain free liquids if encountered.

Decontamination must be conducted inside a containment area and spent decontamination water collected in the nearest down gradient containment sump.

Spent decontamination solution will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated rinse water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of a secondary containment area only.

**Decontamination Set Up**

A visual inspection of each interior and exterior piping section will be conducted to ascertain safe and most effective decontamination approach. Decontamination set up considerations will include the erection of piping decontamination stands and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, transfer and containment of spent decontamination solution or waste containerization, placement of non hazardous waste containers or bins, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Contact with hazardous liquids

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards

- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# D Decontamination Performance Method for Piping as Hazardous Waste

## Decontamination Scope

The scope of this decontamination performance method is to insure that no free liquids or ignitable characteristics remain on or in metallic equipment, items, or porous materials rejected for all other disposition options. Under this performance standard “hazardous waste” means materials acceptable for disposal to a hazardous waste landfill operating under the requirements of 40CFR Part 264 or 256 as well as applicable elements of CCR §66264 and §66265.

Under this performance standard, “piping” means any rigid metallic or chlorinated plastic pipe or tube including mechanical valves, unions, flanges, manifolds, and associated gaskets and intended for the transference of chemicals and having contact or potential contact with characteristic or listed hazardous materials.

Piping sections to be considered for hazardous waste disposal must meet the following criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting.

1. Broken down or cut into sections no longer than 6 feet in length
2. No presence of free liquids
3. No presence of ignitable characteristics

Decontamination method for removing volatile vapors from interior surfaces to below 10% LEL will consist of allowing a piping section to air out or by filling the pipe with inorganic material.

Free liquids should be removed only over a drip pad placed on top of secondary containment or completely absorbed using an inorganic material.

Decontamination must be conducted inside a disposable containment tray or liner.

## Decontamination Location

Decontamination will be conducted in-place and within the confines of a secondary containment area only.

## Decontamination Set Up

Decontamination set up considerations will include the erection of piping decontamination stands, placement of control zone locations, placement of similar temporary containment, waste containerization, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Contact with hazardous liquids

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## E DPM for Piping Exhibiting Low or High pH

### Decontamination Scope

This decontamination performance method is to be performed only when initial field testing using pH strip paper reveals piping surface exhibiting a pH at or below 4 or at 10 or higher.

Under this performance standard, “piping” means any rigid metallic or chlorinated plastic pipe or tube including mechanical valves, unions, flanges, manifolds, and associated gaskets and intended for the transference of chemicals and having contact or potential contact with characteristic or listed hazardous materials.

The scope of decontamination is to conduct wet decontamination work on metal pipe surfaces to remove the characteristic of DOT corrosivity prior to standard decontamination or disposal as prescribed under **DPM 3A**, **DPM 3B**, **DPM 3C, or DPM-3D**.

*Low pH (4 or lower)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) lower than 4.0 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Drain any free liquids and containerize.

2. Disconnect piping section(s) exhibiting surface corrosivity from equipment assembly and place onto concrete surface within the HWMU containment area.

3. Remove and dispose of all insulation, heat trace, and porous materials from piping exterior.

4. Using a hand held pump sprayer apply a prepared solution of sodium bicarbonate and water (pH of 10+) directly on all external and internal pipe surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface for 15 minutes. Repeat application so as to keep surfaces wet.

5. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH above 4 but below 10. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 3A**, **DPM 3B**, **DPM 3C, or DPM 3D**. Repeat steps 1 through 5 as necessary.

*High pH (10 or higher)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) higher than 10 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.

1. Drain any free liquids and containerize

2. Disconnect piping section(s) exhibiting surface corrosivity from equipment assembly and place onto concrete surface within the HWMU containment area.

3. Remove and dispose of all insulation, heat trace, and porous materials from piping exterior.

4. Using a hand held pump sprayer apply a prepared solution of citric acid (dry) and water (pH of 3-) directly on to all internal and exterior pipe surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface no longer than 5 minutes. Repeat application so as to keep surfaces wet.

5. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH below 10 but above 4.0. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 3A**, **DPM 3B**, **DPM 3C, or DPM 3D**. Repeat steps 1 through 5 as necessary.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place including all areas of overspray and within the confines of the secondary containment area. Structural fixtures will be dismantled and decontaminated within the confines of secondary containment. All decontamination work and verification of decontamination will be concluded prior to equipment removal for final disposition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection and pH testing of piping surfaces for evidence of surface corrosion and to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include the pH testing of floors, walls and ceiling, erection of scaffolding, positioning of man lifts, water lines, control zone locations, and fall protection measures.

Other decontamination set up considerations will include the placement of temporary berming around non containment concrete areas, spray barriers or protective sheeting. To include the placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Gradients and slope will also be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent decontamination water to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

For non-containment areas, temporary berming made of weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan. The chemical hazards associated with decontamination activities may include the following:

- Potential for contact with residual corrosive salts on piping surfaces

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Flying concrete or debris from power washing
- Working in close proximity to heavy portable equipment
- Exposure to high pressure water and pressurized equipment
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

# 4 MISCELLANEOUS EQUIPMENT SYSTEMS

## A Decontamination Performance Method for Equipment Systems for Resale

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metallic equipment systems to a state free of contamination suitable for resale. Under this performance standard “resale” means the reuse of mechanical and/or electrical equipment for its original intended purpose as a component in the processing of hazardous waste within a hazardous waste management unit of for similar industrial use only.

Under this performance standard “equipment systems” means any single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

Equipment to be considered for decontamination for resale must meet the following decontamination criterion. NOTE: Insure that interior sections are inspected for LEL and presence of free liquids.

1. Equipment exteriors must be configured to allow for full visual inspection and configured internally for adequate flushing and rinsing. Partial disassembly may be required.
2. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
3. Internal chambers and voids must be drained of free liquids.
4. All extraneous chemical and liquid feed and drain lines must be drained, disconnected, and moved away from equipment and decontaminated separately for resale, scrap, or waste.
5. If there is more than one distinct equipment piece to be dismantled then , prior to disassembly, each piece must be marked or tagged with a number or ID corresponding with adjoining piece(s) along with type of waste handled and direction of process.
6. Must have no significant erosion, corrosion, cracks, or bulging evident. If so then that piece or detachable component must be discarded as scrap.
7. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will consist of pressure washing exterior portions of un-insulated painted or non painted metal surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward.

A one foot square surface area should be exposed to direct pressure spray for a minimum of 15-30 seconds.

As external surfaces are to be pressure washed downward then pressure washing of internal chambers and voids will be conducted at the same vertical level using the same high pressure cold water/low foam surfactant wash inserted into or through each interior using a mole or wide angle rotor washing attachment.

Flushing of interior surfaces may be conducted if pressurized washing and rinsing fails to achieve desired results. Flushing will consist of spraying or pouring a concentrated wetting agent such as Alconox® or Sodium hydroxide solution to reach and remove contamination lodged into small recesses or hidden interior spaces. The flushing solution or “flushate” should be allowed to soak in-place for approximately 15 minutes while keeping the internal surface wet. A flushing rinse using pressurized clean water will follow until the rinsate has a final pH of between 5 and 9 as tested using pH strip paper.

Heavily stained, discolored, or corroded exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface is acceptable. Vacuuming out residual wash or rinsewater may be required.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment concrete surfaces then stormwater collection basins must be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing and rinsing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of the secondary containment area or concrete pad having temporary containment berming.

**Decontamination Set Up**

A check of equipment markings or tags plus a visual inspection of each interior and exterior piping section will be conducted to ascertain safe and most effective decontamination approach.

Decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet) and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection points will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Disassembly**

Equipment system disassembly should be conducted only after decontamination verification, unless distinct pieces of equipment or components have to be removed for purposes of insuring safe decontamination.

Should any piece or component require removal prior to decontamination then the piece or component must be marked and tagged showing where or how it is attached to adjoining components, type of waste processed or contacted with, and direction of waste processing thorough the piece or component.

Disassembly of large equipment units are to be conducted prior to the removal of overhead structures not having undergone one or more decontamination methods described in **DPM 5**.

Disassembly sequence should begin with the removal of electrical services and removable sensors followed by power and hydraulic systems. Then conveyance systems followed by major components and finally gangways, frameworks and supporting mounts.

As each piece of equipment is disconnected a visual inspection is to be made on connection surfaces to determine the presence of gross contamination. If discovered than refer to **DPM 4E**.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazards waste during decontamination set up
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Equipment Systems as Scrap

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metallic equipment systems to a state free of contamination suitable as scrap. Under this performance standard “scrap” means the mechanical and/or electrical equipment will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

Under this performance standard “equipment systems” means any single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

Equipment to be considered for decontamination as scrap or recycling must meet the following decontamination criterion. NOTE: Insure that interior sections are inspected for LEL and presence of free liquids.

1. Equipment exteriors must be configured to allow for full visual inspection and for adequate interior flushing and rinsing. Partial disassembly may be required.
2. Porous insulation and other non specific porous material should be removed and discarded as hazardous waste.
3. Internal chambers and voids must be drained of free liquids.
4. Interior spaces must not exhibit greater than 10% LEL.

Decontamination method for removing volatile vapors from interior surfaces to below 10% LEL will consist of allowing a piping section to air out, flushing with a detergent wash, or by sucking out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will consist of pressure washing exterior portions of un-insulated painted or non painted metal surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward.

A one foot linear surface area should be exposed to direct pressure spray for a minimum of 15-30 seconds.

As external surfaces are pressure washed downward then pressure washing of internal chambers and voids will be conducted at the same vertical level using the same high pressure cold water/low foam surfactant wash inserted into or through each interior using a mole or wide angle rotor washing attachment.

Flushing of interior surfaces may be conducted if pressurized washing and rinsing fails to achieve desired results. Flushing will consist of spraying or pouring a concentrated wetting agent such as Alconox® or Sodium hydroxide solution to reach and remove contamination lodged into small recesses or hidden interior spaces.

The flushing solution or “flushate” should be allowed to soak in-place for approximately 15 minutes while keeping the internal surface wet. A flushing rinse using pressurized clean water will follow until the rinsate has a final pH of between 4 and 10 as tested using pH strip paper.

Heavily stained, discolored, or corroded exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 5 seconds of direct pressure per one square foot of surface is acceptable. Vacuuming out residual wash or rinsewater may be required.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment concrete surfaces then stormwater collection basins must be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing and rinsing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of the secondary containment area or concrete pad having temporary containment berming.

**Decontamination Set Up**

A check of equipment interior and exteriors will be conducted to ascertain safe and most effective decontamination approach.

Decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet) and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection points will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Disassembly**

Equipment system disassembly will be conducted only after decontamination verification unless distinct pieces of equipment or components must be removed prior to decontamination for purposes of insuring thorough decontamination.

Disassembly sequence should begin with the removal of electrical connection and removable sensors followed by power and hydraulic systems. Then conveyance systems followed by major components and finally gangways, frameworks and supporting mounts. As each piece of equipment is disconnected and visual inspection is to be made on connection surfaces to determine the presence of gross contamination. If discovered than refer to the appropriate Specially Decontamination Method in **DPM 4E**.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazards waste during decontamination set up
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Chemical burns from exposure to flushing agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## C Decontamination Performance Method for Equipment Systems as Non-Hazardous Waste

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metallic equipment systems to a state free of contamination suitable as non-hazardous waste. Under this performance standard “non-hazardous waste” means material suitable for disposal to a subtitle D landfill.

Under this performance standard “equipment systems” means any single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

Piping sections to be considered for decontamination as non-hazardous waste must meet the following decontamination criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting to size.

1. Equipment exteriors must be configured to allow for full visual inspection and configured internally for adequate flushing and rinsing. Partial disassembly may be required.
2. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
3. Broken down or cut into sections on longer than 10 feet in length and allowing for the complete drainage of free liquids.
4. Internal chambers and voids must be drained of free liquids.
5. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or fill voids with absorbent material.

Decontamination work will consist of pressure washing disconnected sections of un-insulated painted or non painted metal pipe surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) inserted into and through each section using a mole or rotor washing brush.

The goal of decontamination is to remove as mush visual evidence of contamination or sufficient to achieve **DPS 4 (non hazardous waste)**

A one foot linear surface area should be exposed to direct pressure spray for a minimum of mo more than 10 seconds followed by a brief rinse. A final inspection of washed materials is to be made to insure no free liquids are present or allowed to drain free liquids if encountered.

Decontamination must be conducted inside a containment area and spent decontamination water collected in the nearest down gradient containment sump.

Spent decontamination solution will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated rinse water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of a secondary containment area only.

**Decontamination Set Up**

A visual inspection of each interior and exteriors will be conducted to ascertain safe and most effective decontamination approach. Decontamination set up considerations will include the erection of piping decontamination stands and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, transfer and containment of spent decontamination solution or waste containerization, non hazardous waste containerization, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Disassembly**

Equipment systems disassembly will be conducted only after decontamination verification unless distinct pieces of equipment or components must be removed prior to decontamination for purposes of insuring thorough decontamination.

Disassembly sequence should begin with the removal of electrical services and removable sensors followed by power and hydraulic systems. Then conveyance systems followed by major components and finally gangways, frameworks and supporting mounts. As each piece of equipment is disconnected and visual inspection is to be made on connection surfaces to determine the presence of gross contamination. If discovered than refer to the appropriate Method found in **DPM 4E**.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazards waste during decontamination set up
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Chemical burns from exposure to flushing agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## D Decontamination Performance Method for Equipment Systems as Hazardous Waste

### Decontamination Scope

The scope of this decontamination performance method is to insure that no free liquids or ignitable characteristics remain on or in metallic equipment, items, or porous materials rejected for all other disposition options. Under this performance standard “hazardous waste” means materials acceptable for disposal to a hazardous waste landfill operating under the requirements of 40CFR Part 264 or 256 as well as applicable elements of CCR §66264 and §66265.

Under this performance standard “equipment systems” means any single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

Equipment systems to be considered for hazardous waste disposal must meet the following criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting.

1. Broken down or cut into sections no longer than 3 feet in length and allowing for the complete drainage of free liquids.
2. No presence of free liquids
3. No presence of ignitable characteristics

Decontamination method for removing volatile vapors from interior surfaces to below 10% LEL will consist of allowing a piping section to air out or by filling voids with absorbent material.

Free liquids should be removed only over a drip pad placed on top of secondary containment. Decontamination must be conducted inside a disposable containment tray or liner.

### Decontamination Location

Decontamination will be conducted in place and within the confines of a secondary containment area only.

### Disassembly

Equipment systems disassembly will be conducted only after decontamination verification unless distinct pieces of equipment or components must be removed for purposes of insuring thorough decontamination.

Disassembly after limited decontamination of equipment systems designated as hazardous waste requires application of general industry standards for demolition only and application of health and safety dust and vapor suppression and standard safety protocols found in the health and safety plan.

**Decontamination Set Up**

Decontamination set up considerations will include establishment of control zones, the erection of scaffolding (for equipment systems higher than 6 feet) decontamination stands for small equipment, placement of control zone locations, placement of similar temporary containment, waste containerization, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# E Decontamination Performance Method for Equipment Systems having Non Accessible Interior Surfaces

## Decontamination Scope

The scope of this decontamination performance method is to remove contamination from internal equipment spaces, voids, chambers or difficult to reach mechanisms and suitable for resale or scrap.

Under this performance standard “equipment systems” means any single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

Equipment systems subject to this standard include

1. Exposed equipment surfaces after disassembly
2. Mechanical pumps, motors, enclosed liquid reservoirs, water treatment devises, valves, bearings, gear boxes, and most single pieces of equipment less than 3 feet in length or width and less than 150 pounds.
3. Mechanical pumps, motors, hydraulic manifolds, liquid distribution manifolds, reduction boxes, grapplers, hoists, and other equipment greater than 3 feet in diameter and/or weighing more than 150 pounds.
4. Equipment having plugged or partially plugged internal mechanisms.
5. Large mechanical systems, prior to disassembly where hydroblast or solvent flushing equipment can be safely brought to and applied.

Equipment systems to be considered for decontamination must meet the following criterion.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Must be capable of withstanding high pressure (8,000 psi) cold water wash or;
3. Compatible with solvent washing.
4. Each section must have no material plugging evident. If so then that section must be discarded as scrap of hazardous waste.

*Hydroblasting*

Cold water hydroblasting is for equipment that can be secured to a holding frame in such a manner so as not to be dislodged during washing. A hydroblast nozzle will be used to scour out pump impeller chambers, and other internal compartment configured with few non movable internal edges. There is no minimum time for hydroblasting equipment surfaces and is restricted to minimizing surface damage.

*Solvent Flushing*

Solvent flushing will utilize diesel and is for non electrical equipment. Solvent flushing will utilize a flexible low pressure spray applicator and used in situations where solvent can flow by gravity in a close loop manner to loosen or dissolve organic and inorganic residues. Diesel flushate can be used to fill up an internal chamber followed by draining or allowed to soak on internal surfaces as a preparation for hydroblasting. Diesel flushate can be reused, if filtered, repeatedly when replenished with new diesel routinely.

*Solvent Submersion*

Solvent submersion consists of an open tank with a lid used to submerge equipment pieces having significant amounts of contamination and having complex interior mechanisms. This method is suitable for gear and reduction boxes, hydraulic and pneumatic equipment as well as polyurethane based air and oil filter media. Diesel held submersion tank should be placed only in a secondary containment system and placed near the area of work. Submersion is conducted generally in preparation for final pressure washing or hydroblasting.

When using diesel in bulk, insure that diesel containers are secured and sealed when not dispensing or refilling.

*Exposed Surface Decontamination*

Exposed surfaces such as valve, flange, and union faces, remove o-rings (if present) and remove residuals with diesel saturated rag followed by a light rubbing with steel wool. Apply final wipe with clean diesel saturated rag or submerge in detergent water and rinse.

If decontamination is conducted inside a containment area then any spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated rinse water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in-place and within the confines of a secondary containment area or concrete pad having temporary containment berming.

**Decontamination Set Up**

Decontamination set up considerations will include the erection of equipment stands (for hydroblasting), placement of water lines, and spray barriers or protective sheeting.

Other decontamination set up considerations will include the placement of control zone locations, placement of similar temporary berming, placement of washing and diesel submersion equipment and supplies, diesel flushing containment and collection trays, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

## F Decontamination Performance Method for Equipment Systems Exhibiting Low or High pH

### Decontamination Scope

This decontamination performance method is to be performed only when initial field testing using pH strip paper reveals piping surface exhibiting a pH at or below 4 or at 10 or higher.

The scope of decontamination is to conduct wet decontamination work on metal pipe surfaces to remove the characteristic of DOT corrosivity prior to standard decontamination or disposal as prescribed under **DPM 4A**, **DPM 4B**, **DPM 4C, or DPM-4D**.

*Low pH (4 or lower)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) lower than 4.0 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Drain any free liquids from equipment interiors and containerize

2. Remove and dispose of all insulation, heat trace, and porous materials from equipment exterior.

3. Remove impacted equipment (if feasible) and move to concrete area within the HWMU containment pad. If unable to remove from original location isolate impacted equipment using plastic barrier sheeting and open or separate all access ports, unions, flanges, or nozzles.

4. Using a hand held pump sprayer and extension line and apply a prepared solution of sodium bicarbonate and water (pH of 10+) directly on all external and internal equipment surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface for 15 minutes. Repeat application so as to keep surfaces wet.

5. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH above 4 but below 10. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 4A**, **DPM 4B**, **DPM 4C, or DPM 4D**. Repeat steps 1 through 5 as necessary.

*High pH (10 or higher)*

For surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) higher than 10 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.

1. Drain any free liquids from equipment interiors and containerize

2. Remove and dispose of all insulation, heat trace, and porous materials from equipment exterior.

3. Remove impacted equipment (if feasible) and move to concrete area within the HWMU containment pad. If unable to remove from original location isolate impacted equipment using plastic barrier sheeting and open or separate all access ports, unions, flanges, or nozzles.

4. Using a hand held pump sprayer apply a prepared solution of citric acid (dry) and water (pH of 3-) directly on to all internal and exterior equipment surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface no longer than 5 minutes. Repeat application so as to keep surfaces wet.

5. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH below 10 but above 4.0. Rinsate can be added to the spent decontamination wash water.

Re-test treated surfaces 30 minutes after rinsing and continue with **DPM 4A**, **DPM 4B**, **DPM 4C, or DPM 4D**. Repeat steps 1 through 5 as necessary.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in place including all areas of overspray and within the confines of the secondary containment area. Structural fixtures will be dismantled and decontaminated within the confines of secondary containment. All decontamination work and verification of decontamination will be concluded prior to equipment removal for final disposition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection and pH testing of equipment surfaces for evidence of surface corrosion and to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include erection of scaffolding (if work is over 6 feet), positioning of man lifts, and fall protection measures.

Other decontamination set up considerations will include establishment of control zones, the placement of temporary berming around non containment concrete areas, spray barriers or protective sheeting, placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Gradients and slope will also be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent decontamination water to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

For non-containment areas, temporary berming made of weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan. The chemical hazards associated with decontamination activities may include the following:

- Potential for contact with residual corrosive salts on surfaces
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Flying concrete or debris from power washing
- Working in close proximity to heavy portable equipment
- Exposure to high pressure water and pressurized equipment

# 5 BUILDINGS

## A Decontamination Performance Method for Process Structures for Resale

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal process structures and structural components to a state free of contamination suitable for resale. Under this performance standard “resale” means the reuse of metallic structural materials for their original intended purpose for general industrial storage applications.

The term “building or structure” refers to any structure designed to protect or otherwise cover and surround completely or partially a physical process, storage of equipment or materials and/or for human occupancy

All non metal materials such as exposed drywall, plastic, wood and synthetic materials having contact or potential contact with hazardous materials will be removed and containerized for disposal as non hazardous or hazardous waste prior to wet decontamination.

Decontamination will consist of applying a low phosphate surfactant mix with water on painted or non painted metal or porous concrete and concrete block surfaces starting on the highest portion of the structure working downward. Solution should stay on the surface for approximately 30 minutes. This is followed by a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down.

Surfaces exhibiting physical contamination should be washed until no visual signs of contamination remain followed by a one foot surface area exposure to direct pressure spray for a minimum of 10 seconds.

Heavily stained, discolored, or corroded surfaces may need to be pre-soaked for 1 to 2 hours after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

Decontamination of structural ancillary equipment such as sprinkler and fire suppression systems, ducting and ventilation, scrubber and forced air exhausting ducting assemblies would be conducted in a similar manner with the exception of equipment having internal components that may require more extensive decontamination. Refer to **DPM 4A, DPM-4E** and **DPM 4F**.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas or on surfaces where run off leads to stormwater systems then stormwater collection basins will be diverted, plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Disassembly for Resale**

Disassembly for scrap will involve standard industrial bulk material sorting, disassembly techniques requiring dust control during all phases of disassembly.

**Decontamination Location**

All decontamination work should be conducted in-place and within the physical confines of the HWMU containment pad or constructed temporary containment pad as described in the preceding paragraphs. All decontamination works and verification of decontamination will be concluded prior to structural of equipment removal for final disposition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection of structural surfaces, affixed equipment and concrete floors to ascertain safe access and most effective decontamination approach. Initial set up considerations will include control zone locations, the erection of scaffolding, positioning of man lifts, and fall protection measures.

Additional decontamination set up considerations will include the placement of temporary berming (if required), placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If working adjacent to unprotected surfaces, temporary berming such as weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting or plastic barriers maybe placed or erected to keep wash water contained.

Any metallic or non porous items such as non-sellable grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that may impede the application or flow of decontamination solution or would require disassembly for proper cleaning will be demolished, removed and placed into containers for decontamination as miscellaneous equipment or disposed of as hazardous waste.

Walls and other structural porous materials such as gypsum, wallboard or wood will be demolished and containerized separately.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Electrical hazards
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method as Scrap or Recycling

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal process structures and structural components to a state free of contamination suitable for scrap or recycling. Under this performance standard scrap implies that metallic structural materials will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

The term “building or structure” refers to any structure designed to protect or otherwise cover and surround completely or partially a physical process, storage of equipment or materials and/or for human occupancy

All non metal materials such as drywall, plastic, wood and synthetic materials will be removed and containerized for disposal as hazardous waste prior to wet decontamination.

Decontamination will consist of applying a low phosphate surfactant mix with water on painted or non painted metal surfaces starting on the highest portion of framework working downward. Solution should stay on the surface for approximately 30 minutes. This is followed by a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down.

Surfaces exhibiting physical contamination should be washed until no visual signs of contamination remain followed by a one foot surface area exposure to direct pressure spray for a minimum of 5 seconds.

Heavily stained, discolored, or corroded surfaces may need to be pre-soaked for 1 to 2 hours after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues and with the goal to remove sufficient waste so as to meet the criteria of **DPS 3 (Scrap)**

Decontamination of structural ancillary equipment such as sprinkler and fire suppression systems, ducting and ventilation, scrubber and forced air exhausting ducting assemblies would be conducted in a similar manner with the exception of equipment having internal components that may require more extensive decontamination. Refer to **DPM 4B, DPM-4E** and **DPM 4F**.

If decontamination is conducted inside a containment area then the spent decontamination water should be collected in the nearest down gradient containment sump.

If decontamination is conducted on non-containment areas or on surfaces where run off leads to stormwater systems then stormwater collection basins will be diverted, plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system.

Washing should be conducted so as to allow spent wash solution to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

**Decontamination Location**

All decontamination work should be conducted in-place and within the physical confines of the HWMU containment pad or constructed temporary containment pad as described in the preceding paragraphs. All decontamination works and verification of decontamination will be concluded prior to structural of equipment removal for final disposition.

**Disassembly for Scrap with Demolition**

Disassembly for scrap will involve standard industrial bulk material sorting, scraping and demolition techniques requiring dust control during all phases of demolition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection of structural surfaces, affixed equipment and concrete floors to ascertain safe access and most effective decontamination approach. Initial set up considerations will include the erection of scaffolding, positioning of man lifts, water lines, control zone locations, and fall protection measures.

Additional decontamination set up considerations will include the placement of temporary berming (if required), placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If working adjacent to unprotected surfaces, temporary berming such as weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting or plastic barriers maybe placed or erected to keep wash water contained.

Any metallic or non porous items such as non-sellable grating, Unistrut® or Kendorf® fixtures, electrical conduct, or piping and that may impede the application or flow of decontamination solution or would require disassembly for proper cleaning will be demolished, removed and placed into containers for decontamination as miscellaneous equipment or disposed of as hazardous waste.

Walls and other structural porous materials such as gypsum, wallboard or wood will be demolished and containerized separately.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to hazardous spray or vapors associated with pressure washing
- Potential impact from loose or dislodged debris from washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Fall hazards
- Pinching hazards
- Falling objects
- Electrical hazards
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment

## C Decontamination Performance Method for Laboratories

### Decontamination Scope

The scope of this decontamination performance method is to render interior non permitted unit laboratory structural surfaces to a state free of contamination suitable for demolition as non hazardous waste. Under this performance standard free of contamination means a representative volumetric sample of structural material does not exhibit characteristic hazards defined under 40CFR Part 261 Subpart C as determined using methods prescribed under 40CFR Part 261 Subpart B.

The term “building or structure” refers to any structure designed to protect or otherwise cover and surround completely or partially a physical process, storage of equipment or materials and/or for human occupancy

Prior to structural surface decontamination, impeding porous materials such as ceiling tiles are to be removed and discarded as hazardous waste unless a representative sample meets the criteria of **DPS3 and DPC5 (Non Hazardous Waste)**. If so, ceiling tiles may be discarded as non hazardous waste.

An assessment for asbestos contained materials (ACM) will be conducted prior to removal or ceiling tiles and floor tiles.

Prior to structural surface decontamination the following items are to be removed and discarded as hazardous waste.

1. Small chemistries (to be disposed of as hazardous waste Chemical Lab Packs)
2. Chemical vent hoods, HVAC and all ducting to include exterior china box with blower and flume assemblies, and stack.
3. Non metallic wet benches
4. Grossly contaminated surface sections
5. Floor mats and waste containment trays

General working surface decontamination will consist of applying a cloth wipe saturated with a low phosphate surfactant mix with water on all surfaces to include laboratory benches walls, cabinetry, furnishings, windows, blinds, walls and floor. Solution should stay on the surface for approximately 10 minutes.

A single rinse will consist of wiping all treated surfaces using cloth rags saturated with a prepared solution consisting of 6% IPA and water.

Decontamination of structural ancillary equipment such as sprinkler and fire suppression systems, ducting and ventilation, scrubber and forced air exhausting ducting assemblies would be conducted in accordance with one or more decontamination methods prescribed under **DPM 4B, DPM 4C, DPM 4D, DPM 4E, or DPM 4F.**

*Exterior Building Sampling and Material Removal*

Exterior building surfaces subject to decontamination or removal as regulated waste is limited to roofing material under or around chemical exhaust vents and china box assemblies. Sampling of at least one surface section sufficient to test for parameters indicated in **DPS3** will be performed. If testing results meet the criteria of DPC5 than roofing material is suitable for disposal as non hazardous waste. If testing results fail then impacted sections of roofing as determined by using a 3 foot by 3 foot grid, will be handled, containerized, and disposed of as hazardous waste.

Spent decontamination solution and rinsate materials will be dispensed into DOT approved containers and designated as hazardous waste.

**Demolition for Scrap and Disposal**

Demolition for scrap and disposal will involve standard industrial bulk material sorting, scraping and demolition techniques requiring dust control during all phases of demolition.

**Decontamination Location**

All interior decontamination work will be conducted in-place and within the physical confines of the physical structure of the laboratory area. Any exterior removal of regulated waste will be conducted using enclosed waste disposal shoots dispensed directly into bulk hazardous waste containers or similar method in conjunction with dust and vapor controls defined in the health and safety plan to prevent contamination spread.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection of structural surfaces, equipment, crawlspaces, walls, and floors to ascertain safe access and most effective decontamination approach. Initial set up considerations will include the erection of scaffolding, control zone locations, containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to vapors associated with application of decontamination solutions

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Falling Objects
- Pinching hazards
- Electrical hazards

## D Decontamination Performance Method for Non-Process Offices

### Decontamination Scope

The scope of this decontamination performance method is to render interior and exterior non permitted office structures to include both fixed and mobile office units to a state free of contamination suitable for demolition as non hazardous waste.

Under this performance standard “free of contamination” means a representative volumetric sample of structural material does not exhibit characteristic hazards defined under 40CFR Part 261 Subpart C as determined using methods prescribed under 40CFR Part 261 Subpart B.

The term “building or structure” refers to any structure designed to protect or u[otherwise cover and surround completely or partially a physical process, storage of equipment or materials and/or for human occupancy

All office and administration interior office equipment and furnishings are to be considered free of contamination based on known and established past practices. The only area of concern in these A and B occupancy rated areas are personnel locker rooms, floors and concrete entrance ways leading to process areas.

All exterior entrances and tiled locker room showers and floors will be powerwashed using a low phosphate surfactant mix with water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down.

Surfaces exhibiting physical contamination should be washed until no visual signs of contamination remain.

A single rinse using pressurized clean water (at or above 2500 psi) applied evenly on surfaces starting from the highest contours working down will be conducted and sufficient to remove decontamination wash solution residues or a minimum of 5 seconds per one square foot of surface.

Spent decontamination wash and rinsewater from exterior surface areas will be controlled using temporary berming and will be vacuumed up using a wet/dry vac or vacuum truck.

Interior titled floors will be mopped using a low phosphate surfactant mix with water followed with a clean water mop.

All carpeted floors will be steam cleaned in place.

Spent decontamination solution and rinsate materials will be dispensed into DOT approved containers and added to general wash and rinsewater bulk waste.

There is no decontamination verification method required for non process office buildings

**Demolition for Scrap**

Demolition for scrap and disposal will involve standard industrial bulk material sorting, scraping and demolition techniques requiring dust control during all phases of demolition.

**Decontamination Location**

All decontamination work will be conducted in-place and within the physical confines of the physical area of decontamination

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection of structural surfaces. Initial set up considerations will include control zone locations, containment of spent decontamination solution, specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for localized exposure to vapors associated with application of decontamination solutions

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Trip hazards
- Electrical hazards

# 6 SOLVENT DISTILLATION SYSTEMS

## A Decontamination Performance Method for Distillation Systems for Resale

### Decontamination and Disassembly Scope

The scope of this decontamination performance method is to render non-porous metallic solvent distillation systems to a state free of contamination suitable for resale.

Under this performance standard “resale” means the reuse of mechanical and/or electrical equipment for its original intended purpose as a component in the processing of hazardous waste within an existing hazardous waste management unit operating under 40CFR Part 264.

Under this performance standard, “**distillation systems**” means solvent thermal fractionation , vacuum pot,  thin film distillation or similar single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

This performance standard refers to terms such as distillation system, process equipment, equipment, and equipment pieces which, in turn, refer to small and large equipment “units” that comprise various components serving collectively as a unit.

For example; a distillation reboiler consists of different components such as a tank, removable tank pipe flanges, a distribution manifold, valves, and gages or sensor devises connected together to form a single functioning mechanism. Any reference to any of the above equipment terms implies that items not specifically described in the closure plan narrative are included as part of a distillation system and therefore included in this Decontamination Performance Method.

Distillation equipment to be considered for decontamination for resale must meet the following pre-decontamination work criterion.

1. Equipment exteriors must be accessible for full visual inspection and accessible internally for adequate flushing and rinsing to achieve a non-hazardous waste criteria specified under **DPS 1 (Resale)**.

2. Internal chambers and voids must be drained of free liquids.
3. All extraneous chemical and liquid feed and drain lines must be drained, disconnected, and moved away from equipment and decontaminated separately for resale, scrap, or waste. (Refer to equipment disassembly below for specific instructions).
4. Each process piece must be marked or tagged with a number or ID corresponding with adjoining piece(s) along with type of waste handled and direction of process.

5. Interior spaces must not exhibit greater than 10% LEL prior to disassembly.
    a. If volatile vapors are present at or above 10% LEL either one, or both, of the following applications will apply.
        i. Open all access ports to allow affected internal section to air out
        ii. Apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

**Electrical Equipment Decontamination**

All electrical equipment such as pumps, control panels, switches, breaker panels, wiring and conduits will be disconnected up to equipment actuating junction boxes attached to the equipment. Each equipment piece, to include wired conduit sections will be tagged or marked indicating HWMU number, location removed from, and function. Electrical equipment will be moved to a staging area located within the containment area and individually decontaminated according to **DPM 4E "Decontamination Performance Method for Equipment Systems having Non-Accessible Interior Surfaces".**

**Mechanical Equipment Decontamination**

After electrical equipment removal, all piping, starting from the highest levels for each column, reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser will be disconnected and decontaminated separately in accordance with **DPM 3A "Decontamination Performance Method for Piping for Resale".**

**External Surfaces Decontamination**

External decontamination work will consist of pressure washing exterior portions of insulated and un-insulated painted or non painted metal surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. Hydroblasting may be required on certain external surfaces depending on degree of external contamination.

External surfaces of each column, reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser are to be pressure washed starting from the highest point downward until all external surfaces have been visually cleaned. After the removal of such visual contamination continue to apply direct pressure spray per one foot square surface area for an additional 30 seconds.

After initial washing activities are performed, a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface will be applied during rinsing activities.

**Internal Surfaces Decontamination**

Internal decontamination work will consist of installing a collection hose to the distillation column drain line that will send wash water to a receiving vacuum truck or pump and receiving wash water tank assembly. Disconnect distillation column liquid intake nozzle flange allowing enough space to insert a wide spray pressure applicator into the expansion chamber.

Pressure wash internal chambers and voids using a high pressure cold water/low foam surfactant wash. Spent wash water may be reused through a filtered closed loop wash system or dispensed as spent waste wash water. If this method applies a 30 minute cycle using a minimum of 500 gallons of wash water is required.

Once the pressure washing operation has been discontinued, open the top side inspection port and repeat internal washing using a narrow spray nozzle for both upper and lower accessible internal surfaces. A 10 minute cycle using a minimum of 100 gallons of wash water is required for this operation.

If additional inspection ports are present, place plastic sheeting over original open port and proceed to the next lower inspection port. Repeat above mentioned pressure washing method.

After initial washing activities are performed, a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface is acceptable.

Repeat above internal pressure wash processing for the reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser utilizing inspection ports, nozzles, or manways accordingly. Modify drainage to accommodate specific fluid intake and discharge manifold configurations

Additional flushing of interior surfaces may be required if initial pressurized washing and rinsing fails to achieve desired results. Flushing will consist of spraying or pouring a concentrated wetting agent such as Alconox® or sodium hydroxide solution to reach and remove contamination lodged into small recesses or hidden interior spaces. The flushing solution or “flushate” should be allowed to soak in-place for approximately 15 minutes while keeping the internal surface wet.

**Supporting Equipment Decontamination**

The washing of equipment supporting platforms, common railings, catwalks and elevated grating, production floor concrete surfaces and unique equipment clusters such as water filtration and screening systems. Individual pieces of equipment, to include irregular pieces of metal, are to be decontaminated in accordance with **DPM 4A “Decontamination Performance Method for Equipment Systems for Resale”.**

Once the entire decontamination process is completed imlplement verification testing for all decontaminated equipment. If testing results fall above required DPS for distillation system re-sell, repeat external and internal decontamination methods and re-test for acceptability before proceeding with further disassembly.

*NOTE: In the event that any one, or more of the HWMU equipment fails its respective DPS criteria then that equipment will be considered for handling as scrap or hazardous waste.*

Spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection points to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Distillation System Disassembly**

The disassembly of columns, reboiler heat exchangers, condensers, reflux pumps, overhead separators, plate and frame condensers and plate and frame chilling condensers will be conducted using an overhead crane to support each piece of equipment while being unbolted or cut away from framework or supporting saddle or platform.

Once disconnected, each piece will be lifted up and away from the containment unit and set directly onto a highway transport unit, or unit designed for rail travel, or set temporarily onto a constructed saddle for further pre-transportation packaging.

During the disassembly process, any surfaces encountered that were exposed to hazardous materials, such as plate-to-plate interfaces, will be decontaminated individually using **DPM 4E "Decontamination Performance Method for Equipment Systems having Non-Accessible Interior Surfaces".**

Pre-transportation packaging for equipment will be consistent with all applicable 49CFR performance packaging requirements.

Small equipment including electrical, power, and certain equipment components will be tested in accordance with their respective PDS criteria and packaged in crates or specialty containers. Pre-transportation packaging for small equipment will be consistent with all applicable 49CFR performance packaging requirements.

After removal of all equipment, decontamination processing within the HWMU will consist of pressure remaining framework in accordance with **DPM 2A "Decontamination Performance Method for Open Aboveground Framework for Resale".**

Disassembly of framework will be conducted using overhead cranes as each frame section is cut or unbolted and loaded onto highway transport units, or unit designed for rail travel, or set temporarily onto a constructed saddle for further pre-transportation packaging.

Pre-transportation packaging for framework will be consistent with all applicable 49CFR performance packaging requirements for general bulk commodities.

**Decontamination and Disassembly Location**

Decontamination will be conducted in-place and within the confines of the secondary containment area.

**Decontamination and Disassembly Set Up**

Decontamination and disassembly sequencing will be planned using the below method as a base approach, and taking into account actual conditions that may require plan modification.

Decontamination work involving pressure washing, hydroblasting, flushing and rinsing will be conducted with emphasis on minimizing the amount of contaminated wash or rinsewater from coming into direct contact with secondary contaminant. Protective measures such as laying down plastic sheeting, erection of spray barriers, installing closed loop discharge systems, vacuuming or channeling will be implemented whenever risk to the integrity or the impacted containment surface becomes questionable or will create undue additional decontamination effort later on.

Decontamination and disassembly set up considerations will first include an initial check of equipment interior and exterior sections to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Equipment system disassembly should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

Should a piece of equipment or component require removal prior to decontamination then the equipment or component must be marked and tagged showing where or how it is attached to adjoining components, type of waste processed or contacted with, and direction of waste processing thorough the piece or component.

Disassembly of large equipment units are to be conducted prior to the removal of overhead structures not having undergone one or more decontamination methods described in **DPM 5A and B**.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Chemical burns from exposure to flushing or decontaminating agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Potential impact from loose or dislodged debris from washing Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Distillation Systems as Scrap

## Decontamination and Disassembly Scope

The scope of this decontamination performance method is to render non-porous metallic solvent distillation systems to a state free of contamination suitable for scrap.

Under this performance standard “scrap” means the mechanical and/or electrical equipment will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

Under this performance standard “distillation systems” means solvent thermal fractionation , vacuum pot,  thin film distillation or similar single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

This performance standard refers to terms such as distillation system, process equipment, equipment, and equipment pieces which, in turn, refer to small and large equipment “units” that comprise of various components serving collectively as a unit. For example; a distillation reboiler consists of different components such as a tank, removable tank pipe flanges, a distribution manifold, valves, and gages or sensor devises connected together to form a single functioning mechanism. Any reference to any of the above equipment terms implies that items not specifically described in a closure plan narrative are included as part of a distillation system and therefore included in this Decontamination Performance Method.

Equipment to be considered for decontamination as scrap or recycling must meet the following decontamination criterion. NOTE: Insure that interior sections are inspected for LEL and presence of free liquids.

1. Equipment exteriors must be configured to allow for full visual inspection and for adequate interior flushing and rinsing. Partial disassembly may be required for inspection.
2. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
3. Internal chambers and voids must be drained of free liquids.
4. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow affected internal section to air out, apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

All equipment will be inspected for the presence of free liquids and drained using accessible drain ports or for piping and pumps sucked out at disconnecting joints or unions.

All electrical control cabinetries and breaker boxes will be de-energized and locked and tagged out, then secured with access panel door open.

Decontamination work will consist of pressure washing exterior surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. Hydroblasting certain external surfaces replaces pressure washing depending on degree of external contamination.

External surfaces of each column, reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser are to be pressure washed starting from the highest point downward until all external surfaces have been cleaned. After the removal of visual contamination add an additional 10 seconds of direct pressure spray per one foot square surface area.

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface is acceptable.

Install a collection hose to the distillation column drain line that will send wash water to a receiving vacuum truck or pump and receiving wash water tank assembly. Disconnect distillation column liquid intake nozzle flange allowing enough space to insert a wide spray pressure applicator into the expansion chamber.

Pressure wash internal chambers and voids using the same high pressure cold water/low foam surfactant wash. Spent wash water may be reused through a filtered closed loop wash system or dispensed as spent waste wash water. A 15 minute cycle using a minimum of 300 gallons of wash water is required.

Shut down pressure washing operations. Open top side inspection port and repeat internal washing using a narrow spray nozzle for both upper and lower accessible internal surfaces. A 10 minute cycle using a minimum of 100 gallons of wash water is required.

Place plastic sheeting over open port and process to the next lower inspection port (if present)

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface is acceptable.

Repeat internal pressure wash processing for the reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser utilizing inspection ports, nozzles, or manways accordingly. Modify drainage to accommodate specific fluid intake and discharge manifold configurations

Additional flushing of interior surfaces may be conducted if pressurized washing and rinsing fails to achieve desired results. Flushing will consist of spraying or pouring a concentrated wetting agent such as Alconox® or sodium hydroxide solution to reach and remove contamination lodged into small recesses or hidden interior spaces. The flushing solution or “flushate” should be allowed to soak in-place for approximately 15 minutes while keeping the internal surface wet. A flushing rinse using pressurized clean water will follow until the rinsate has a final pH of between 5 and 9 as tested using pH strip paper.

The next decontamination process will involve the cleaning of equipment supporting platforms, common railings, catwalks and elevated grating, production floor concrete surfaces and unique equipment clusters such as water filtration and screening systems. Individual pieces of equipment to include irregular pieces of metal are to be decontaminated in accordance with **DPM 4B.**

Heavily stained, discolored, or corroded exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

All external decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Conduct verification testing for all decontaminated equipment to include separated equipment decontaminated by other prescribed means. Repeat external and internal decontamination methods and re-test for acceptability before proceeding with further disassembly.

*In the event that any one or more equipment fails its respective DPS criteria then that equipment will be considered for handling as non hazardous or hazardous waste.*

Disassembly of columns, reboiler heat exchangers, condensers, reflux pumps, overhead separators, plate and frame condensers and plate and frame chilling condensers will be conducted using an overhead crane to support each piece of equipment while being unbolted or cut away from framework or supporting saddle or platform.

Once disconnected, each piece will be lifted up and away from the containment unit and set directly onto a highway transport unit or placed into bulk containers for transportation for recycling.

Any exposed surfaces such as plate-to-plate interfaces will be decontaminated individually using **DPM 4E**.

Remaining small equipment will be demolished using standard industrial demolition practices and placed into bulk containers for transportation for recycling.

After removing all equipment, decontamination processing within the HWMU will consist of pressure remaining framework in accordance with **DPM 2A or DPM 2B**. Disassembly of framework will be conducted using overhead cranes as each frame section is cut or unbolted and set directly onto a highway transport unit or placed into bulk containers for transportation for recycling.

**Decontamination and Disassembly Location**

Decontamination will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Disassembly Set Up**

Decontamination and disassembly sequencing will be planned using this method as a base approach and taking into account actual conditions that may be encountered requiring modification.

Decontamination and disassembly set up considerations will first include an initial check of equipment interior and exterior sections to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Equipment system disassembly should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

Disassembly of large equipment units are to be conducted prior to the removal of overhead structures not having undergone one or more decontamination methods described in **DPM 5A and B**

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment
- Chemical burns from exposure to flushing or decontaminating agents

## C Decontamination Performance Method for Distillation Systems for Non-Hazardous Waste Disposal

### Decontamination and Disassembly Scope

The scope of this decontamination performance method is to render non-porous metallic solvent distillation systems to a state free of contamination suitable as non hazardous waste. Under this performance standard non-hazardous waste means material suitable for disposal to a subtitle D landfill.

Under this performance standard “distillation systems” means solvent thermal fractionation , vacuum pot,  thin film distillation or similar single piece of equipment or equipment pieces or components connected together having been in direct or indirect contact with hazardous waste.

This performance standard refers to terms such as distillation system, process equipment, equipment, and equipment pieces which, in turn, refer to small and large equipment “units” that comprise of various components serving collectively as a unit. For example; a distillation reboiler consists of different components such as a tank, removable tank pipe flanges, a distribution manifold, valves, and gages or sensor devises connected together to form a single functioning mechanism. Any reference to any of the above equipment terms implies that items not specifically described in a closure plan narrative are included as part of a distillation system and therefore included in this Decontamination Performance Method.

Equipment to be considered for decontamination as non-hazardous waste must meet the following decontamination criterion. NOTE: Insure that interior surfaces are inspected for LEL and presence of free liquids before cutting to size.

1. Equipment exteriors must be configured to allow for full visual inspection and configured internally for adequate flushing and rinsing. Partial disassembly may be required.
2. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
3. Broken down or cut into sections on longer than 10 feet in length and allowing for the complete drainage of free liquids.
4. Internal chambers and voids must be drained of free liquids.
5. Interior spaces must not exhibit greater than 10% LEL.

If volatile vapors are present at or above 10% LEL then allow piping section to air out, apply a detergent flush, or fill voids with absorbent material.

All electrical control cabinetries and breaker boxes will be de-energized and locked and tagged out, then secured with access panel door open.

Decontamination work will consist of pressure washing exterior surfaces using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. Hydroblasting certain external surfaces replaces pressure washing depending on degree of external contamination.

External surfaces of each column, reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser are to be pressure washed starting from the highest point downward until all external surfaces have been cleaned. After the removal of visual contamination add an additional 10 seconds of direct pressure spray per one foot square surface area.

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 5 seconds of direct pressure per one square foot of surface is acceptable.

Install a collection hose to the distillation column drain line that will send wash water to a receiving vacuum truck or pump and receiving wash water tank assembly. Disconnect distillation column liquid intake nozzle flange allowing enough space to insert a wide spray pressure applicator into the expansion chamber.

Pressure wash internal chambers and voids using the same high pressure cold water/low foam surfactant wash. Spent wash water may be reused through a filtered closed loop wash system or dispensed as spent waste wash water. A 10 minute cycle using a minimum of 300 gallons of wash water is required.

Shut down pressure washing operations. Open top side inspection port and repeat internal washing using a narrow spray nozzle for both upper and lower accessible internal surfaces. A 5 minute cycle using a minimum of 100 gallons of wash water is required.

Place plastic sheeting over open port and process to the next lower inspection port (if present)

After washing a single rinse using pressurized clean water will be applied in the same manner to remove decontamination wash solution residues. A minimum of 10 seconds of direct pressure per one square foot of surface is acceptable.

Repeat internal pressure wash processing for the reboiler heat exchanger, condenser, reflux pump, overhead separator, plate and frame condenser, plate and frame chilling condenser utilizing inspection ports, nozzles, or manways accordingly. Modify drainage to accommodate specific fluid intake and discharge manifold configurations

Additional flushing of interior surfaces may be conducted if pressurized washing and rinsing fails to achieve desired results. Flushing will consist of spraying or pouring a concentrated wetting agent such as Alconox® or sodium hydroxide solution to reach and remove contamination lodged into small recesses or hidden interior spaces. The flushing solution or “flushate” should be allowed to soak in-place for approximately 15 minutes while keeping the internal surface wet. A flushing rinse using pressurized clean water will follow until the rinsate has a final pH of between 5 and 9 as tested using pH strip paper.

The next decontamination process will involve the cleaning of equipment supporting platforms, common railings, catwalks and elevated grating, production floor concrete surfaces and unique equipment clusters such as water filtration and screening systems. Individual pieces of equipment to include irregular pieces of metal are to be decontaminated in accordance with **DPM 4C.**

Heavily stained, discolored, or corroded exterior or interior surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

All external decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Conduct verification testing for all decontaminated equipment to include separated equipment decontaminated by other prescribed means. Repeat external and internal decontamination methods and re-test for acceptability before proceeding with further disassembly.

*In the event that any one or more equipment fails its respective DPS criteria then that equipment will be considered for handling as hazardous waste.*

Disassembly of columns, reboiler heat exchangers, condensers, reflux pumps, overhead separators, plate and frame condensers and plate and frame chilling condensers will be conducted using an overhead crane to support each piece of equipment while being unbolted or cut away from framework or supporting saddle or platform.

Once disconnected, each piece will be lifted up and away from the containment unit and set directly onto a highway transport unit and wrapped a with 6 mil plastic covering or placed into lined bulk containers for transportation for disposal.

Any exposed surfaces such as plate-to-plate interfaces will be decontaminated individually using **DPM 4E**.

Remaining small equipment will be demolished using standard industrial demolition practices and placed into lined bulk containers for transportation for non hazardous waste disposal.

After removing all equipment, decontamination processing within the HWMU will consist of pressure remaining framework in accordance with **DPM 2A or DPM 2B**. Disassembly of framework will be conducted using overhead cranes as each frame section is cut or unbolted and wrapped a with 6 mil plastic covering or placed into lined bulk containers for transportation for non hazardous waste disposal.

**Decontamination and Disassembly Location**

Decontamination will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Disassembly Set Up**

Decontamination and disassembly sequencing will be planned using this method as a base approach and taking into account actual conditions that may be encountered requiring modification.

Decontamination and disassembly set up considerations will first include an initial check of equipment interior and exterior sections to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Equipment system disassembly should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

Disassembly of large equipment units are to be conducted prior to the removal of overhead structures not having undergone one or more decontamination methods described in **DPM 5A and B**.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing or decontaminating agents

# D Decontamination Performance Method for Distillation Systems for Hazardous Waste Disposal

## Decontamination Scope

The scope of this decontamination performance method is to insure that no free liquids or ignitable characteristics remain on or in equipment, items, or porous materials rejected for all other disposition options. Under this performance standard “hazardous waste” means materials acceptable for disposal to a hazardous waste landfill operating under the requirements of 40CFR Part 264 or 256 as well as applicable elements of CCR §66264 and §66265.

Equipment systems to be considered for hazardous waste disposal must meet the following criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting.

1. Broken down or cut into manageable dimensions acceptable by the disposal facility and allowing for the complete drainage of free liquids.
2. Separation of insulation material so that all exterior surfaces are exposed
3. Opening of all equipment ports and manways
4. No presence of free liquids
5. No presence of ignitable characteristics

Decontamination method for removing volatile vapors from interior surfaces to below 10% LEL will consist of allowing a piping section to air out or by filling voids with absorbent material.

Free liquids should be removed only over a drip pad placed on top of secondary containment. Decontamination must be conducted inside a disposable containment tray or liner.

If volatile vapors are present at or above 10% LEL then allow affected internal section to air out, apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

All external decontamination will consist of removing gross contamination from surfaces that can be practically achieved using no sparking tools.

Interior decontamination will be limited to power washing internal surfaces to the degree where no semi liquid or free flowing residuals remain. Install a collection hose to the distillation equipment drain line that will send wash water to a receiving vacuum truck or pump and receiving wash water tank assembly. Disconnect equipment liquid intake nozzle flange(s) allowing enough space to insert a wide spray pressure applicator into the expansion chamber.

All other spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area.

A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Disassembly of columns, reboiler heat exchangers, condensers, reflux pumps, overhead separators, plate and frame condensers and plate and frame chilling condensers will be conducted using an overhead crane to support each piece of equipment while being unbolted or cut away from framework or supporting saddle or platform.

Once disconnected, each piece will be lifted up and away from the containment unit, wrapped with 6 mil plastic sheeting and set directly onto a highway transport unit, or placed into lined specialty bulk containers.

Pre-transportation packaging for equipment will be consistent with all applicable 49CFR performance packaging requirements.

Small equipment including electrical, power, and certain equipment components will be placed into lined specialty bulk containers. Pre-transportation packaging for small equipment will be consistent with all applicable 49CFR performance packaging requirements.

After removal of all equipment, decontamination processing within the HWMU will consist of pressure remaining framework in accordance with **DPM 2A**. Disassembly of framework will be conducted using overhead cranes as each frame section is cut or unbolted and wrapped with 6 mil plastic sheeting and set directly onto a highway transport unit, or placed into lined specialty bulk containers.

Pre-transportation packaging for framework will be consistent with all applicable 49CFR performance packaging requirements.

**Decontamination and Demolition Location**

Decontamination will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Demolition Set Up**

Decontamination and disassembly sequencing will be planned using this method as a base approach and taking into account actual conditions that may be encountered requiring modification.

Decontamination and disassembly set up considerations will first include an initial check of equipment interior and exterior sections to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible equipment ports, man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found in interior compartments will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Equipment system disassembly should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or lqiuids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment
- Chemical burns from exposure to flushing or decontaminating agents

# 7 TANKS

## A Decontamination Performance Method for Tanks for Resale

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal tanks to a state free of contamination suitable for resale. Under this performance standard resale means the reuse of the piping for its original intended purpose for conveying hazardous waste within a hazardous waste management unit of for non food industrial storage only.

Tanks to be considered for decontamination for resale must meet the following decontamination criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Removable metallic items such as sensor, float gauges, heat strips, tape and gasket material must be removed and discarded as scrap or hazardous waste.
3. Feed and return piping must be drained and removed prior to decontamination.
4. Tank surfaces must have no significant erosion, corrosion, cracks or bulging evident. If so then the tank must be discarded as scrap.

If volatile vapors are present at or above 10% LEL either one, or both, of the following applications will apply.

   a. Open all access ports to allow affected internal section to air out
   b. Apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will first consist of vacuuming out remaining tank sludge which will be transferred into DOT approved drums or bulk containers for disposal as hazardous waste.

Once gross contamination has been removed the inside the tank will be pressure washed using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. A one foot linear surface area should be exposed to direct pressure spray for a minimum of 10-15 seconds after all physical contamination has been removed.

Hydroblasting certain external surfaces replaces pressure washing depending on degree of external contamination.

Heavily stained, discolored surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

A single application using a pressurized clean water rinse (at or above 2500 psi) on internal surfaces will be sufficient to remove wash solution residues. A minimum of 5 seconds per one square foot of surface is also acceptable.

Spent decontamination solution and rinsate will be pumped from tank concurrently with powerwashing and rinsing to a designated rinse water holding tank located in or near the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

Verification examination and sampling will be conducted in accordance with **DPC 2 (resale)** then any remaining free liquids are to be pumped out the tank and all manways, inspection ports and nozzles or tank adaptors sealed.

Exterior tank surfaces will then be decontaminated by pressure washing tank exteriors using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly.

Decontamination will start with powerwashing the top of the tank followed with side walls, attached catwalks or cage ladders then along the tank lip and concrete pad. A one foot surface area should be exposed to direct pressure spray after all physical contamination has been removed for a minimum of 5 seconds.

Heavily stained, discolored surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

A final clean water rinse application using a pressurized sprayer (at or above 2500 psi) over exterior surfaces will be sufficient to remove wash solution residues. A minimum of 5 seconds per one square foot of surface is also acceptable.

Exterior tank decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Tank Disassembly**

The disassembly of tanks and associated components will be conducted using an overhead crane to support and lift equipment from the tank or supporting pad.

Once removed, each piece will be set directly onto a highway transport unit or set temporarily onto a constructed saddle for further pre-transportation packaging.

Tank underside will be decontaminated after the tank has been lifted and set safely on a transport unit or temporary support saddle. Underside decontamination will consist of setting up a temporary containment pad around the work area and applying dampened rags with a low phosphate cleaning detergent and water directly on the external surfaces. This will be repeated with a clean water wipe.

Transportation of tank body to the designated off site location will be consistent with all applicable 49CFR transportation requirements for bulk commodities.

Disassembly of any remaining tank framework will be conducted using overhead cranes as each frame section is cut or unbolted and loaded onto a highway transport unit or set temporarily onto a constructed saddle for any additional transport preparation.

Transportation of tank framework to the designated off site location will be consistent with all applicable 49CFR transportation requirements for bulk commodities.

**Decontamination and Disassembly Location**

Decontamination will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Disassembly Set Up**

Decontamination and disassembly sequencing will be planned using the below method as a base approach and taking into account actual conditions may require plan modification.

Decontamination work involving pressure washing, hydroblasting, flushing and rinsing will be conducted with emphasis on minimizing the amount of spent wash or rinsewater from coming into direct contact with secondary contaminant. Protective measures such as laying down plastic sheeting, erection of spray barriers, installing closed loop discharge systems, vacuuming or channeling will be implemented whenever risk to the integrity or the impacted containment surface becomes questionable or will create undue additional decontamination effort later on.

Decontamination and disassembly set up considerations will first include an initial check of tank interior and exterior surfaces to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), manlifts, spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible tank man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found inside will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Tank disassembly should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing or decontaminating agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Confined space hazards
- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment

# B Decontamination Performance Method for Tanks as Scrap

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal tanks to a state free of contamination suitable for scrap. Under this performance standard “scrap” means the tank and all associated components will be disassembled or demolished and shipped offsite as salvageable material to a commercial or state licensed metal recycler.

Under this performance standard “Tank” means any single tanks and attached components to include catwalks, ladders, railings, float devises, forced or atmosphere vents, scrubber assemblies, mixers and mounts, insulation, heat tracing or other piece of equipment or equipment pieces or components connected to the tank and having been in direct or indirect contact with hazardous waste.

Tanks to be considered for decontamination as scrap or recycling must meet the following decontamination criterion. NOTE: Insure that interior sections are inspected for LEL and presence of free liquids.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Removable metallic items such as sensor, float gauges, heat strips, tape and gasket material must be removed and discarded as scrap or hazardous waste.
3. Feed and return piping must be drained and removed prior to decontamination.

   If volatile vapors are present at or above 10% LEL either one, or both, of the following applications will apply.
   a. Open all access ports to allow affected internal section to air out
   b. Apply a detergent flush, or suck out vapors using a pneumatic vacuum system having an activated carbon filtering scrubber or similar emissions devise.

Decontamination work will first consist of vacuuming out remaining tank sludge which will be transferred into DOT approved drums or bulk containers for disposal as hazardous waste.

Once gross contamination has been removed the inside the tank will be pressure washed using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. A one foot linear surface area should be exposed to direct pressure spray for a minimum of 10-15 seconds after all physical contamination has been removed.

Hydroblasting certain external surfaces replaces pressure washing depending on degree of external contamination.

A single application using a pressurized clean water rinse (at or above 2500 psi) on internal surfaces will be sufficient to remove wash solution residues.

Spent decontamination solution and rinsate will be pumped from tank concurrently with powerwashing and rinsing to a designated rinse water holding tank located in or near the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

Verification examination and sampling will be conducted in accordance with **DPC 4 (Scrap)** then any remaining free liquids are to be pumped out the tank and all manways, inspection ports and nozzles or tank adaptors sealed.

Exterior tank surfaces will then be decontaminated by pressure washing tank exteriors using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly.

Decontamination will start with powerwashing the top of the tank followed with side walls, attached catwalks or cage ladders then along the tank lip and concrete pad. A one foot surface area should be exposed to direct pressure spray after all physical contamination has been removed for a minimum of 5 seconds.

Heavily stained, discolored surfaces may need to be pre-soaked for 30 minutes to 1 hour after applying a low phosphate surfactant solution directly onto impacted surfaces.

A final clean water rinse application using a pressurized sprayer (at or above 2500 psi) over exterior surfaces will be sufficient to remove wash solution residues. A minimum of 5 seconds per one square foot of surface is also acceptable.

Exterior tank decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Tank underside will be grossly decontaminated after the tank has been lifted and set safely on a transport unit or temporary support saddle. Underside decontamination will consist of setting up a temporary containment pad around the work area and applying dampened rags with a low phosphate cleaning detergent and water directly on the external surfaces. This will be repeated with a clean water wipe.

**Tank Demolition**

The demolition of tank bodies to be shipped as scrap will be conducted using mechanical sheers or devise to crush, sheer or render the tank into form necessary for transportation and at a minimum a 3 foot diameter hole cut into the bottom of the tank to prevent reuse An overhead crane or trackhoe will be used and lift broken down equipment and set directly onto a highway transport unit or bulk scrap container.

Transportation of tank body and any associated framework and equipment to the designated recycling facility will be consistent with all applicable 49CFR transportation requirements for bulk scrap.

**Decontamination and Demolition Location**

Decontamination and demolition will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Demolition Set Up**

Decontamination and demolition sequencing will be planned using the below method as a base approach and taking into account actual conditions may require plan modification.

Decontamination work involving pressure washing, hydroblasting, flushing and rinsing will be conducted with emphasis on minimizing the amount of spent wash or rinsewater from coming into direct contact with secondary contaminant. Protective measures such as laying down plastic sheeting, erection of spray barriers, installing closed loop discharge systems, vacuuming or channeling will be implemented whenever risk to the integrity or the impacted containment surface becomes questionable or will create undue additional decontamination effort later on.

Decontamination and demolition set up considerations will first include an initial check of tank interior and exterior surfaces to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), manlifts, spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible tank man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found inside will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Tank demolition should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination and demolition activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing or decontaminating agents

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Confined space hazards
- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment

## C Decontamination Performance Method for Tanks for Non Hazardous Waste Disposal

### Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal tanks to a state free of contamination suitable as non hazardous waste. Under this performance standard “non-hazardous waste” means material suitable for disposal to a subtitle D landfill.

Under this performance standard “Tank” means any single tank and attached components to include catwalks, ladders, railings, float devises, forced or atmosphere vents, scrubber assemblies, mixers and mounts, insulation, heat tracing or other piece of equipment or equipment pieces or components connected to the tank and having been in direct or indirect contact with hazardous waste.

Tanks to be considered for decontamination as scrap or recycling must meet the following decontamination criterion. NOTE: Insure that interior sections are inspected for LEL and presence of free liquids.

1. Porous insulation and other non specific porous material must be removed and discarded as hazardous waste.
2. Feed and return piping must be drained and removed prior to decontamination.

   If volatile vapors are present at or above 10% LEL either one, or both, of the following applications will apply.
   a. Open all access ports to allow affected internal section to air out
   b. Apply a detergent flush

Decontamination work will first consist of vacuuming out remaining tank sludge which will be transferred into DOT approved drums or bulk containers for disposal as hazardous waste.

Once gross contamination has been removed the inside the tank will be pressure washed using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) working from the highest physical point downward. A one foot linear surface area should be exposed to direct pressure spray for a minimum of 10 seconds after all physical contamination has been removed.

Hydroblasting certain external surfaces replaces pressure washing depending on degree of external contamination.

A single application using a pressurized clean water rinse (at or above 2500 psi) on internal surfaces will be sufficient to remove wash solution residues.

Spent decontamination solution and rinsate will be pumped from tank concurrently with powerwashing and rinsing to a designated rinse water holding tank located in or near the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

Verification examination and sampling will be conducted in accordance with **DPC 5 (non hazardous waste)** then any remaining free liquids are to be pumped out the tank and all manways, inspection ports and nozzles or tank adaptors sealed.

Exterior tank surfaces will then be decontaminated by pressure washing tank exteriors using a high pressure cold water/low foam surfactant wash (at or above 2500 psi) applied evenly.

Decontamination will start with powerwashing the top of the tank followed with side walls, attached catwalks or cage ladders then along the tank lip and concrete pad. A one foot surface area should be exposed to direct pressure spray after all physical contamination has been removed for a minimum of 5 seconds.

A final clean water rinse application using a pressurized sprayer (at or above 2500 psi) over exterior surfaces will be sufficient to remove wash solution residues.

Exterior tank decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

Tank underside will be grossly decontaminated after the tank has been lifted and set safely on a transport unit or temporary support saddle. Underside decontamination will consist of setting up a temporary containment pad around the work area and applying dampened rags with a low phosphate cleaning detergent and water directly on the external surfaces. This will be repeated with a clean water wipe.

**Tank Demolition**

The demolition of tanks and any associated components not suitable as scrap will be conducted using mechanical sheers or devise to crush, sheer or render the tank into form acceptable for landfill by leaving no or few interior free spaces. An overhead crane or trackhoe will be used and lift broken down equipment and set directly onto a highway transport unit or bulk waste container

Transportation of tank body and any associated framework and equipment to the designated disposal facility will be consistent with all applicable 49CFR transportation requirements for bulk non hazardous waste.

**Decontamination and Demolition Location**

Decontamination and demolition will be conducted in place and within the confines of the secondary containment area.

**Decontamination and Demolition Set Up**

Decontamination and demolition sequencing will be planned using the below method as a base approach and taking into account actual conditions may require plan modification.

Decontamination work involving pressure washing, hydroblasting, flushing and rinsing will be conducted with emphasis on minimizing the amount of spent wash or rinsewater from coming into direct contact with secondary contaminant. Protective measures such as laying down plastic sheeting, erection of spray barriers, installing closed loop discharge systems, vacuuming or channeling will be implemented whenever risk to the integrity or the impacted containment surface becomes questionable or will create undue additional decontamination effort later on.

Decontamination and demolition set up considerations will first include an initial check of tank interior and exterior surfaces to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), manlifts, spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

All accessible tank man ways, hatches, or inspection nozzles will be opened, monitored and allowed to air out. Loose debris or liquid waste found inside will be vacuumed out, containerized and dispensed as hazardous waste.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Tank demolition should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing or decontaminating agents

**Physical Hazards**

The chemical hazards associated with decontamination and demolition activities may include the following:

- Confined space hazards
- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment

# D Decontamination Performance Method for Tanks for Hazardous Waste Disposal

## Decontamination Scope

The scope of this decontamination performance method is to render non-porous metal tanks to a state acceptable for disposal as hazardous waste. Under this performance standard “hazardous waste” means materials acceptable for disposal to a hazardous waste landfill operating under the requirements of 40CFR Part 264 or 256 as well as applicable elements of CCR §66264 and §66265.

Under this performance standard “tank” means any single tank and attached components to include catwalks, ladders, railings, float devises, forced or atmosphere vents, scrubber assemblies, mixers and mounts, insulation, heat tracing or other piece of equipment or equipment pieces or components connected to the tank and having been in direct or indirect contact with hazardous waste.

Tanks to be considered for hazardous waste disposal must meet the following criterion. NOTE: Insure that interior piping sections are inspected for LEL and presence of free liquids before cutting.

1. Broken down or cut into manageable dimensions acceptable by the disposal facility and allowing for no or few interior spaces
2. Separation of insulation material so that all exterior surfaces are exposed
3. No presence of free liquids
4. No presence of ignitable characteristics

Decontamination method for removing volatile vapors from interior surfaces to below 10% LEL will consist of allowing a piping section to air out or by filling voids with absorbent material.

Free liquids should be removed only over a drip pad placed on top of secondary containment. Decontamination must be conducted inside a disposable containment tray or liner.

Interior tank decontamination will consist of vacuuming out remaining tank sludge which will be transferred into DOT approved drums or bulk containers for disposal as hazardous waste. Any additional gross contamination resent will be removed using manual non sparking scrapers or by limited hydroblasting. Interior decontamination will be limited to the removal of gross contamination using non sparking tools and limited powerwashing sufficient to remove built up waste on metal surfaces.

Spent hydroblast water will be pumped from tank directly to a designated rinse water holding tank located in or near the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer rinsewater to a holding tank located elsewhere on-site.

Exterior decontamination will be limited to the removal of gross contamination using non sparking tools and limited powerwashing sufficient to remove built up waste on metal surfaces.

Exterior tank decontamination is to be conducted inside a containment with spent decontamination water will be collected in the nearest down gradient containment sump.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive wash water may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination and Demolition Location**

Decontamination and demolition will be conducted in place and within the confines of the secondary containment area.

**Tank Demolition**

The demolition of tanks and any associated components not suitable as non hazardous waste will be conducted using mechanical sheers or devise to crush, sheer or render the tank into form acceptable for landfill by leaving no or few interior free spaces. An overhead crane or trackhoe will be used and lift broken down equipment and set directly onto a highway transport unit or bulk waste container.

Transportation of tank body and any associated framework and equipment to the designated disposal facility will be consistent with all applicable 49CFR transportation requirements for bulk hazardous waste.

**Decontamination and Demolition Set Up**

Decontamination and demolition sequencing will be planned using the below method as a base approach and taking into account actual conditions may require plan modification.

Decontamination work involving pressure washing, hydroblasting, flushing and rinsing will be conducted with emphasis on minimizing the amount of spent wash or rinsewater from coming into direct contact with secondary contaminant. Protective measures such as laying down plastic sheeting, erection of spray barriers, installing closed loop discharge systems, vacuuming or channeling will be implemented whenever risk to the integrity or the impacted containment surface becomes questionable or will create undue additional decontamination effort later on.

Decontamination and demolition set up considerations will first include an initial check of tank interior and exterior surfaces to ascertain safe and most effective decontamination approach.

Other decontamination set up considerations will include the erection of scaffolding (for equipment systems higher than 6 feet), manlifts, spray barriers or protective sheeting, placement of control zone locations, placement of similar temporary berming, placement of washing equipment and supplies, water sources and wash water collection points, set up of disassembly cranes and hoists, plugging or sealing of nearby stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points, staging areas, as well as the set up of emergency equipment and PPE decontamination stations.

Ground gradients and slope will be considered when determining where to allow pressure wash water to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

Tank demolition should be conducted only after decontamination verification unless distinct pieces of equipment or components need to be removed for purposes of insuring safe decontamination.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan.

The chemical hazards associated with decontamination activities may include the following:

- Potential for release of hazardous waste during decontamination set up, decontamination, and disassembly
- Potential for localized exposure to hazardous spray, vapors, or liquids associated with draining, flushing or pressure washing
- Potential impact from loose or dislodged debris from washing
- Chemical burns from exposure to flushing or decontaminating agents

**Physical Hazards**

The chemical hazards associated with decontamination and demolition activities may include the following:

- Confined space hazards
- Slippery surfaces
- Ignitable atmosphere
- Trip hazards
- Fall hazards
- Pinching hazards
- Electrical hazards
- Falling objects
- Working in close proximity to heavy portable or elevated equipment
- Exposure to high pressure water and pressurized equipment

## E DPM for Tanks Exhibiting Low or High pH

### Decontamination Scope

This decontamination performance method is to be performed only when initial field testing using pH strip paper reveals tank surfaces exhibiting a pH at or below 4 or at 10 or higher.

The scope of decontamination is to conduct wet decontamination work on tank interiors (and exterior surfaces if required) to remove the characteristic of DOT corrosivity prior to standard decontamination or disposal as prescribed under **DPM 7A**, **DPM 7B**, **DPMB-7C, or DPM 7D**.

*Low pH (4 or lower)*

For interior tank surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) lower than 4.0 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Drain or pump out any free liquids from tank interior and containerize

2. Disconnect all feed and discharge piping and test for corrosivity as prescribed under **DPM 3E** and place onto concrete surface within the HWMU containment area.

3. Using a hand held pump sprayer apply a prepared solution of sodium bicarbonate and water (pH of 10+) directly on all internal tank surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surfaces for 15 minutes. Repeat application so as to keep surfaces wet.

4. Test for pH and if less then 4.0 apply additional sodium bicarbonate until free liquids are greater than 4.0 and less then 10.

5. Repeat steps 1 through 4 as necessary.

For exterior tank surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) lower than 4.0 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Disconnect all feed and discharge piping and test for corrosivity as prescribed under **DPM 3E** and place onto concrete surface within the HWMU containment area.

2. Remove and dispose of all insulation, heat trace, and porous materials from tank exterior and dispense as hazardous waste.

3. Using a hand held pump sprayer apply a prepared solution of sodium bicarbonate and water (pH of 10+) directly on all exterior tank surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution sufficient to insure complete saturation paying particular attention to underneath tank bottom lip. Allow solution to remain on treated surfaces for 15 minutes. Repeat application so as to keep surfaces wet.

4. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH above 4 but below 10. Rinsate can be added to the spent decontamination wash water.

5. Repeat steps 1 through 4 as necessary.

*High pH (10 or higher)*

For tank interior surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) higher than 10 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.

1. Drain or pump out any free liquids from tank interior and containerize

2. Disconnect all feed and discharge piping and test for corrosivity as prescribed under **DPM 3E** and place onto concrete surface within the HWMU containment area.

3. Remove and dispose of all insulation, heat trace, and porous materials from tank exterior and dispense as hazardous waste.

4. Using a hand held pump sprayer apply a prepared solution of citric acid (dry) and water (pH of 3-) directly on to all internal and exterior pipe surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface no longer than 5 minutes. Repeat application so as to keep surfaces wet.

5. Test for pH and if greater than 10 apply additional citric acid solution until free liquids are less than 10 but greater than 4.0.

6. Repeat steps 1 through 5 as necessary.

For exterior tank surfaces exhibiting a pH as tested using wetted pH strip paper (0-14) higher than10 the following neutralization method will be used. (Refer to the health and safety plan under PPE for corrosive waste handling.)

1. Disconnect all feed and discharge piping and test for corrosivity as prescribed under **DPM 3E** and place onto concrete surface within the HWMU containment area.

2. Remove and dispose of all insulation, heat trace, and porous materials from tank exterior and dispense as hazardous waste.

3. Using a hand held pump sprayer apply a prepared solution of citric acid (dry) and water (pH of 3-) directly on to all internal and exterior pipe surfaces. Sufficient solution should be applied to completely wet all exposed surfaces. Apply solution on fixtures sufficient to insure complete saturation in all recesses. Allow solution to remain on treated surface no longer than 5 minutes. Repeat application so as to keep surfaces wet.

4. Using a cold water pressure washer, rinse all treated surfaces until the final rinse water exhibits a pH lower than 10 but higher than 4.0.

5. Repeat steps 1 through 4 as necessary.

Spent decontamination solution and rinsate will be pumped from containment area sumps or low lying areas around stormwater collection point to a designated wash water holding tank located outside the HWMU or concrete pad area. A vacuum truck designed to hold non-corrosive rinsewater may be used to pump out and transfer wash water to a holding tank located elsewhere on-site.

**Decontamination Location**

Decontamination will be conducted in place including all areas of overspray and within the confines of the secondary containment area. Structural fixtures will be dismantled and decontaminated within the confines of secondary containment. All decontamination work and verification of decontamination will be concluded prior to equipment removal for final disposition.

**Decontamination Set Up**

Decontamination set up will begin with a visual inspection and pH testing of tank and associated structural surfaces for evidence of surface corrosion and to ascertain safe access and most effective decontamination approach. Decontamination set up considerations will include erection of scaffolding, positioning of man lifts, water lines, control zone locations, and fall protection measures.

Other decontamination set up considerations will include the placement of temporary berming around non containment concrete areas, spray barriers or protective sheeting. placement of washing equipment and supplies, water sources and wash water collection points, plugging or sealing of stormwater collection basins, transfer and containment of spent decontamination solution, and specific ingress and egress points as well as the set up of emergency equipment and PPE decontamination stations.

Gradients and slope will also be considered when determining where to allow pressure wash rinsate to flow for collection and if any temporary filling of cracks or holes (if present) need to be made prior to washing.

If decontamination is conducted on non-containment areas then stormwater collection basins will be plugged or sealed using tension plugs or rubber covers so as to prevent seepage of wash water into the stormwater collection system. Washing should be conducted so as to allow spent decontamination water to gravity flow towards the nearest stormwater collection sump or vacuumed up concurrently.

For non-containment areas, temporary berming made of weighted down 4” x 4’ timber wrapped in 6 mil plastic sheeting and placed along the outer edge of the concrete pads may be used where curbing is not present to keep wash water contained.

**Chemical Hazards**

Specific chemical and physical hazard assessments, protective measures and emergency contingency planning are provided in the health and safety plan. The chemical hazards associated with decontamination activities may include the following:

- Potential for contact with residual corrosive salts on tank surfaces
- Potential for localized exposure to hazardous spray or vapors associated with pressure washing the tank

**Physical Hazards**

The physical hazards associated with decontamination activities may include the following:

- Confined space hazards
- Slippery surfaces
- Flying concrete or debris from power washing
- Working in close proximity to heavy portable equipment
- Exposure to high pressure water and pressurized equipment

**APPENDIX C**
**DECONTAMINATION PERFORMANCE CONFIRMATION (DPC)**

**Section Contents**

# 1 Decontamination Performance Confirmation for Equipment and Structures

This section describes where and how confirmation sampling will be conducted on equipment and structures throughout the site for both HWMU Containment Areas and for Permitted and Non Permitted Non Containment Areas. Sampling and testing rationales, methods, parameters, quality assurance and control measures are provided in the attached Sampling Plan.

**Visual Inspection for Waste Residuals**

A visual inspection will be conducted of interior and exterior surfaces once decontamination work has been completed and allowing for the removal of all waste residues, final rinsing, and time for surfaces to dry. Inspection methodology will consist of visual examination and use of an OVM.

**Sampling Methods and Collection Requirements**

Use sampling methods described in the SAP Section 9.1 (Sampling Collection Methodologies)

Refer to SAP Section 9.3 (Table 3 Sampling Collection and Preservation) for container size, type and preservatives to be used for sampling.

**Equipment, Tank, and Structural Sampling Frequency and Locations**

*NOTE: Specific test parameters for Resale, Scrap, or Waste are listed in Appendix A*

| | |
|---|---|
| Chiller - Plate and Frame | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest point in coolant collection tray<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest point in coolant collection tray |
| Column Exterior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical exterior point next to solids discharge line<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical exterior point next to solids discharge line or drain |
| Column Interior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point or drain<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point or drain |
| Cooling Tower | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point in recirculation water pick up tray |

| | |
|---|---|
| | One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point in recirculation water pick up tray |

| | |
|---|---|
| Condenser Exterior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical exterior point or drain<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical exterior point or drain |
| Condenser Interior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point or drain<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point or drain |
| Equipment Systems Exteriors - Permitted | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point when equipment is elevated.<br><br>For small unsorted or disassembled equipment pieces, 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point when equipment is elevated for every 10 pieces of equipment<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point when equipment is elevated<br><br>For small unsorted or disassembled equipment pieces, one 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point when equipment is elevated for every 10 pieces of equipment |
| Equipment Systems Interiors - Permitted | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final flushate at point of discharge or lowest discharge exit<br><br>For small unsorted or disassembled equipment pieces, 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final flushate at point of discharge or lowest discharge exit for every 10 pieces of equipment<br><br>One 400 ml liquid sample for metals will be collected from final flushate at point of discharge or lowest discharge exit<br><br>For small unsorted or disassembled equipment pieces, One 400 ml liquid sample for metals will be collected from final flushate at point of discharge or lowest discharge exit for every 10 pieces of equipment |
| Equipment Systems Exteriors and Interiors - Non Permitted | NA (refer to specific decontamination procedures listed in **Appendix B 5C**) |

| | |
|---|---|
| (machine shop tools, hoists, scales, welders, and all other non specific tooling) | |

| | |
|---|---|
| Equipment Systems – Exteriors and Interiors Non Permitted (includes compressors, hydraulics, generators, gas powered tools) | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from oil or coolant reservoir at lowest physical interior point or drain<br>One 400 ml liquid sample for metals will be collected from oil or coolant reservoir at lowest physical interior point or drain |
| Framework | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point |
| Laboratory Equipment | NA (refer to specific decontamination procedures listed in **Appendix B 5C**) |
| Piping Exterior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical exterior point when pipe is tilted<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical exterior point when pipe is tilted |
| Piping Interior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point when pipe is tilted<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point when pipe is tilted |
| Reboiler Exterior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water drainage at lowest outside physical interior point before contacting concrete pad<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest outside physical interior point before contacting concrete pad |
| Reboiler Interior | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point (do not include heat exchanger assembly)<br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point (do not include heat exchanger assembly) |

| | |
|---|---|
| Structures – Permitted | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point from gutter downspout before entering stormwater collection drainage.<br><br>2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point from any interior wall before contact with concrete<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point from gutter downspout before entering stormwater collection drainage.<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point from any interior wall before contact with concrete |
| Structures –Non Permitted | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point from gutter downspout before entering stormwater collection drainage.<br><br>2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical point from any interior wall before contact with concrete<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point from gutter downspout before entering stormwater collection drainage.<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical point from any interior wall before contact with concrete |
| Structural Material – Non Permitted | One 8 oz solid sample of core material to include one drywall, ceiling tile, cinder block, roofing material, floor tile for metals |
| Tank Exterior – Permitted (includes portable containers) | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water drainage at lowest outside physical interior point before contacting concrete pad<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest outside physical interior point before contacting concrete pad |
| Tank Interior- Permitted (includes portable containers) | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point |
| Tank Exteriors - Non Permitted (includes portable containers) | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water drainage at lowest outside physical interior point before contacting concrete pad<br><br>One 400 ml liquid sample for metals will be collected from final |

| | |
|---|---|
| | rinse water at lowest outside physical interior point before contacting concrete pad |
| Tank Interiors - Non Permitted (includes portable containers) | 2-40 ml vials for VOCs and 2-1liter sample(s) for SVOCs will be collected from final rinse water at lowest physical interior point<br><br>One 400 ml liquid sample for metals will be collected from final rinse water at lowest physical interior point |

## 2 Decontamination Performance Confirmation for Concrete Surfaces

This section describes where and how confirmation sampling will be conducted on concrete surfaces throughout the site for both HWMU Containment Areas and for Permitted and Non Permitted Non Containment Areas. Sampling and testing rationales, methods, parameters, quality assurance and control measures are provided in the attached Sampling Plan.

Sampling activities discussed in this section cover both surface sampling in hazardous waste management unit (HWMU) concrete containment areas as well as non contained concrete areas within the permitted section of the ROMIC facility complex. (Refer to facility layout **figure B-2**)

Surface sampling or "confirmation sampling" will be conducted after the performance of decontamination activities as described in **Appendix B-1** *Decontamination Performance Methods for Concrete Surfaces.*

**Concrete Sampling for Containment Areas**

Containment areas are defined as concrete surfaces completely surrounded by a concrete or asphalt retaining wall or berm which are designed to contain chemical spills. A containment area may or may not have a collection sump. There are no asphalt containment areas.

Once all of the HWMU equipment and structures have been removed and the underlying concrete pad has been decontaminated and dried, concrete chip samples will be collected using a clean stainless steel or hardened tempered carbon steel hand or pneumatic impact chisel. A minimum of 250 grams (about a two cm deep by 10 x 10 cm square area) of chipped concrete is required for collection. Proper safety attire must be worn during sampling and sampling collection (refer to Site Health and Safety plan). Detailed sampling collection and handling procedures are found in the Sampling and Analysis Plan (SAP).

Two methods will be used to determine the appropriate locations for grab chip samples from concrete surfaces. These are grid samples and bias based samples.

*Grid Sampling*

The first method for determining sample location is based on the establishment of a 30' by 30' rectangular grid set up within each HWMU containment area. Samples will be taken at each intersect point of the sampling grid.

For square or rectangular containment areas the grid can be measured out either by establishing the center point and setting up a grid pattern orientated on a true north-south by east- west axis, or, if the sampling area is square and greater than 900 ft2 or irregularly shaped a center point for a 30 by 30 foot grid established will be determined mathematically (Refer to Sampling Plan).

It is understood that many of the containment areas are less than 60' wide at their narrowest point and therefore the grid will be modified to allow for a single set of sampling locations to be placed down the center of the containment pad at approximately 30' intervals.

Actual Grid sample locations will be indicated in the sampling log noting reference location and reason for sampling. This information will be made part of the final closure report.

The following table refers to attached figures which show specific HWMU containment area configurations and respective sampling point locations.

**Table 3**
**Grid Sampling Reference Figure Locator**

| HWMU Containment Area | Figure |
|---|---|
| # 1 (North Storage Building) | Figure B-19 |
| # 2 (South Storage Building) | Figure B-19 |
| # 3 (Sampling Area) | Figure B-19 |
| # 4 (West Storage #1) | Figure B-20 |
| # 5 (West Storage #2) | Figure B-20 |
| # 8 (Tank Farm A) | Figure B-18 |
| # 9 (Tank Farm B) | Figure B-18 |
| #10 (Tank Farm CLR) | Figure B-18 |
| #11 (Tank Farm D) | Figure B-18 |
| #13 (Tank Farm G) | Figure B-18 |
| #14 (Tank Farm H) | Figure B-18 |
| #15 (Tank Farm I) | Figure B-18 |
| #16 (Tank Farm MNO) | Figure B-18 |
| #17 (Tank Farm Q) | Figure B-20 |
| #18 (Tank Farm K) | Figure B-17 |
| #19 (Tank Farm J) | Figure B-18 |
| Production Area (Units #23, 24, 26, and #27) | Figure B-18 |
| #25 (HTU) | Figure B-18 |
| #28 (Liquefaction) | Figure B-19 |
| #29 (Lab Pack Consolidation) | Figure B-20 |
| #31 (Debris Shredder) | Figure B-19 |
| #34 (Truck Wash Unit) | Figure B-17 |

*Bias Sampling*

The second sampling type is a bias sample justified by the presence of visual surface staining and low lying surfaces as realized by the pooling or flow of decontamination rinse water or the presence of a sump or French drain.

If a predetermined grid sampling point is located within 10 feet of the determined bias sample location then that grid sample point will be moved to the bias sample location. If there is not a predetermined grid sampling point located within 10 feet of the determined bias sample location then an additional chip sample will be collected from the bias location. Actual bias sample locations will be indicated in the sampling log noting reference location and reason for sampling. This information will be made part of the final closure report.

**Analysis to Be Performed**

1. Analysis for RCRA 8 metals listed in the DPS of this section will be performed using EPA method 6010B/7000/1311.

2. Analysis for copper and nickel will be performed using California TTLC.

3. PCB 8082 for North Storage Building and South Storage area concrete surfaces only.

**Sampling for Non Containment Areas**

Non-containment areas are defined as concrete surfaces having no physical containment capability but are subject to chemical spills from truck or trailer leaks and unloading and loading or movement of bulk and containerized waste.

The non containment area is contiguous and represents the largest surface area of the active or “permitted” portion of the property. NOTE: There are no non-containment areas made of asphalt.

The non containment area is comprised of a generally flat surface with a number of gradients sloped towards storm water receiving basins which drain into one or more collection sumps where storm water can either be pumped to holding tanks or discharged directly to off site receptors.

Hazardous waste activities conducted within the non containment area consisted of the loading and unloading of bulk waste trucks at seventeen separate stations referred to collectively in the facility draft permit as HWMU #36. The Unit #36 Truck Loading/Unloading Areas Closure Activity Narrative provides locations for all seventeen loading and unloading stations.

Surface sampling or “confirmation sampling” will be conducted after the performance of decontamination activities as described in Appendix B-1 Decontamination Performance Methods for Concrete Surfaces.

Once decontamination work has been completed and allowed to dry, concrete chip samples will be collected using a clean stainless steel or hardened tempered carbon

steel hand or pneumatic impact chisel. A minimum of 250 grams of chipped concrete is required for collection. Proper safety attire must be worn during sampling and sampling collection (refer to Site Health and Safety plan). Detailed sampling collection and handling procedures are found in the Sampling Plan.

Two methods will be used to determine the appropriate locations for grab chip samples from concrete surfaces related to the non containment area. These are grid samples and bias based samples.

*Grid Sampling*

The first method for determining sample location is based on the establishment of sampling locations along a sampling grid. Figure B-21 shows where grab chip samples will be taken at each intersect point of a 50 by 50 foot rectangular grid set up around a mathematical center point (Refer to Sampling Plan) and spread over the entire non containment area (see figure 21 for sampling locations).

Actual Grid sample locations will be indicated in the sampling log noting reference location and reason for sampling. This information will be made part of the final closure report.

*Bias Sampling*

The second sampling type is a bias sample justified by the presence of visual surface staining and low lying surfaces as indicated by the pooling or flow of decontamination rinse water as well as the presence of sump or French drains. If a predetermined grid sampling point is situated within 20 feet from any of the determined bias sample locations then that grid sample point will be moved to the bias sample location.

.If there is not a predetermined grid sampling point located within 20 feet of the determined bias sample location then an additional chip sample will be collected from the bias location.

Actual bias sample locations will be indicated in the sampling log noting reference location and reason for sampling. This information will be made part of the final closure report.

**Visual Verification Screening and Analysis to Be Performed**

1. Visual inspection of satisfactory concrete cleaning will be consistent with the visual criteria explained in **Appendix A5**.

2. Analysis for RCRA 8 metals listed in the DPS of this section will be performed using EPA method 6010B/7000/1311 for metals listed in **Appendix A5** for concrete surfaces left in place.

3. Analysis for selected VOC and SVOC's listed in **Appendix A5** for concrete surfaces left in place.

4. Analysis for copper and nickel will be performed using California TTLC listed in **Appendix A5** for concrete surfaces left in place.

5. Analysis for PCB's using EPA method 8082 for concrete surfaces left in place exclusive to HWMU #2 (South Storage Building and as listed in **Appendix A5** for concrete surfaces left in place.