Best Management Practices for Containing Critical Materials During Storage & Handling

Including BMPs For Disposal of Stormwater & Wastewater Associated With Business Activity

Satisfies Rules of the Panhandle Health District Over the Rathdrum Prairie, Idaho.

Public Health
Prevent. Promote. Protect.
Panhandle Health District

PROTECT THE RATHDRUM - SPOKANE AQUIFER

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Table of Contents

APPENDICES

PRODUCED BY: PANHANDLE HEALTH DISTRICT

AQUIFER PROTECTION PROGRAM

FUNDING PROVIDED BY: KOOTENAI COUNTY AQUIFER PROTECTION DISTRICT

COVER PHOTO: Poor example of uncontained drum and bucket waste fluids collecting stormwater which displaces waste fluids to the ground.

BEST MANAGEMENT PRACTICES FOR CONTAINING CRITICAL MATERIALS DURING STORAGE & HANDLING

SATISFIES REQUIREMENTS OVER THE RATHDRUM PRAIRIE AQUIFER & ADJACENT RECHARGE AREAS

INTRODUCTION

This manual was developed to assist businesses and individuals with establishing proper methods for the storage and handling of critical materials that have the potential to contaminate ground water below the Rathdrum Prairie in Idaho. The methods described in this manual are commonly accepted as the best management practices (BMPs) that are protective of this resource that we need for sustainable living and commerce. Though this manual is developed particularly for use over the Rathdrum Prairie, the methods within are applicable anywhere when water resource protection measures are desired.

In addition to critical materials storage and handling, one of the most ubiquitous sources of potential contamination to a water resource is the improper disposal of 'process', or non-domestic, wastewater. Therefore, this manual also makes great effort to describe BMPs for handling these wastewaters in a manner that will protect our water resources. Several local and State agencies have rules that require the use of these BMPs over the Rathdrum Prairie Aquifer and other areas in order to protect ground water and surface water. This manual will help you with selecting, designing, implementing, and maintaining protective measures. The BMPs in this guidance should be used in consultation and plan review with local and state authorities to ensure compliance with applicable rules or codes.

This document was originally compiled in 2002 through the combined efforts of private industry, the State of Idaho Department of Environmental Quality (IDEQ), the Panhandle Health District (PHD), the Kootenai County Planning and Zoning Department, and the Kootenai County Building Department. An advisory committee was formed from representatives of these entities who worked as a unified group to create consistent guidance for BMPs as they apply to the storage of critical materials in the county. The manual has been completely rewritten in 2014 by Panhandle Health District. The rewrite uses nearly all the same concepts presented in the original but adds a great amount of clarity and specificity in the application of the BMP's. It eliminates a couple of practices that did not prove functional in the field and adds some that improve protection of the resource. In addition, emphasis on proper handling of non-domestic wastewater has been added.

With time and new application scenarios, occasionally a BMP may be found to be impracticable in the field, or a new BMP may be found to provide better protection for the resource. Some information in this manual may become out of date as new and redesigned secondary containment systems are developed. Contact PHD, your local building/fire department, and IDEQ to determine the most current BMP options for the type and quantity of materials you are storing or the wastewater you are generating (see Jurisdictional Guidance in Appendix A).

AUTHORITIES

Idaho Department of Environmental Quality administers the Ground Water Quality Rule [IDAPA 58.01.11.301.01.a] states: *"Activities with the potential to degrade Sensitive Resource aquifers shall be managed in a manner which maintains or improves existing ground water quality through the use of best management practices and best available methods."*

Panhandle Health District administers the Critical Materials Rule (CMR) [IDAPA 41.01.01.400] requires that certain types and quantities of critical materials be secondarily contained in order to protect the Rathdrum-Prairie Aquifer from contamination. Prohibits critical materials from coming into contact with the ground.

Kootenai County codes and ordinances state that the storage of critical materials must be in conformance with the county's Comprehensive Plan, and their Zoning and Building ordinances. The comprehensive plan has provisions for protecting ground water quality. Additionally, through conditional use permits, the county can impose more restrictive measures for safeguarding against releases.

Idaho's Petroleum Storage Tank Fund requires additional valving and periodic leak detection monitoring before it will insure petroleum storage sites that do not have secondary containment.

State and local fire codes require secondary containment for certain types and quantities of hazardous materials.

All new, expanded, or upgraded facilities that store critical materials affected by this guidance must obtain approval for their containment method from the appropriate regulatory agency(ies) (See Appendix C: Jurisdictional Guidance).

To verify compliance with environmental laws, environmental agencies (local, regional, state, or federal) may periodically inspect containment facilities used to store and handle critical materials.

NOTE: Failure to implement an approved BMP may result in an enforcement action by one or more of these agencies.

HOW TO USE THIS MANUAL

Containment rules and BMP's are structured to allow flexibility in design to accommodate the infinite variety of applications and needs. However, there must be some standardization of accepted practice to provide guidance and predictable protection of the resource. Part I of this manual provides general background information that is useful in planning, constructing, and using any containment system. Specific design information is provided in parts II and III of the manual: Part II is presented as BMP component design and begins on page 9. Here you will find detailed physical design criteria for individual components of a BMP system. Part III, beginning on page 17, is presented as full BMP systems by business type. In this section, you will find BMP systems descriptions and more unique notes as to their implementation for specific business types.

PART I – BACKGROUND INFORMATION

DEFINITIONS AND ACRONYMS

BMP = Best Management Practice. A practice or combination of practices that are more effective than others for preventing or reducing contamination to the Rathdrum Prairie Aquifer.

Critical Material = Any liquid, semi-liquid, flowable or water soluble solid that is listed on the most current Superfund Amendments and Reauthorization Act, Title III List of Lists published by the U.S. Environmental Protection Agency, or is required by the U.S. Occupational Safety and Health Administration (OSHA) to have a material safety data sheet (MSDS). Critical Materials may be composed of one or more chemicals. Materials that pass fluids per the Paint Filter Test, EPA method 9095B, are considered to be liquid and flowable (see Appendix D)

IBC = Intermediate Bulk Container (aka: Tote, typically 250 gallons)

IDEQ = Idaho Department of Environmental Quality

IDWR = Idaho Department of Water Resources

MSDS = Material Safety Data Sheet. Documentation required by OSHA to describe a substance's physical properties and hazards to human health and safety.

NDWW = Non-Domestic Wastewater. Any wastewater that is **not** produced from typical activities in restroom facilities, showers, or kitchens.

PHD = Panhandle Health District

Secondary Containment = site improvements, apparatus, and barriers that provide a second level of isolation for critical materials in order to prevent them from coming into contact with the ground surface or waters of the state. The word *containment* in this manual is synonymous with *secondary containment*.

SIW = Shallow Injection Well. A bored, dug, or drilled hole used for the disposal of fluids, usually stormwater. For rules regarding use and registration of SIW's; see IDAPA 37.03.03.

SOP = Standard Operating Procedure. What employees do on a regular basis to minimize release of chemical or wastewater to the ground.

Threshold Quantity = A singular or aggregate amount of critical material(s) that when met or exceeded in presence on a site, triggers mandatory compliance with rule.

CRITICAL MATERIALS SUBJECT TO SECONDARY CONTAINMENT

The quantities of material requiring secondary containment are stipulated in PHD's Critical Materials Rule and in some local fire codes. These *threshold quantities* that require secondary containment range from as low as 10 pounds (approximately 1 gallon) for extremely hazardous substances to 5,000 pounds (approximately 600-800 gallons) for less hazardous substances.

Critical materials that are stored on a site for more than 30 days are considered permanent storage and must comply with the secondary containment BMPs stipulated in this guide. Critical materials that are consumed or distributed in less than 30 days but are repeatedly/continuously replenished must also comply with BMPs. The relative hazard levels of chemicals that make up critical materials have been identified by existing federal regulations. Title III of the Superfund Amendments Reauthorization Act (SARA III) and Title III, Section 112R of the Clean Air Act Amendments of 1990, gave rise to a consolidated list of chemicals called the Title III List of Lists.

Title III List of Lists

PHD's Critical Materials Rule and this manual use three categories of chemicals (described below) from the Title III List of Lists to designate the relative hazard and determine containment needs. All chemicals are placed in one of these three categories based on their relative hazard.

Each category has been assigned a unique threshold quantity, measured in pounds of chemical stored or used on site. Chemicals present on site in volumes equal to or greater than their category's threshold quantity, dictate that the establishment must implement BMPs for storing and handling that chemical.

To determine a given chemical's category, locate it on the Title II List of Lists, which is available at http://www.epa.gov/emergencies/tools.htm (see "EPCRA/CERCLA....Consolidated List of Lists...." in the list of tools.) Chemicals that belong in the first two categories (described below) are determined by locating the chemical in the List of Lists and looking at columns to the right of the chemical. These columns have numerical entries. The left-most column with a numerical entry designates the category (shown at the top of that column) that the chemical is in. Chemicals that belong in the third category are not found in the List of Lists, but rather are identified as all other chemicals required by OSHA to have a Material Safety Data Sheet (MSDS).

Three Categories of Chemical and Their Threshold Volumes

(1) Extremely Hazardous Substances (EHS)

An EHS is required to be in secondary containment if at any point in time the facility stores or uses:

- 10 pounds (approximately 1 gallon) in the aggregate, exclusive of medium or solvent, or
- 100 pounds (approximately 12 gallons) in the aggregate, inclusive of medium or solvent.

Examples of EHS include:

Chemical Name	CAS Registry Number
Arsenic Compounds	various
Chloroform	67-66-3
Cresol	1319-77-3
Dinoseb	88-85-7
Formaldehyde	50-00-0
Hydrogen Cyanide	7-90-8
Lindane	58-89-9
Parathion	56-38-2
Phenol Compounds	108-95-2
Strychnine	57-24-9

(2) CERCLA Hazardous and SARA Section 313 Toxic Chemicals

Secondary containment is required for these chemicals if the facility uses or stores at any point in time:

- 100 pounds (approximately 12 gallons) in the aggregate, exclusive of medium or solvent, or
- 1,000 pounds (approximately 120 gallons) in the aggregate, inclusive of medium or solvent.

Examples of CERCLA Hazardous and SARA Section 383 toxic chemicals include:

Chemical Name	CAS Registry Number
Acetone	67-64-1
Acids	
Benzene	71-43-2
Cyanides	57-12-5
Ethyl Benzene	100-41-4
Ethyl Chloride	75-00-3
Ethylene Glycol	107-21-1
Methyl Ethyl Ketone	78-93-3
Napthalene	91-20-3
Pentachlorophenol	87-86-5
Toluene	108-88-3
1,1,1 Trichloroethane	71-55-6
Urethane	51-79-6
Xylene	1330-20-7

(3) SARA Section 311 and 312 Chemicals

Rather than being listed, SARA Section 311 and 312 chemicals are identified by broad criteria. Virtually any material that requires a material safety data sheet under the OSHA Hazard Communication Standard is required to have secondary containment if stored at or above threshold quantities.

- For these chemicals, secondary containment is required for chemicals in quantities of 5,000 pounds (approximately 600 – 800 gallon) in the aggregate, inclusive of medium or solvent.

While normally required, containment may be waived for drums in counts of three or less that contain only SARA 311 & 312 chemicals. To be eligible for waiver, the drum(s) must be stored indoors, on a concrete slab with no cracks, at least 50 feet away from doors, ramps, and the slab perimeter. Transfer in and out of the drums must be clean and dry.

Examples of SARA Section 311 and 312 chemicals include (but are not limited to):

Chemical Name	CAS Registry Number
Diesel Fuel	69334-30-5
Magnesium Chloride	7791-18-6
Oil	8002-05-9
Latex Paint	various

CONSTRUCTING A SECONDARY CONTAINMENT SYSTEM

Plan Review

All secondary containment systems must be designed and built using generally accepted engineering and construction practices. Engineered drawings may be required. A plan and specification review is required as follows:

- PHD requires application and plan review for any new chemical storage, new containment apparatus, or changes in chemical storage equal to, or greater than threshold quantities.
- IDEQ may require plan review for non-domestic wastewater disposal systems
- Municipal jurisdictions have application and plan review requirements for planning/zoning/building and conditional use permits

☞ BIG TIP: Designs and installation must account for inspection and maintenance needs. Facility staff and agency inspectors need to be able to access the entire containment area and structure for visual inspection of the containment's integrity. Staff and service personnel must be able to access all surfaces for cleaning and repair of the containment.

Site Location

Various agencies may have requirements on the location of your storage/handling and related activities. Please contact the appropriate jurisdiction(s) regarding activity location in relation to the following:

Drinking Water Wells	**IDEQ, IDWR**
Surface Water/Flood Plain	**IDEQ, County, City**
Buildings& Combustibles	**Kootenai County, Local Fire Protection District, City**
Zoning, Property Lines	**City, County**
Stormwater Disposal	**City, County, IDWR (SIW rules), PHD (SIW registration)**

Construction Materials

Materials used in the construction of secondary containment must be chemically compatible with the product being stored. Containers shall be constructed of materials of sufficient thickness and composition so as not to be weakened as a result of contact with accumulated stormwater or discharged product. See specific *Component Design* criteria (Part II) for more detail. Containment areas should be protected from moving equipment and machinery by installing bollards or similar as appropriate.

Capacity

Secondary containment must be sized to contain 110% of the volume of the largest container or 10% of the total volume of all containers in the containment (whichever is greater). If the containment is exposed to precipitation, add roughly one week's peak seasonal precipitation, as equivalent volume to the 110% or10% requirement.

Operating and Maintaining a Secondary Containment System

Secondary containment systems require regular service and maintenance. To ensure the system continues to function as designed, it is important to regularly inspect and test the containment structure, manage the accumulation of spills, leaks, and stormwater and to pro-actively train employees in these system needs.

☞ BIG TIP: The above won't happen reliably if there is no accountability or responsibility among staff. Designate a *pollution prevention* or *environmental* coordinator if you don't have one already. Involve employees and get their buy-in. Delegate responsibility from each department, production phase, or building for large facilities.

Self Inspections

Self-inspections are the most powerful prevention tool you have at your facility. Each facility will need to design its own self-inspection list and based on observable process and conditions, but at minimum most should address the following:

- Containment of critical material;
- Structural integrity of both the primary and secondary containment system (e.g. cracks, corrosion, dents...);
- Automated leak detection working and readings recorded. Manual leak detection performed and recorded;
- The presence of stains, release, spills, and their source; The presence of stormwater in containment;
- Valve positions on equipment/piping, containment systems, and oil-water separators;
- Tightness of valves, seals, couplings, and connectors;
- Observation of staff compliance with standard operating procedures;
- Occasional hydrostatic testing of containment systems.

Inspections should be performed at a frequency that is appropriate for the scope of the operation. Preformatted checklists make the inspection quick and repetitive. Results or working lists should be posted/stored in an easily accessible area. Systems and accountabilities need to be in place to address deficiencies promptly. Contact PHD for assistance with creating a self-inspection form.

Leaking Product and Accumulated Spills

Containment systems should be kept relatively free from releases. Accumulated product should be re-used if possible. In no case should any accumulation compromise the containment *capacity* requirement discussed on page 4. If the capacity is being compromised, the accumulation should be evacuated to buckets or drums and stored in containment pending shipment and disposal in accordance with law. Often it is convenient and practical to have your hazardous waste hauler evacuate your containment systems when they come to collect other waste streams and containers.

Containment Integrity & Hydrostatic Testing

Hydrostatic testing of containment systems is necessary under certain circumstances. First, systems fabricated on site without engineering design should be hydrostatically tested prior to use. This simply involves filling the containment to the required capacity with water and observing for leaks and change in the water level. Other systems that use liners or underground vaults may also need occasional hydrostatic testing as specified in the BMP for that component or system.

Criteria for hydrostatic testing should include:

- Performance of the test by a third disinterested party as directed by a regulatory agency.
- Measurements and calculations showing net change from evaporation and precipitation.
- The time of observation should be at least 24 hours for systems ≤ 600 gallons and 48 hours for larger systems.

Training & Supervision

The weak point in the containment system is often observed to be lack of knowledge and inadequate training among employees. Facility owners must take responsibility to see that employees are properly trained in the following;

- Operation and maintenance of containment systems.
- Proper chemical handling and storage.
- Spill response and cleanup protocol

Post SOPs in a conspicuous place to help remind and educate employees. Enforce the use of self-inspection lists. Ask PHD to help you develop a self inspection program.

STORMWATER DISPOSAL

☞ ! BIG TIP: BE AWARE OF THE STORMWATER DISPOSAL SYSTEM THAT SERVES YOUR SITE ! Some systems act as a direct, unfiltered conduit to our groundwater and are known as *Shallow Injection Wells,* or SIWs *(see fig. 1). Other* systems may drain directly to the nearest lake or river. Chemicals should not be used in the vicinity of shallow injection wells or systems discharging to surface water when there is any possibility of release.

Figure 1: Cutaway showing a shallow injection well on a curb.

Management of Stormwater Collected in Containment Systems

When feasible, it is best to reduce or eliminate the introduction of stormwater into a secondary containment system. Options include:

- Construct a roof over the containment when fire and building codes allow. This may not be effective if the footprint is small and the site is subject to wind. Water shed from the roof should not interfere with operations and should not add to collected water in another area such as a fueling pad.
- Locating the storage area inside a building as codes allow.

When stormwater is collected in containment systems, it must be evaluated for contaminants prior to disposal. Visual evaluation may be sufficient for many products that cause sheen on the stormwater. Other contaminants such as inorganic ions can be measured with do-it-yourself colorimetric kits (like testing for chlorine in a pool). Otherwise, a sample may need to be submitted to a laboratory. Any contaminant present in the stormwater in a concentration greater than that in the ground water must necessitate that the contaminated stormwater be disposed of as non-domestic wastewater or hazardous waste, as appropriate. This contaminated water **may not** be disposed of to the surface or subsurface of the ground.

An exception applies to fuel storage and fueling pads. At fueling sites, light oil/petroleum sheens on stormwater can be separated by draining the contaminated water through an oil/water separator. Properly maintained separators may discharge to an approved stormwater treatment swale. Sheens can be removed from non-draining containments with absorptive pads or by pumping the top fraction off to proper waste disposal. The remaining fraction, free of sheen, can then be discharged to an approved stormwater treatment swale. Large bulk fuel storage containment structures (>24,000 gal.) that rely on discharge to a separator must also have an *oil stop valve* installed upstream of the separator. For more information, please see *Oil/Water Separators* (pg 12), *Oil Stop Valve* (pg 16), and *Fueling Operations BMP's* (pg 24).

Summary of Contaminated Stormwater Disposal Options – Off Site

- *Hauling to waste disposal site:* Contaminated stormwater can be hauled by a qualified waste hauler to an approved disposal site. It is recommended that the facility owner verify the qualifications of the hauler and the suitability of the disposal destination; liabilities can track back to the source of the waste. Receipts and manifests should be kept on file. (See Appendix B – Web *Resources/Waste Mgt.*)

Summary of Contaminated Stormwater Disposal Options – On Site

- *Fueling site that drains through an oil/water separator to discharge:* Fueling sites may be allowed to drain contaminated stormwater through an oil/water separator and discharge to an approved stormwater disposal/treatment area. Other restrictions may apply (See Oil/Water Separators; pg. 12).
- *Re*-use: The contaminated stormwater is introduced into process and consumed. For example; The stormwater from a road de-icer containment is pumped into trucks as part of their mix for application.
- *Evaporation – Mechanical:* Contaminated stormwater is evaporated mechanically, typically through a heated commercial evaporator. This application must meet air quality rules of the IDEQ.
- *Evaporation – Ambient:* Contaminated stormwater drains to an evaporative holding pond:
  - Must be lined with an approved liner.
  - Must meet wastewater disposal rules of the IDEQ
  - Must be engineered to show that the cell(s) will accommodate all sources of input with no seasonal overflow and a calculated net annual loss to evaporation, or have a contingency for pumping and hauling to an approved site.

Uncontaminated Stormwater Disposal Option – On Site

- If it is determined from testing (visual evaluation if appropriate) that the stormwater from your containment is uncontaminated, the discharge may be directed to an existing, compliant stormwater treatment/disposal area that serves your site .

Stormwater BMP's and Local Codes

Final stormwater treatment and disposal components, such as swales, are discussed in Idaho's *Catalog of Stormwater Best Management Practices*, which is available at the local IDEQ office or on the Internet at http://www.deq.idaho.gov/water-quality/wastewater/stormwater.aspx . There is a link to the Catalog on the right side of that page under "IDEQ Resources". Each jurisdiction (ie City, County) has specific stormwater disposal requirements modeled after BMP's in the Catalog. Review your final treatment and disposal alternatives with your local agency.

WASTEWATER DISPOSAL

Non-Domestic Wastewater (NDWW)

Non-domestic wastewater is any wastewater (including vehicle wash) at a site that is not produced as sanitary wastewater from restroom facilities, showers, or kitchens. NDWW cannot be disposed to any surface or subsurface location without written approval from PHD and IDEQ. On-site disposal of NDWW can contaminate soils and ground water and may become a significant cleanup liability for the owner of the site. If municipal sewer services are available, then the facility must connect all waste streams to this service and provide proper pretreatment as determined by the municipality. If municipal services are not available, a recirculation or evaporative system will be required. In all cases, facilities wishing to dispose of or hold wastewater on site must submit plans for review and will be encouraged to reduce or recycle wastewater streams.

Floor Drains

All new floor drains must be connected to public sewer, or constructed as part of a non-discharging system such as a blind sump. Existing floor drains must be verified to be connected to public sewer via engineered 'as-builts' or dye testing. Panhandle Health District or your sewer district can provide assistance with dye testing. If an existing floor drain cannot be verified as connected to public sewer or is found to discharge inappropriately, it will need to be connected to public sewer or filled with concrete.

Boiler Water & Water Softeners

Boiler water and boiler blow-down contain chemical additives used to improve operation and efficiency of boiler systems. The water and condensed steam from these systems is considered wastewater and may not be discharged to the ground. It is common for some states to levy large fines for discharging boiler water and blow-down to the ground or to surface waters. Most boiler systems can now be operated in a close loop with internal management of contaminants that used to be blown to the ground. If blow-down or other discharge must occur and public sewer is not available, then the wastewater should be contained and evaporated, used in process, or hauled to an approved disposal site.

Water softeners that run on traditional cation exchange periodically discharge brine and inorganic minerals. Larger operations not on public sewer often discharge this waste to the subsurface. This discharge may need to be registered with IDWR as a class V injection. Contact PHD or IDWR for further information. (See also: Appendix B – *Web Resources/Waste Mgt.*)

PART II – COMPONENT DESIGN

The following are general descriptions of typical containment system components. More business-specific application and O & M criteria for these components can be referenced in the BMP section of this manual, Part III.

CONCRETE BOX, CURB, OR RECESSED SLAB

Description: An open box, basin, or recessed floor typically designed to contain large volumes of critical materials. Using recessed floors or stem-walls, this design concept can provide broad area containment for an entire room or building footprint.

Figure 2: Concrete box containment

Design Criteria & Features: These components typically require an engineered design to consider specific criteria such as topographic grades, compressive strength, permeability, and other quality control measures for the concrete work. Other criteria include:

- Walls and curbs should be part of a mono-pour with the slab, or floor, whenever possible.
- If a cold joint is used instead, then chemical resistant water stops must be used in the joint.
- Epoxies or other industrial sealants must be used when chemical resistance or additional sealing is needed.
- Drain outlets should be clearly marked with valve status obvious and consistent with a handle or flag direction.
- Sumps may be required to facilitate monitoring and recovery of chemical or stormwater.
- This component is often constructed in conjunction with an on/offload pad. See *On/Offload Pad* below.

Operation & Maintenance Notes: Since many of these applications are outdoors, stormwater management considerations should be made. (See page 6.) Diligent maintenance of cracks with appropriate chemical resistant caulk and grout prevents leaks and helps keep cracks from getting worse. Grinding and cleaning of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications. Drain valves should be kept closed and checked on a regular basis through a posted/recorded self-inspection process.

ON/OFFLOAD PAD

Description: A concrete pad sloped to a drain, sump, or a gate that passes material spilled during bulk transfer into a containment area; usually a concrete box type containment or an approved holding tank. A discharging separator may be used in lieu of containment or holding tank if the critical material is less dense than water. (See Pg. 12)

Figure 3: Offload pad - drains to main containment

Design Criteria & Features: This component typically requires an engineered design to consider critical site specific criteria such as topographic grades, compressive strength, permeability, and other quality control measures for the concrete work. Other criteria include:

- Sumps and curbs should be part of a mono-pour with the slab, or floor, whenever possible.
- If a cold joint is used instead, then chemical resistant water stops must be used in the joint.
- Adequately sized sumps or separators are recommended if sediment will be tracked onto the pad.
- The footprint of the pad should accommodate any feasible fluid release trajectory.
- Epoxies or other industrial sealants must be used when chemical resistance or additional sealing is needed.
- Grades on the pad must be accurate to channel all spilled product to containment. Grades outside the pad footprint must preclude any surface stormwater from flowing onto the pad.
- A receiving containment area must be designed to accommodate the excess stormwater from this pad and still provide the containment volume required for the material stored; For design purposes, assume at least one week's accumulation during peak seasonal precipitation.

Operation & Maintenance Notes: Since this applications is typically outside, stormwater management considerations should be made (See page 6). Most concrete work is subject to cracking over time. Diligent maintenance of cracks with appropriate chemical resistant caulk and grout is necessary in order to maintain the integrity of the containment. Cleaning and preparation of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications. Sumps and drains should be checked/cleaned on a regular basis through a posted/recorded self-inspection process.

MEMBRANE LINER

Description: A flexible polymeric geomembrane usually fabricated from polyethylene (HDPE or LDPE) or polyvinyl chloride (PVC). Typically lain in an excavated depression or the edges are placed over earthen berms or eco blocks to create a basin. Due to their shortcomings, liners are typically used to contain less hazardous materials. They are useful for covering extremely large areas, as containment under buildings, or as temporary containment.

Figure 4: Technicians seaming a liner. Note gravel sump with perforated pipe to collect any release.

Design Criteria & Features:

- Minimum accepted thickness for a geomembrane liner used for containment is 30 mils for PVC liners and 60 mils for HDPE liners, or must have engineered installation criteria that warrantee a minimum 10 year life for the particular application.
- Liners must be placed on a carefully prepared base material that will protect it from damage when weight is applied. Grades of the base should include a sump area that facilitates monitoring and recovery of storm-water or released chemical. Grades should be set to minimize standing fluid when the sump is empty.
- Perforations and seams should be minimized at all costs.

- When their need is absolutely necessary, perforations and seams must be booted and sealed by certified technicians.
- Covering a liner with a geotextile, sand, gravel, or soil may prolong its life (check with the manufacturer).
- When covered with sand/gravel or soil, an inspection port must be inserted into the sump. The port must accommodate a suction hose for the evacuation of stormwater or released material. Prior to use, the rim elevation must be clearly marked in the inspection sump by filling the liner with water until a static level is reached.

Figure 5: Technician seaming a 'boot' in a liner perforation.

Operation & Maintenance Notes: Liners have limited lifespan, particularly if exposed to air and sun. Leaks may result from poor installation controls, physical wear & tear, and chemical degradation over time. The manufacturer should declare a useful or warranted life span in the specifications for the liner. If the liner has exceeded that lifespan, then it should be replaced or hydrostatically tested on an annual basis. Self-inspections should note if and how much stormwater is collected. A hydrostatic test should also be performed If stormwater is not accumulating as it should. These tests should be completed and certified by a third party. (See page 5 – *Containment Integrity & Hydrostatic Testing.*)

FUELING PAD

Description: A concrete pad onto which vehicles park while refueling. The pad is sloped to one or more non-discharging sumps, trench drains, or catch basins. Trench drains and catch basins discharge to an oil-water separator which discharges to a properly maintained, irrigated grassy swale.

Figure 6: Fueling pad with elevated perimeter to exclude outside storm water.

Design Criteria & Features: This component typically requires an engineered design to consider specific criteria such as topographic grades, compressive strength, permeability, and other quality control measures for the concrete work. Other criteria include:

- Sumps, catch basins, and rolled curbs should be part of a mono-pour with the pad whenever possible. If a cold joint is used instead, then fuel resistant water stops must be used in the joint. Expansion cracks should be filled with a self-leveling polyurethane caulk.
- Proper grades are critical to assure all releases and contaminated stormwater go to the sump or catch basin. Proper grades can be hard to achieve unless much attention is given to this detail. Grades or rolled curbs must be used to exclude surface stormwater from outside the footprint of the pad.
- Outlets of catch basins should be significantly above the bottom of the basin to allow for sludge accumulation. A screen, inverted elbow, or 'T' should be placed on the outlet to minimize floating debris entering the separator. The gasket or grout seal around the outlet should be water tight.
- Public and card-lock fueling sites are required to have a canopy to minimize stormwater on the pad. Canopy drains must bypass the pad and the separator.
- Non-discharging sumps are practical only at smaller sites that fuel equipment that is used exclusively on site. A low canopy must be provided with an adequate footprint to effectively eliminate windblown stormwater.

Operation & Maintenance Notes: Once the pad is constructed, its grade should be tested by pouring water in representative locations of the pad to verify that all flows go to collection. Most concrete is subject to cracking over time. Therefore, diligent maintenance of cracks with appropriate chemical resistant caulk or grout is necessary in order to maintain the integrity of the containment (Cleaning and preparation of the crack surface prior to sealing is critical). Self-leveling polyurethane caulks work best in horizontal crack sealing applications. Sumps, trench drains, and catch basins need to be cleaned frequently to keep them clear of sediment and debris. Sludge from catch basins should be handled as per sump waste guidelines in this manual (see *Appendix* E – *The Key to Managing Your Sump Waste*). Absorbents should be worked into spilled fuel and then swept up immediately; it does not make sense to pour absorbent on a spill and then leave it to be dispersed across the property. A posted self-inspection process should be put in place in order to provide timely response and minimize risk regarding the issues detailed above.

Oil-Water Separator

Description: Oil-water separators provide some removal and containment of contaminants in a wastewater or stormwater stream. The contaminants must have a density less than that of water. As the waste stream passes slowly through the separator, these lighter contaminants can float to the surface and become contained by the 'T' outlets (see figure 6). Most often separators are used in fuel island applications or pretreatment of floor drain wastes prior to discharge to public sewer. Check with your municipal sewer provider for requirements of the later application.

Design Criteria & Features:

- Typical applications use a two-chambered 1,000 gallon tank with inlet and outlet 'T's'.
- Larger units and/or coalescing plates may be required for certain flows.
- Commercially available through septic tank manufacturers and built to septic tank standards.

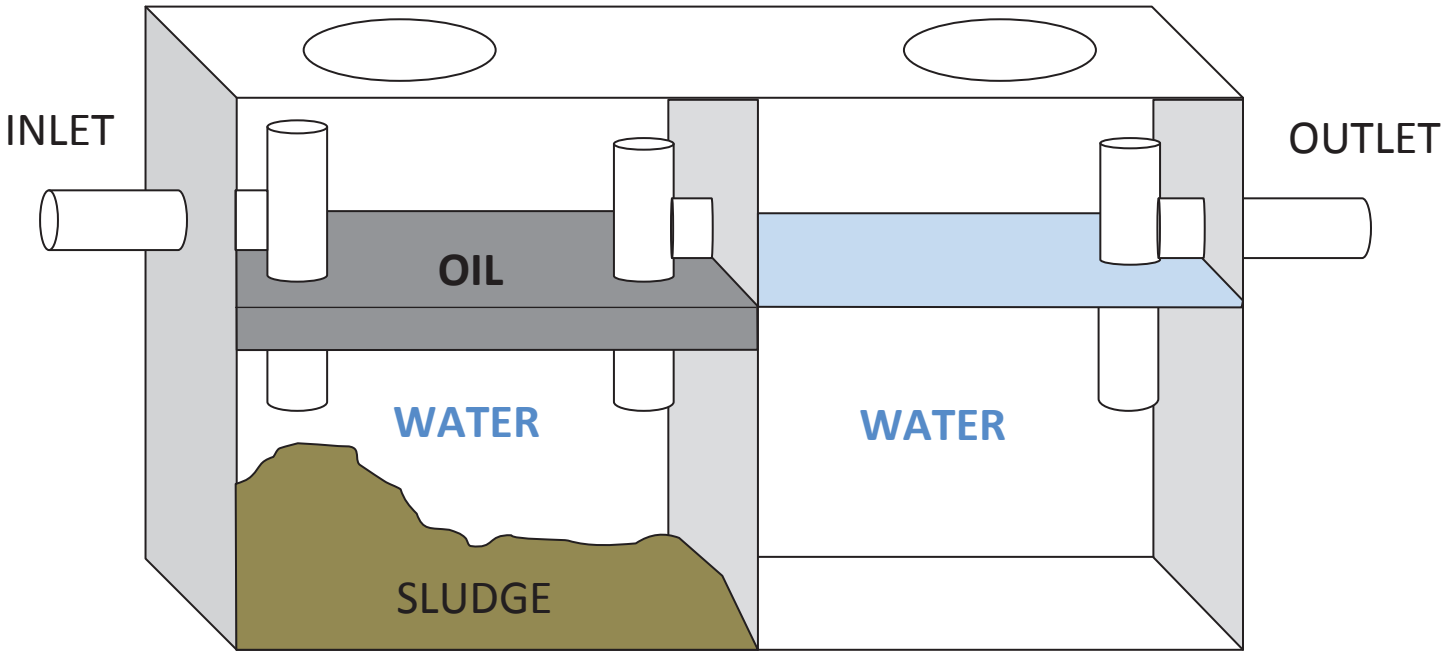


Figure 6: Oil-Water Separator.

Operations & Maintenance Notes:

- The flow rate through the separator should be controlled so that it does not overwhelm the unit's ability to treat the water. Separation efficiency is never 100% and is reduced further by high flows.
- This unit must discharge to public sewer if allowed, or to a bio-filter such as a grassy swale.
- A chamber in the separator should be pumped when measurable amount of material (oil, fuel) can be detected on top of the water and/or when sludge accumulation is interfering with the flow. For the purposes of this document, 'measurable' is deemed to be ¼ inch as determined with a water detecting paste.
- Wastes should be hauled by a qualified hazardous waste hauler to an approved destination. Keep all receipts/records. Liabilities for improper disposal will be traced back to the source.
- Leaks in seams or pipe perforations are indicated by a water level that is even a small amount below the lip of the outlet. Re-grout around the outlet pipe or seam as needed.

Piping, Coupling, & Valve Containment

Description: A trench, chase, pan, or second pipe wall designed to collect and contain release from pipes, couplings, or valves. Containment should be provided for these components whenever they are located outside of a main containment area or in the ground. (Does not apply to fuel piping compliant with UST rules regarding monitoring and cathodic protection.)

Design Criteria & Features: Whenever possible, piping and on-load/off-load couplings should be located over the containment device used for containing the bulk material being conveyed. These applications are

Figure 7: Fabricated catch tray under fuel couplings

usually very site specific. General criteria are as follows:

- Trenches, chases, pans and open second walls (non pressurized double walls) should drain back to a main containment or a sump. (This will increase the amount of stormwater collected, if exposed)
- The method used should account for and contain any feasible pressurized fluid trajectory.
- Closed second pipe walls (pressurized interstitial space) should be provided with a gauge, alarm, or other means of detecting a release.

Operation & Maintenance Notes: Appurtenances associated with this method should be part of a recorded, regular inspection program. Operation and maintenance will depend on the specific method used but may include visual inspection of races and sumps, checking leak detection devices, and repairing cracks. Releases should be put back into production or disposed of in accordance with law.

Figure 8: Concrete pipe containment chase with rolled curb edges will contain a low pressure release.

PREFABRICATED CONTAINMENT

Description: Typically a polyethylene, rectangular, shallow box covered with a grate on which drums sit. These devices are often referred to as a ***containment pallet***. They are available in any number of sizes and volumes, usually with fork-lift access. Some have optional polyethylene covers to allow placement outside. Containment pallets are also available for IBC, or tote, containers.

Design Criteria & Features: These devices often do not meet the 110% containment volume criterion. That criterion may be waived when no transfer is occurring in and out of the drums or when drums are located distant from outside walls and a large production floor provides some containment. When automatic pumps are mounted on or near the drums, the full 110-10% criteria should be met. Most containment pallets have fork lift entry slots for ease of relocation. Ramps can be purchased or constructed to allow access for wheeled drum trucks. Check the manufacturer's specifications on compatibility between the containment material and the chemical you are storing.

Operation & Maintenance Notes: These containment devices need to be evacuated or pumped out periodically when product transfer in or out of the drums is common. If the facility is not equipped to perform pumping and cleaning of the containment, your hazardous waste hauler should be able to perform that service for you. Some devices offer integral drain plugs which simplify evacuation, but plugs are often known to leak or be left open inadvertently. Replace containment devices that have been damaged.

Figure 9: Prefabricated drum containment.

Fabricated Steel

Description: A welded steel box or pan into which drums or smaller tanks (usually < 600 gallons) are placed. For larger areas, an alternative design using angle-iron bolted and glued or gasketed to a concrete floor may be used.

Figure 10: Steel containment for motor oils.

Design Criteria & Features: The gauge of the steel must be sufficient to withstand the activities and abuse that the box or pan will receive. Prior to use, the welds, glue, or gasket must be tested by filling the containment with water and checking for leaks. An inspector may request to witness the test. Depending on the size and number of containers being stored, the walls on a box type of containment may need to be quite high in order to satisfy the 110-10% containment criterion. This should be considered carefully prior to construction especially if it will be necessary to move containers into and out of the containment. Glue or gaskets used in a bolted angle-iron application must be chemically compatible with the critical material stored.

Operation & Maintenance Notes: These containment devices may need to be evacuated or pumped out periodically. If the facility is not equipped to perform pumping and cleaning of the containment, your hazardous waste hauler should be able to perform that service for you.

Double Walled Tank

Description: A tank within a tank, the inner tank being separated from the outer by a space, or interstice, that provides at least 110% containment for the inner tank.

Design Criteria & Features: The interstitial space must be easily monitored, preferably with a visible float gauge or electronic gauge. Dip sticking is acceptable on smaller tanks ($\leq$600 gallons).

Operation & Maintenance Notes: The interstitial space must be monitored as part of a regular self-inspection process. Associated piping joints, valves, and nozzles should be kept tight and weep-free.

Portable/Temporary Systems

Description: Typically comprised of a prefabricated collapsible unit, or a geomembrane, these systems are usually approved only for construction projects or other uses to last no more than one year.

Design Criteria & Features: These systems should be submitted for review by PHD for each new location or new use as with any other system. Prefabricated system application shall meet intended use as specified by the

PORTABLE/TEMPORARY SYSTEMS (CONT)

manufacturer. Geomembrane systems should meet all criteria described in the Membrane Liner component on page 10.

Operation & Maintenance Notes: Establish functional protocol for handling spills and stormwater. Inspect systems regularly, at least once per week, for damage and product or storm water accumulation. Collapsible, drive-on containment systems will need immediate response protocol for each release within the containment.

OIL-STOP VALVE (OSV)

Description: This device consists of a passive float valve configuration where the float is more dense than oil/fuel but less dense than water. This allows water to pass through the system, but the float valve sinks and closes in the presence of a given amount of oil/fuel. This component is considered a necessary part of a BMP system for bulk fuel containment where stormwater is allowed to flow through the containment.

Design Criteria & Features: The full level of the tank or pit containing an OSV must be below the main containment level. Discharge from this device must pass through an oil-water separator and on to a grassy swale.

Operation & Maintenance Notes: Oil or fuel must be evacuated from the pit periodically and disposed of as hazardous waste.

Figure 11: Oil stop valve.

Figure 12: Oil stop valve in service (pit not full yet).

PART III – BEST MANAGEMENT PRACTICES BY BUSINESS TYPE

AGRICULTURAL CHEMICAL

Typical Businesses Application: These BMPs apply to wholesale nutrient distributors, weed abatement districts, farms, and similar businesses.

Cross Reference: Businesses of this type may also need to reference *Auto/Fleet Maintenance*, *Vehicle Washing*, *Fueling Operations* or other BMPs in this manual.

Discussion of Risks: Businesses in this class handle quantities of bulk or bagged soil nutrients, pesticides, and herbicides. Stormwater interacts with bulk nutrient at on/offload areas and in conveyance apparatus. Product that is spilled during transfer or mixing operations is easily carried away with stormwater and infiltrates the ground.

BMP – BULK STORAGE & HANDLING OF SOIL NUTRIENTS

Containment: Typical components used include Concrete Box (whole room/building) containment. In order to minimize undesirable transport of nutrients, bulk transfer areas must be covered or protected from precipitation to the maximum practical extent. This includes constructing water and wind-tight housings over exterior conveyor apparatus or locating apparatus in protected areas. Conveyor chases or trenches must also be covered if nutrient dust builds on the outside of apparatus or in the trenches themselves. Drains are not allowed in conveyor trenches if any accumulation of product occurs within the trench during normal operation. Instead, these trenches and sumps should be monitored and the stormwater removed for proper disposal (see *Wastewater* below) as needed. Contaminated storm-water stored in drum quantities should be contained on typical containment pallets or other approved containment.

Figure 13: Constructed shed keeps precipitation out of conveyor apparatus and chase.

SOP'S: Spilled granular nutrient should be swept up as soon as transfer process is complete. Remove caked nutrient salts from equipment prior to washing and follow *Vehicle Wash* BMPs or variance described below.

Self Inspection: Self-inspections should include daily checks for spilled nutrient, cracks in containment components, and seasonally appropriate checks for stormwater accumulation in chases, trenches, or sumps. Check that conveyor covers are tight and that nutrient dust is not accumulating in trenches that are exposed to precipitation. Assure that precipitation seals are intact and covers for trenches and pits are in place when offload is not occurring.

Maintenance: Cracks in concrete containment, chases/trenches and off-load pads should be diligently maintained. Cleaning and preparation of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications.

Wastewater/Stormwater: A typical source of NDWW includes equipment washing. *Vehicle Wash* BMPs (see pg 36) apply here. However, where heavy equipment becomes caked with nutrients, once heavy caking has been removed, there is some variance for *occasional* rinsing of this equipment onto a healthy vegetated surface during the growing season only.

Contaminated stormwater that has been evacuated from containments and trenches should be kept in secondary containment until which time it is properly disposed of. Proper disposal would include hauling by a qualified hazardous waste handler, or possibly via land application at agronomic rates if such practice is compliant with or permitted by IDEQ rules.

BMP – Storage & Handling of Pesticides

Containment: Small quantities of pesticides/herbicides (<25 gallons) can be stored in dry protected rooms with a concrete floor or on other floors or shelves with shallow containment pans. Larger quantities should be stored over a concrete floor sloped to a sump with mono-pour curb, or stem-wall, around the perimeter of the room. Bulk mixing is best performed in the field, on the job site, or in a base shop over a containment floor and sump.

SOP'S: Pesticide and herbicide use is regulated by Idaho Dept. of Agriculture. Users must be licensed and adhere to BMPs and rules of the Idaho Department of Agriculture regarding mixing, application, and container rinsing/disposal.

Self Inspection: Include regular sump inspections for containment integrity and accumulation of wastes. Assure that all products are contained as described above. Large and deep sumps that are not readily visually accessible should be hydrostatically tested annually.

Maintenance: Cracks in concrete containment floors and sumps should be diligently maintained. Cleaning and preparation of the crack surface prior to sealing is critical. Self-leveling polyurethane caulks work best in horizontal applications.

Wastewater/Stormwater: Stormwater should not typically be an issue in these containment areas. Wastewaters from rinsing containers or other contact activities should be disposed of as hazardous waste or as per Dept. of Agriculture guidelines.

AIRCRAFT MAINTENANCE & FUELING

Typical Businesses Application: These BMPs apply to personal and corporate hangars, FBOs, charter flight operations, and similar facilities where maintenance and/or fueling of aircraft occur.

Cross Reference: Businesses of this type may also need to reference *Vehicle Washing* and *Fueling Site* BMPs.

Discussion of Risks: Businesses in this class present unique issues due both to FAA rules and the need to eliminate the accumulation of stormwater on taxiways and runways. For example, structures such as canopies for fueling sites that would interfere with the movement of aircraft are not allowed. In addition, throughout airports, there are huge numbers of stormwater conveyance and infiltration devices (mostly SIWs) that provide ready conduits for chemical release, NDWW, and contaminated stormwater to infiltrate the ground surface. Businesses in this class can stock large quantities of numerous industrial solvents, oils, and fuel additives. Aircraft deicing operations release chemical to the ground that, if not collected, would migrate easily through alluvial sands and gravels present on the Rathdrum Prairie.

Figure 14: De-icing fluids are highly mobile in the permeable soils found on the Rathdrum Prairie

BMP – Aircraft Maintenance

Containment: Typically C*oncrete Box* and/or *Prefabricated* system components are used. Larger operations may use the whole-room containment version of the *Concrete Box* component.

Standard Operating Procedures: Small spills and releases should be cleaned up immediately with absorbent granules or rags. Solvent soaked rags can be managed per Appendix A – *Guidelines on Handling Solvent Contaminated Rags*. On occasion, unique aircraft projects or maintenance procedures require specific critical materials. When these aircraft or procedures change, leftover critical materials that are no longer needed should be shipped for use somewhere else or to haz-mat disposal.

Self Inspection: Self-inspections should include checks for critical material accumulation in containment areas, and assure that all containers are located in, or on containment. Locate unused critical materials for removal. Check that sumps and hangar drain plugs are water-tight (unless there is an approved connection to public sewer).

Maintenance: Have your haz-mat hauler remove accumulation of released product in containment areas, or drum and contain wastes for future hauling. See specific component design for further maintenance notes.

Wastewater/Stormwater: Washing of aircraft with water and any detergents or solvents generates wastewater. By State rule, wastewater must be disposed of in an approved wastewater disposal system. In addition, as of the date of this writing, EPA has published a proposed rule requiring the collection and treatment of aircraft deicing fluids. The rule would apply at airports with 1,000 or more jet departures per year. Even if the rule does not become final or does not apply to your airport, collection of spent deicing fluid is highly recommended to reduce imminent risk of fluids migrating through the porous soils of the Rathdrum Prairie Aquifer and affecting down-gradient beneficial use. An *On/Off Loading Pad* component (see component design) would be an appropriate starting point for designing a collection system.

BMP – AIRCRAFT FUELING

Containment: Typical components used include *Fueling Pads, Double-walled Tanks*, and *Oil-water Separators*. Above ground fuel tanks must be double-walled with a visual float-type or electronic monitoring in the interstitial space. During fueling at a fixed location, aircraft should be located over a pad that drains to a sump, then to an oil-water separator that discharges to a grassy swale. Mobile fuel trucks should be parked in an area where a malfunction and release would not flow to a storm drain. Underground storage tanks used for fuel should meet all UST rules administered by Idaho IDEQ. Fuel hydrants associated with UST's should be curbed and fuel tight at the curb base juncture.

Figure 15: Helicopter fueling pad with drain to a separator.

Standard Operating Procedures: Operation of fueling pumps, valves and couplings is industry specific and beyond the scope of this manual. Small releases should have absorbent worked into the spill and then swept up immediately. Releases that reach stormwater injection wells or catch basins should be reported per IDEQ requirements

Self Inspection: Record monthly checks on the oil-water separator condition, including water levels, and check for accumulation of fuels in both chambers (See separator maintenance on page 13). Check for fuel pad cracking, catch basin sludge, fuel containment condition, interstitial gauge reading (for double-walled tanks) Note the condition of couplings/hoses.

Maintenance: Fill cracks in fueling pads with a self leveling, fuel resistant, polyurethane caulk. Keep the outlet of the discharge pipe from the separator above grade and free of sod. Remove and drain sludge from catch basins per guidelines in this manual. See specific BMP component design for further maintenance notes.

Wastewater/Stormwater: Water and fuel pumped from a separator must be hauled and disposed of by a qualified hazardous waste hauler.

AUTO BODY

Typical Businesses Application: These BMPs apply to individuals and businesses that are engaged in prepping, painting, and lacquering vehicles.

Cross Reference: Businesses of this type may also need to reference *Auto/Fleet Maintenance* and *Vehicle Washing* BMPs.

Discussion of Risks: These businesses store solvent and generate solvent wastes that are highly toxic and mobile in the environment. Wastewater from washing vehicles and shop floors can carry contaminants to the ground surface or nearby shallow injection wells.

BMP – AUTO BODY

Containment: Containment of paint pigment banks is not usually necessary. Containment of other products such as solvents that are in containers of 5 gallons or less is encouraged especially if there is a frequent transfer of product into and out of the container. Larger quantities are required to be contained. Containment is typically accomplished with *Prefabricated Containment*.

Standard Operating Procedures: Spray gun cleaning must occur in an enclosed cleaning device or other process approved through IDEQ Air Quality and may not include spraying solvent on the ground. Waste solvents should not be allowed to accumulate over time in uncontained areas. Store all containers in a protected area indoors.

Figure 16: Worker using an enclosed spray gun cleaning device.

Self Inspection: Check for adherence to procedures above and assure proper wastewater disposal. File receipts for hazardous waste removal. Check for containment of chemicals and that all waste containers are stored inside with tight seals to prevent volatilization.

Wastewater/Stormwater: Wastewater is often generated during vehicle preparation and/or shop clean-up. NDWW must be collected and disposed of in a public sewer, hauled to an approved site as waste, or evaporated in an approved evaporator.

AUTO/FLEET & HEAVY EQUIPMENT MAINTENANCE

Typical Businesses Application: These BMPs apply to auto service shops, fleet vehicle maintenance, and trucking/construction vehicle maintenance shops.

Cross Reference: Businesses of this type may also need to reference *Auto Body*, *Vehicle Washing*, and *Fueling Site* BMPs and may be associated with most any other business type.

Discussion of Risk: Businesses in this class store quantities of oils, solvents, and engine coolants. This is the most common type of chemical handling business in this region. Waste fluids are often hastily left in uncontained areas. Drums, buckets, and pans are left outside with open tops or without tight seals, allowing stormwater to displace the fluids inside. Vehicle fluids are often released to the ground during the maintenance process or through leaks. There is constant manual transfer of chemicals which leads to spills and overfills. Waste fluids that are stored and not shipped with a qualified hauler in a timely fashion add more risk of release to the environment. Floor drains can lead to subsurface disposal wells or old septic systems. Parts washer sludge contains toxic heavy metals. Burning of waste fluids adds to atmospheric deposition of toxins that can be carried into groundwater. (Burning of waste fluids is regulated by IDEQ Air Quality.)

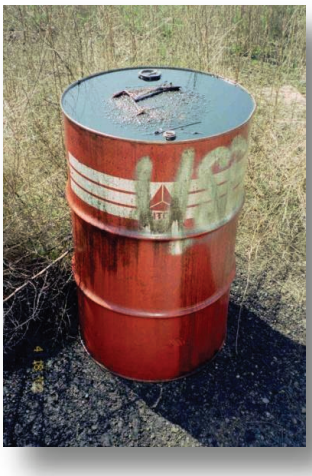


Figure 17: Uncontained used oil at a heavy equipment maintenance facility being displaced by stormwater to the ground.

BMP – Auto/Fleet & Heavy Equipment Maintenance

Containment: The most significant difference between businesses in this type relate to the volume of fluids and waste fluids stored on site. Containment methods will vary based on the volumes involved. All drums and tanks must be in approved containment. Containment pallets are common as are fabricated steel and concrete curb containment. The 110% containment volume requirement may be waived (i.e. allow for smaller containment pallet) for drums that are in good condition and stored inside a building. Containment for oil totes supplied by bulk oil suppliers should include adequate drip pans permanently located below service valves. (See pages 9 & 14 for component examples.)

Figure 18: Containment box and shed under construction at a heavy equipment maintenance facility.

Standard Operating Procedures: Collect ALL used fluids including hydraulic oils and coolants generated from repair and maintenance process. Engine blocks and gear/transmission cases should be drained thoroughly and stored inside or covered/contained outside areas. Used-oil drain pans should be emptied immediately, or by end of shift, to a contained bulk storage via a process that doesn't drip or spill outside of containment. All drums and five-gallon buckets of waste fluid must be stored inside the shop or other area protected from precipitation. Store all empty drums on their sides. Sweep up used absorbent materials the same day they were applied to a spill (especially outdoors) and dispose of appropriately. Larger operations will require frequent self-inspections to ensure proper procedures and maintenance procedures are adhered to.

Self Inspection: Record daily or weekly checks on the above procedures paying close attention to containers of critical materials and waste fluids not placed in containment. Monitor transfer practices for chronic spill. Inspect containment areas for accumulation of stormwater and critical material. Look around containment areas, especially against outside walls, for leaks and spills. Check for broken or cracked containment. Check containment drain valves for closed position or tight seal on plugs.

Maintenance: Repair leaking hydraulics on heavy equipment promptly. Repair broken or cracked containment. See specific containment component design for detailed maintenance notes.

Wastewater/Stormwater: With the exception of rinsing atmospheric dust from cars at sales lots, all vehicle washing generates wastewater. By Idaho rule, all wastewater must go to an approved wastewater treatment/ disposal system. All floor drains must be connected to a public sewer system. Those that are not must be sealed or discharge to an approved holding tank or re-use system.

AUTO SUPPLY

Typical Businesses Application: This BMP applies to retail or in-house parts supply facilities that store a wide variety of chemicals primarily in containers less than 5 gallons. Occasional 5 gallon and drum quantities or even an above ground tank for used oil may be present.

Cross Reference: None.

Discussion of Risk: These facilities tend to have lower risk where the floor of the showroom or warehouse provides adequate containment for incidental spills or releases from the small containers on hand. Some facilities provide used oil collection and storage in tank quantities. Storage near outside walls or ramps/doors to the outside can increase risk. Occasionally, large numbers of 5 gallon buckets are stored that increase risk if stored in inappropriate areas such as rooms with dirt floors.

BMP – AUTO SUPPLY

Containment: For the most part, chemical containers of 5 gallons or less are considered contained by warehouse or showroom floors. However, if there is a route for spilled fluids to flow to dirt basements or outside, they may need to be contained. Containment is waived for used oil tanks that are provided for the public's benefit as long as the tank is protected from precipitation and the area around the tank is maintained clean and dry. Floor drains are generally not permitted in critical material storage areas.

BUILDING SUPPLY / FARM & FEED RETAIL

Typical Business Application: These BMPs apply to hardware stores, construction supply, paint supply, co-ops, and other retail farm supply where the majority of the chemicals are smaller containers on showroom floors. Some facilities also have large numbers of bucket and drum quantities.

Cross Reference: Businesses of this type may also need to reference *Fueling Site* and *Agricultural Chemical* BMPs.

Discussion of Risk: Although risks tend to be minimal at these facilities, quantities stored often cross a threshold that requires compliance with rule. Risk is usually associated with lack of training and awareness. Chemical spilled at receiving/dock areas may find its way to shallow injection wells. Precipitation can leach chromium and arsenic from stocks of treated lumber if left uncovered.

Figure 19: Copper, chromium, and arsenic stain leaching from treated lumber to a stormwater injection well.

BMP – BUILDING SUPPLY/FARM & FEED, RETAIL

Containment: For the most part, chemical containers of 5 gallons or less are considered contained by warehouse or showroom floors. However, if there is a route for spilled fluids to flow to dirt floors or outside the building footprint, or there are large pallet quantities, then 5 gallon containers need to be contained.

Standard Operating Procedures: Pallets of fertilizer and other lawn chemicals should be stored protected from precipitation and away from shallow injection wells. Keep treated lumber covered with tarps especially during precipitation events. Absorb and sweep spills immediately and dispose of in solid waste or with hazardous waste as appropriate. Develop systems and accountability to train employees on handling damaged product and spills.

Maintenance: See specific containment component design for maintenance notes.

Wastewater/Stormwater: Floor drains are generally not permitted in critical material storage areas. Be aware of the stormwater collection system that services your site and how a release may interact with that system.

CLEANING SERVICE (CARPET, FLOOD RESTORATION)

Typical Businesses Application: These BMPs apply to carpet cleaning and flood restoration businesses.

Cross Reference: None

Discussion of Risk: Most risk associated with this business class is related to the generation of non-domestic wastewater. This wastewater is typically collected in tanks during the cleaning process and is sometimes inappropriately discharged onto the ground or into storm sewers or drywells. In February of 2013, a carpet cleaning company was fined $11,200 for dumping a job's wastewater into a storm drain in Beaverton, Oregon.

Figure 20: Illegal discharge of wastewater to a swale.

BMP – CLEANING SERVICE

Containment: Most chemical associated with this type of business is stored in the service vehicle and is typically 5 gallons or less in quantity. Drum quantities in a warehouse or shop should be contained on containment pallets or similar, especially if transfer in and out of the drum is occurring.

Wastewater: Operators must have established locations that are connected to public sewer where wastewater tanks can be dumped. If necessary, written agreements with the sewer district should be established to identify allowed dumping sites and to describe other conditions required by the district. Employees must be trained in the imperative nature of proper dumping.

DRY CLEANERS

Typical Businesses Application: These BMPs apply to businesses engaged in laundry and dry cleaning services.

Cross Reference: None

Discussion of Risk: Chemicals used by this industry, particularly the cleaning solvents, are extremely toxic and mobile in the environment. Without strict containment, recovery, and waste disposal practices there is high risk for contamination of groundwater and surface water resources. There is some trend to replace the more hazardous chemicals, such as perchloroethylene, with somewhat more safe aliphatic hydrocarbons.

BMP – DRY CLEANERS

Containment: Dry cleaning machines should be fully contained, typically over a steel drip pan that extends beyond the footprint of the entire machine. The pan should meet the full 110% capacity requirement.

Standard Operating Procedures: Lint and other wastes contaminated with dry cleaning solvent should be stored in covered, contained drums or buckets for pick-up by a hazardous waste hauler. See also Appendix A – *Guidelines on Handling Solvent Contaminated Rags*.

Wastewater: All dry cleaning operations must be connected to public sewer.

FUELING OPERATIONS

Typical Businesses Application: These BMPs apply to any business engaged in the storage and/or dispensing of fuel for vehicles and machinery.

Cross Reference: Fueling operations can be associated with most of the other business classes in this manual.

Discussion of Risk: The enormous volume of fuel storage and transfer over the Rathdrum Prairie presents significant risk to the environment. Some toxic components of fuel are highly mobile in the environment. Overfilling of vehicle tanks is a common occurrence at most sites. 'Drive-offs' with hoses still inserted into tanks happen, especially at public fueling sites.

BMP – PUBLIC RETAIL FUELING SITE, CARD LOCK SITE

Containment: Most public retail fuel storage is underground. These sites are required to use double-walled underground tanks and the fueling pad BMP component (page 11) with a canopy.

Standard Operating Procedures: Small spills and overfills should be absorbed with a granular absorbent by working the granules into the spill and then sweeping them up immediately. Washing the pad down with water is highly discouraged (especially do **not** use detergents) as that will compromise the efficacy of the oil-water separator. (*Training, leak detection, record keeping, and other BMP's associated with underground tanks are part of the UST program administered by the IDEQ and are procedures beyond the scope of this manual.*)

Figure 21: Testing for crack infiltration and flow at a public fuel island.

Self Inspection: Self inspection of the fueling pad should check for the exclusion of exterior surface stormwater as well as containment of stormwater brought onto the pad with vehicles or by wind. Also check for unobstructed flow through the system, and water tight integrity of all components, pipe perforations, and piping joints. Clean and inspect concrete joints on containment structures for tight seal. Maintain and check the log of employee training on items like small spill response (see UST program for other training requirements).

Maintenance: Keep all gutters, drains, catch basins, and separators free of debris, dirt, and sludge. For maintenance of separators, see page 13. See Appendix E for guidelines on handling sludge or *Sump Waste*. Cracks and joints in the fueling pad or containment structure need to be carefully de-oiled, cleaned, and filled with a self-leveling polyurethane caulk. Leaking pipe perforations or seams in the walls of catch basins and separators are indicated by water levels below the lip of the outlet pipe. These leaks can be patched with an appropriate grout.

Wastewater/Stormwater: Contaminated stormwater that is collected on the fueling pad must pass through a separator and into a properly maintained grassy swale. These swales must be irrigated at a frequency that maintains an active, healthy sod which aids in purifying the separator discharge. Automatic irrigation is required for new construction.

BMP – PRIVATE FUELING SITE

Containment: These sites typically use above ground tanks and the concrete box or double-walled tank components for fuel storage. A fueling pad is required. Collection and treatment of stormwater from the pad will most likely need to pass through a separator. For small operations, a blind sump may be approved to collect the stormwater if a canopy is installed with an adequate footprint to exclude most precipitation. See page 11 for detailed information on these components.

Standard Operating Procedures: Small spills and overfills should be absorbed with a granular absorbent by working the granules into the spill and then sweeping them up immediately. If approaches to the fueling pad or larger areas surrounding it are unpaved, take measures to reduce the amount of dirt tracking onto the pad and remove sludge from catch basins frequently.

Self Inspection: Self inspection of the fueling pad should check for the exclusion of exterior surface stormwater and containment of stormwater brought onto the pad with vehicles or by wind. Also check for unobstructed flow through the system, and water tight integrity of all components, perforations, and piping joints. Concrete box containment valve positions should be checked and recorded. Record gauge readings or dip the interstitial space in an above ground double-walled tank. Verify and log training for each employee regarding spill response.

Figure 22: Private fueling site with triple-walled tank, catch basin, and separator (left background).

Maintenance: Keep all gutters, drains, catch basins, and separators free of debris, dirt, and sludge. Dry and dispose of sludge per guidelines on Appendix page E-1. For maintenance of separators, see page 13. Sites using above ground double-walled tanks, with pumps and hoses not in containment, must keep seals and hose joints tight and weep-free. Cracks in the fueling pad need to be filled with a self-leveling polyurethane caulk. Leaking pipe perforations or seams in the walls of catch basins and separators are indicated by water levels below the lip of the outlet pipe. These leaks can be patched with an appropriate grout.

Wastewater/Stormwater: Sites with a canopy and blind sump in the fueling pad must keep the sump evacuated according to the protocols for handling stormwater on page 6. Stormwater in above-ground tank containment is handled under the same protocol. Contaminated stormwater that is collected on a drained fueling pad must pass through a separator and into a properly maintained grassy swale. These swales must be irrigated at a frequency that maintains an active, healthy sod which aids in purifying the separator discharge. Automatic irrigation is required for new construction.

BMP – Bulk Fuel Containment (above ground – permanent)

Containment: Bulk fuel tanks are typically stored in concrete box containment. In new or remodeled facilities, the containment area drains continuously through an oil-stop valve which provides additional protection for stopping larger fuel releases from leaving the system. The containment area drain is valved to allow maintenance and provide containment for active releases. The rim of the oil-stop valve pit/box must be at or above the elevation of the containment wall. Flows from the oil-stop valve must continue on through an oil-water separator and then to a grassy swale. Proper coupling procedures at the delivery tanker should eliminate the need for a fueling pad especially if the tank-side couplings are located over the containment.

Standard Operating Procedures: Critical SOPs for managing inventory and loading/off-loading are specific to the industry and beyond the scope of this BMP. Designate and train a local responsible party in the use, maintenance, and inspection of the BMP components.

Self Inspection: Monitor and record containment and separator valve positions daily. Inspect separator and oil-stop apparatus for measurable amounts of fuel with a water detecting paste. Inspect for cracks in the wall and floor of containment. Check for posted spill response protocol and materials.

Maintenance: Introduction of fuel into the containment system should be minimized. Keep all joints, pumps, valves, and couplings weep free. Cracks should be cleaned and filled with self-leveling caulk or durable grout as appropriate. See page 13 for oil-water separator maintenance.

Wastewater/Stormwater: This is a flow through containment system. Proper treatment of the collected stormwater depends on vigilant maintenance of the oil-stop valve, the oil-water separator, and the receiving swale.

BMP – Temporary Fueling Site

Containment: This BMP is only appropriate for temporary fueling operations, typically two years or less, that are installed at construction sites, wood chipping operations, or similar. At minimum, a poly liner is required under stationary tanker trailers and single walled tanks. The liner may be waived for double-walled tanks unless repeated coupling/uncoupling is occurring. In addition, a buried poly liner is required under the footprint of the vehicles that will be using the site. Inspection ports must be installed in a sump area of the liner. For other criteria on liner containment, see page 10.

Figure 23: Temporary fueling site with liners under both storage and offload/onload lane. (Note black inspection ports along lane.)

Standard Operating Procedures: The pad and main containment liners must not be allowed to overflow with stormwater. Hoses and nozzles should be stored over containment at all times.

Self Inspection: During precipitation events, perform daily monitoring for stormwater accumulation in the fueling pad inspection ports and main containment.

Maintenance: Pinhole leaks and small cracks in liners are impossible to detect visually. If stormwater is not accumulating in a liner in a predictable manner based on current weather, it should be replaced.

Wastewater/Stormwater: Stormwater collected in the liners should be managed per guidelines on page 6.

LANDSCAPE MAINTENANCE

Typical Businesses Application: These BMPs apply to golf course maintenance operations and general landscape maintenance contractors.

Cross Reference: These businesses may also need to reference *Vehicle Washing, Agricultural Chemical, Auto/ Fleet Maintenance,* and *Fueling Operations* BMPs in this manual.

Discussion of Risk: Many of these businesses have frequent turnover that leaves gaps in employee training for proper procedures in handling critical materials and wastewater. Truck or tractor mounted chemical application equipment is known to leak if couplings are bad or valves are faulty or left open. Overspray of nutrients and pesticides onto older streets with stormwater collection systems, is carried with precipitation to local lakes and streams. Proper management of equipment wash water is difficult if the facility is not on public sewer.

BMP – Landscape Maintenance

Containment: Various containment components will be used in these businesses depending on services provided. Prefabricated containment is most common for drums of chemical and waste fluids. Tanks and totes of liquid fertilizer or deicer must be in containment when not mounted on a truck that will be used at a job address.

Standard Operating Procedures: Post and practice strict protocols that minimize potential for spill and overfill during the mixing and loading of job tanks. These activities should be located over an impervious surface whenever possible. Spills should be swept or absorbed immediately and disposed of as solid or hazardous waste as appropriate. Every effort should be made with blowers and brooms to completely remove all over-application of granulated nutrient from streets. Liquid overspray onto streets should not be allowed to occur at all.

Self Inspection: Check truck mounted application equipment for leaks. Review your chemical transfer and mixing protocol for weak points in keeping product off the ground. Develop a training checklist for employees; include information/protocol on over-application of nutrients and pesticides. Check for the containment of all tanks and drums. Check the condition of the containment and note the level of stormwater or chemical in the containment.

Maintenance: Keep containment devices free of accumulation of spilled chemical and stormwater.

Wastewater/Stormwater: Equipment and vehicle wash water must be discharged to a public sewer or contained in a non-discharging recycling system. Applicator tank rinsing must be performed per Idaho Department of Agriculture requirements.

MACHINE SHOP

Typical Businesses Application: These BMPs apply to businesses that machine metal and plastic parts with traditional lathes and presses, etc. or with computerized numerical control (CNC) machines.

Cross Reference: Businesses in this class may also need to reference *Manufacturing* and *Metal Fabrication Finishing & Plating* BMPs in this manual.

Discussion of Risk: Traditional machine shops have mostly given way to CNC operations of all sizes. Regardless of their relatively low toxicity, the coolants and lubricants used in CNC machines are not desirable in drinking water and may possibly be more mobile than traditional oils in the environment due to their commonly water soluble formulations. All operations generate waste fluids and chips that must be stored properly as they await disposal. Chips contain oil or coolant residue that can be carried into the ground by precipitation if the chips are not stored properly. Larger operations generate oily floor cleaning wastes that must be disposed of in an approved manner. Activities near outside walls and slab edges may allow released fluids to leave the slab and enter the ground.

Figure 24: Chip and parts recycle bins must be covered if stored outside.

BMP – MACHINE SHOP

Containment: Experience shows that whole-room or building footprint versions of *Concrete Box* containment is best for containing the chronic drip and splash that can be present in these facilities. When whole-room containment is not available, then the use of prefabricated containment for drums and transfer operations is most functional. Active drums that are accepting waste fluids may need broader footprint containment to collect spills. Machines may be considered contained by concrete slab floors if there is no risk of large release. Machines that inherently leak or splash should not be located near a slab edge or near any cracks in the slab without mitigation.

Standard Operating Procedures: Absorb splash and spills with absorbent granules before they get to cracks, expansion joints, or a floor slab edge. Manage oil/solvent soaked rags according to guidelines (See Appendix A). Cover chips to exclude all precipitation if stored outside. Do not store chips in perforated or drained containers when stored outside.

Self Inspection: Assure that all critical materials including waste fluids are in containment. Check chip storage for dripping containers and note whether stormwater is excluded from chips. Check machines for leaks or excessive release. Examine transfer processes for minimal risk of release. Check compressor condensate collection frequently enough to eliminate overflow and verify its proper disposal.

Maintenance: Seal cracks and expansion joints in concrete floor areas that may accept chronic splash and leaks from nearby machines. (Thorough degreasing of the area first is critical to get adhesion of the sealant.)

Wastewater/Stormwater: Post written protocol and train workers on handling of mop water and other wastewater streams. Mop water may **not** be disposed of in an on-site septic system and must go to a public sewer (with pretreatment as required by the sewer district) or shipped with hazardous waste. Compressor condensate should be either collected and evaporated, or discharged to public sewer, or shipped with waste fluids.

MANUFACTURING

Typical Businesses Application: These BMPs apply to molding, mixing, composite, electronics, and most any other business engaged in fabricating components or assembling products not described elsewhere in this manual.

Cross Reference: Businesses in this class may also need to reference *Machine Shop* or *Metal Fabrication* BMPs.

Discussion of Risk: Manufacturing businesses are a diverse class with many different processes and products. The most common products in this region that present higher risks tend to involve electronics and composites manufacturing. Electronics facilities use hazardous solvents and may produce lead wastes. However, solvents are usually dispensed and used in small spray bottle quantities and applied with rags. Lead wastes are often minimized and contained by automated machines. Most risk with electronics is with bulk storage and transfer of solvents. Composite processes have become much safer for most facilities which now use hi-tech materials that use simplified processes and fewer hazardous solvents and polymers. Often these businesses will have several areas of specialization so that any given employee performs a limited number of steps.

BMP – MANUFACTURING

Containment: Since this is a wide and variable field, containment methods will vary as well. Often a separate containment shed or room is constructed of concrete or fiberglass (for acids) away from the production area. This serves most businesses well especially if transfer of critical materials is relatively occasional and in small quantities. Smaller businesses accomplish effective containment with prefabricated pallets or similar. For high temperature processes with glycol chillers, see *Metal Fabrication, Finishing, & Plating* BMPs on page 29.

Standard Operating Procedures: Unique operating procedures will vary widely. Designate specifically trained employees for bulk handling and transfer of critical material. Use commercial laundry service qualified for handling solvent/oil-soaked rags, or dispose of with hazardous waste as appropriate (See Appendix A – *Guideline on Handling Solvent Contaminated Rags*).

Self Inspection: Verify proper handling and disposal of waste fluids. Review critical material transfer methods for minimal risk. Assure all critical material containers of 5 gallons or more are in containment. Check piping, gauges, and alarms related to critical material conveyance systems for leaks and functionality. Perform and record hydrostatic tests on sumps and trenches, especially those without liner containment underneath. Test and map destination of floor drains if building plans are not available. Check compressor condensate collection frequently enough to eliminate overflow and verify its proper disposal.

Maintenance: See specific containment type in Part II; component design.

Wastewater/Stormwater: All industrial and process wastewater generated over the Rathdrum Prairie and its recharge areas must be disposed of to public sewer (with possible pretreatment requirements) or removed by a qualified hazardous waste hauler as applicable. Be aware of stormwater treatment systems in vicinity of loading docks. Have a spill response plan for accidents at the dock in order to protect SIWs servicing the dock area.

METAL FABRICATION, FINISHING, & PLATING

Typical Businesses Application: These BMPs apply to some welding shops, steel supply businesses, and metal finishing/plating operations including tempering processes.

Cross Reference: These businesses may need to reference *Vehicle Wash* or *Machine Shop* BMPs.

Discussion of Risk: Most welding, powder coating and smaller metal fabrication shops store and handle only small quantities of critical materials that pose minimal risk to drinking water. However, some shops with finishing operations may use solvents for preparation of the metal for painting or powder coating. In addition, metal fabrication and supply businesses may generate large amounts of wastewater from chemical solution tanks that are used to cool the cutting process and pieces of metal. Compressors generate oily condensate that is often mistakenly discharged to the ground. Metal plating operations are now very rare in this region but may use acids, solvents, toxic metals, corrosives, and other critical materials that are extremely mobile and toxic in the environment. Some high temperature processes use glycol chilling systems where glycol can be released to the environment in a system failure.

BMP –STEEL FABRICATION/SUPPLY

Containment: Drum quantities of oils, coolants and similar critical materials are typically stored in fabricated containment. Waste fluids are best stored in a centralized location on fabricated, curbed, or box (room) containment. Coolant apparatus for cutting tables, the associated reserve tanks, and conveyance lines are considered contained by the slab floor if all joints and seals are tight and weep free at all times. Chronically leaky systems should be placed in containment pans. High temperature processes with large glycol or other chemical-based chillers located outside may need to provide containment for the chiller and associated piping.

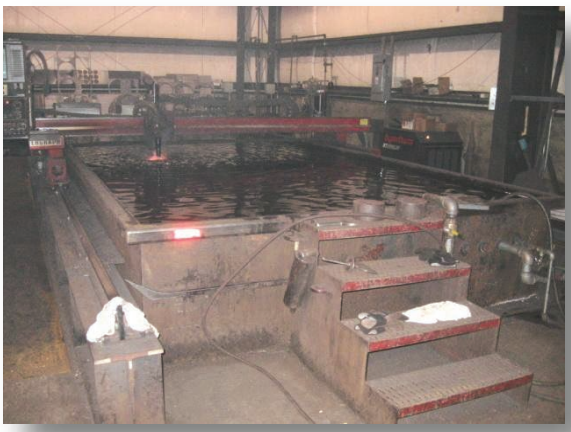


Figure 25: Water cooled cutting processes generate wastewater that must be disposed of properly.

Standard Operating Procedures: Small spills and releases should be absorbed promptly by working absorbent into spill and then sweeping up the spent absorbent. Return drums to containment immediately after major transfer procedures are complete. Manage oil/solvent soaked rags according to guidelines (See Appendix A – *Guidelines on Handling Solvent Contaminated Rags*). In order to eliminate overflow risk, frequently empty collected compressor condensate to appropriate disposal.

Self Inspection: Assure all critical materials are in containment. Check coolant and hydraulic systems for leaks, especially near slab edges. Chiller systems fitted with gauges and alarms should be checked, tested, and recorded. Check compressor condensate collection systems often enough to eliminate overflow. Post complete wastewater disposal protocol near coolant tanks for cutting tables.

Maintenance: Assure that containment devices are evacuated periodically to allow for release volume.

Wastewater/Stormwater: Wastewater generated in cooling tables must be treated as such and either hauled by a qualified hauler or drained to public sewer, if permitted (subject to any pretreatment requirements). Compressor condensate can be evaporated, discharged to public sewer with the sewer districts permission, or shipped with hazardous waste. Discharge of cooling system filter backwash or any cooling table wastes to the environment is prohibited.

BMP –Metal Plating/Tempering Operations

Containment: Drum quantities of solvents, acids, bases, and similar critical materials are typically stored in fabricated containment or full concrete containment rooms. Dip tank operations are typically surrounded by a collection trench or curb containment for drip and splash. It should be noted that concrete in these operations must be coated with specialized, durable coatings in order to resist corrosives. New construction that uses concrete trenches or floor slab to contain plating fluids and wastes must have a liner under the footprint of the room as a second layer of containment. The liner must be equipped with a sump and monitoring port to evaluate and evacuate material collected on the liner (see page 10 – *Membrane Liner*). Waste fluids are best stored in a centralized location on fabricated, curbed, or box (room) containment. Cooling apparatus, for plating and oven operations, particularly those with glycol chillers located outside may need to provide containment and leak detection for the chiller and associated piping.

Standard Operating Procedures: Acids and bases are contained separately. Post a spill response and reporting protocol for various chemicals and scenarios. Include emergency contact information.

Self Inspection: Assure all critical materials are in containment. Check coolant and hydraulic systems for leaks, especially near slab edges. Glycol or other additive-based chiller systems fitted with gauges and alarms should be checked, tested, and recorded. Any anomalies suggesting loss of product from a chiller system should be investigated immediately. Check compressor condensate for proper disposal and to eliminate overflow if not plumbed to public sewer. Inspect containment areas and wastewater trenches for integrity. Assure that employees are trained in spill response and reporting requirements. Check liner inspection ports if any.

Maintenance: Assure that containment devices are cleaned frequently to allow for required containment volume. Clean, evacuate, and maintain wastewater trenches on a regular basis to repair or prevent deterioration of concrete.

Wastewater/Stormwater: Wastewater generated in a plating operation may need to be hauled as hazardous waste. Some streams may be discharged to public sewer with appropriate pretreatment and monitoring. Check with your public sewer jurisdiction. Wastewater may not be disposed of on site.

PRINTING

Typical Businesses Application: These BMPs apply to newsprint, publishing, and other high volume offset print service facilities.

Cross Reference: None

Discussion of Risk: These businesses may store large quantities of inks, solvents, oils, coatings, and waste fluids. Compressors may discharge oily condensate that is often disregarded and allowed to infiltrate the ground. Bulk storage and transfer pose risk that is minimized with properly designed facilities, established protocol, and designated/trained employees.

BMP –Print Shop

Containment: Whole-room concrete containment is most practical due to the volume and prevalence of critical materials, especially in new construction or remodels. Prefabricated containment is also common as are double-walled tanks.

Standard Operating Procedures: Post protocol for chemical storage and transfer. Limit responsibility and accountability for chemical use and handling as possible. Develop training programs for those employees around chemical storage, handling, and spill response. Use commercial laundry service qualified for handling solvent/oil-soaked rags (See Appendix A).

Self Inspection: Assure all critical materials are in containment. Check machines for leak or excessive release. Examine process for risk. Assure that training is complete and refreshed periodically.

Maintenance: See specific containment type in Part II; component design.

Wastewater/Stormwater: Be aware of stormwater treatment systems in vicinity of loading docks. Have a spill response plan for accidents at the dock in order to protect any stormwater SIW servicing the dock area.

PUBLIC UTILITY

Typical Businesses Application: These BMPs apply to facilities that produce or manage electricity, drinking water, wastewater treatment, solid waste, or signal services such as phone and television.

Cross Reference: Businesses in this class likely need to reference *Auto/Fleet & Heavy Equipment Maintenance*, *Vehicle Washing*, and possibly *Fueling Site* BMPs

Discussion of Risk: Among this diverse group of facilities, some store and use large amounts of coolant oils that can be released into the environment via man-caused or natural accidents. Transformers containing these oils can leak or explode. Some transformers still contain PCBs. Other facilities like wastewater treatment plants store huge amounts of chemicals but they are easily contained and are used in highly controlled processes. Solid waste handling facilities provide collection/disposal services for a full spectrum of hazardous wastes and must manage toxic/organic waste fluids precipitated from the solid waste stream as well. Many sites rely on back-up power generation that requires storage of diesel fuel. Other risks at these facilities lie with *Auto/Fleet & Heavy Equipment Maintenance* as described on page 20.

BMP – PUBLIC UTILITIES

Containment: Power utilities use liner-type containment under transformers. Liners are also the choice underneath 'tipping pads' at solid waste facilities. Most other large volume containment for storage and transfer areas at these types of facilities involves curbed areas, or whole-room containment with non-discharging sumps. Prefabricated containment is used for smaller containment needs at associated fleet maintenance shops for example.

Figure 26: Liner containment being installed for a power transformer

Standard Operating Procedures: The size and scope of these facilities necessitates designating a specific individual(s) with responsibility/accountability for oversight of these BMPs. SOPs for each unique operation should be clearly drafted, posted, and with training provided for operational staff. Responsible individual(s) should be well versed in spill response and reporting requirements.

Self Inspection: Power utilities must check sumps and/or separators associated with transformer containment. Older liner containment that doesn't drain through a separator will overflow if not frequently checked and evacuated as needed. Monitor and record stormwater accumulation closely in these systems. If stormwater is not accumulating during precipitation on a closed liner system, then perform a hydrostatic test for that system (see page 5 - *Containment Integrity & Hydrostatic Testing*). Provide visual checks on equipment and associated gauges for leaks. Inspect concrete containment for cracks/deterioration and collection of fluids frequently. Monitor, test, and record alarm system status regularly. Monitor release and discharge to floor drains. Assure that all floor drain destinations are mapped and appropriate, especially in older complex facilities.

Maintenance: Evacuate sumps whenever stormwater or a chemical release or process causes accumulation in the sump. Promptly seal open joints in pads, sumps and all concrete cracks as they are identified with flow-able caulks.

Wastewater/Stormwater: Stormwater may collect in liner containment systems, drive-through load-out tunnels, and tank containment systems. Management of this stormwater should be made in context with guidelines on page 6. Collection systems that store wastewater in holding tanks need to be reviewed by IDEQ.

ROAD MAINTENANCE

Typical Businesses Application: These BMPs apply to businesses or entities that provide services for de-icing, dust suppression, and asphalt emulsion application on roadways.

Cross Reference: Businesses in this class will likely need to reference *Auto/Fleet & Heavy Equipment Maintenance, Vehicle Washing*, and *Fueling Site* BMPs.

Discussion of Risk: Perceptions of risk for groundwater contamination in this industry are often skewed by the fact that de-icing fluids, dust suppressants, and oils are put on the ground in the normal course of their use. However, there are proven risks from repeated release or chronic *point sources* of these chemicals that should not be overlooked. Truck mounted equipment leaks while it is parked. Contaminated stormwater in containment areas is discharged to the ground. Diesel fuel or other solvents used to clean equipment along with the dissolved emulsions are allowed to discharge to the ground. Uncontained washing of trucks used to haul salt-based or oil-based products releases these products to the ground.

BMP –ROAD MAINTENANCE

Containment: Concrete box containment is most appropriate for the critical materials stored by these facilities. Containment for asphalt emulsions may be waived if the product is shown by a third party to pass a standard paint filter test (See Appendix D). Occasionally, liner systems are used for the less toxic salt products but the liner may be subject to annual testing for water-tight integrity (see page 10 – *Membrane Liner*). On/off-load valves must be located over containment.

Standard Operating Procedures: Containment systems for ice/dust control salts should be designed and operated so that stormwater in the system can be re-used in application mix. The outlet end of fixed transfer hoses must be placed in containment when not in use. Fuels and other solvents used in cleaning transfer and application apparatus must be contained as waste fluids at the main shop site or applied through approved SOPs on the job site. Trucks and spray apparatus used in tack-oil or other asphalt emulsion application have need for occasional exterior cleaning that may involve solvents. All solvents used in the cleaning of this equipment must be contained in liners or other catchment device and drummed for proper hazardous waste disposal. Maintain training programs and checklists for loading/off-loading, cleaning apparatus and rinsing job truck tanks, as well as spill response protocol. Designate oversight responsibility when multiple operators/drivers are employed.

Figure 27: Creative trough of welded drum halves contains solvents during cleaning of asphalt emulsion applicator arms.

Self Inspection: Check for containment of all products at all times including waste fluids and contaminated stormwater. Monitor stormwater accumulation in containment areas. Check the status of valve positions and transfer hose location. Assure that truck mounted application apparatus is leak free, parked in containment, or that associated tanks are drained when parked.

Maintenance: Remove stormwater from containment, per guidelines on page 6, to maintain required containment volume.

Wastewater/Stormwater: Wastewater from vehicle washing, tank wash-out, and the cleaning of spray application apparatus may not be disposed of on site. All wastewater must be discharged to public sewer (with district approval), re-used in process, or evaporated via an approved method. Holding or re-use ponds may be approved with IDEQ review.

SMALL ENGINE MAINTENANCE

Typical Businesses Application: These BMPs apply to recreational vehicle/boat maintenance, full service equipment rental shops, and other businesses that repair small engines such as lawnmowers and chainsaws.

Cross Reference: Businesses in this class will likely need to reference *Vehicle Washing* or *Fueling Site* BMPs.

Discussion of Risk: Medium to small businesses in this class have been known to have difficulty getting waste hauler contracts due to economic inefficiencies for the hauler. Critical material storage and handling are often a small enough part of the business that proper methods receive minimal attention. Hectic business and large service inventory can compound poor storage and transfer practices. Equipment/vehicle washing wastewater which carries oil, fuel, pesticide, and cleaning agents is often discharged to the ground surface. Oil-water separators that serve wash pads frequently become overwhelmed with dirt and oil.

BMP – SMALL ENGINE MAINTENANCE

Containment: Prefabricated containment pallets are the most common containment devices used in these businesses.

Standard Operating Procedures: Waste fluids should be transferred to contained and closed buckets, drums, or tanks promptly and not left in buckets or pans outside. Collect antifreeze from RV/boat plumbing for waste disposal when flushing is necessary. Launder or dispose of rags per guidance (See Appendix A – *Guidelines on Handling Solvent Contaminated Rags*).

Self Inspection: Check containment devices for accumulation of spills. Monitor vehicle/equipment washing location and process to assure all wastewater is being disposed of per BMPs. Check catch basins and separators for oil and sludge accumulation as well as water levels in same that should be exactly to outlet rim.

Maintenance: Evacuate containment devices of spill accumulation as soon as the accumulation occupies 10 percent of the volume of the device. Leaking pipe perforations or seams in the walls of catch basins and separators are indicated by water levels below the rim of the outlet pipe. These leaks can be patched with an appropriate grout.

Wastewater/Stormwater: All wastewater from vehicle/equipment washing must go to an approved wastewater disposal system. Some exception may be provided for water-only cleaning of boats. When vehicles/equipment have significant accumulation of earth/mud, there must be a sizeable catch basin designed into the wash system to separate solids out of the waste stream. Catch basins must be cleaned out frequently following sludge disposal guidelines published and administered by IDEQ (See Appendix E – *The Key to Managing Your Sump Waste*). Check with your sewer provider for pretreatment requirements.

SURFACE MINING, CONCRETE, & ASPHALT

Typical Businesses Application: These BMPs apply to gravel mining and batch plants that manufacture concrete and asphalt.

Cross Reference: Businesses in this class may need to reference *Auto/Fleet & Heavy Equipment Maintenance, Vehicle Washing*, and *Fueling Site* BMPs.

Discussion of Risk: These are large complex businesses with a matching potential for failure in critical material handling systems. There is heavy use of solvents and acids for cleaning trucks. Heavy equipment and fleet maintenance necessitates storage and transfer of huge volumes of oils and waste oils. Oil-based anti-stick agents are conveyed through pumps and hoses with multiple points of potential failure and applied liberally at different points in asphalt production systems, often reaching the ground. Automatic truck-bed release agent applicators become mal-adjusted and discharge agent to the ground. Heat transfer oils are difficult to contain in complex apparatus and conveyance systems that are designed to be mobile. Concrete plants use huge volumes of admix chemicals that are typically readily contained in bulk but, pose risk in extensive conveyance systems, and are present in process wastewater. Large volumes of wastewater that are generated from production process, wash-out, and vehicle washing are difficult to contain and recycle in their entirety. At wash-out areas, low evaporation rates, over-use, inadequate containment design, and leaky hoses or nozzles in fresh water make-up frequently contribute to overflow at washout basin systems.

BMP –CONCRETE & ASPHALT BATCH PLANT

Containment: Concrete box containment is most practical for admix chemicals and fuel. Double-walled tanks are common as well for fuel containment. Prefabricated containment pallets are common in fleet maintenance shops and bed release areas. Bed release application areas are also served by a catchment system and an oil-water separator. Double walled tanks are common for fuels. Prefabricated pans are used for heat-oil systems on asphalt tanks but stormwater can be hard to manage there. Asphalt mix drums and associated heat-oil are best contained in a full concrete pad with a curb. Asphalt 'drags' should also be contained in a small pad and curb at its base to collect release oils.

Figure 28: Asphalt 'drags' should be contained at the base to collect release oils.

Standard Operating Procedures: Cleaning of asphalt conveyance pumps must be performed in a way that collects diesel or other solvents for proper waste disposal or consumed in process. Effective procedure and clearly communicated accountability should be in place to address any high risk process, overflow, leak, or other critical material malfunction upon identification by any employee. Truck bed release-oil application should be kept to a minimum with little or no oil leaving the haul box. Clearly designate and locate waste fluid collection systems so they are obvious and accessible to all employees.

Self Inspection: Drivers and operators should all exercise awareness for mechanical or process weaknesses that allow wastewater or critical material to get to the ground surface. Check for full containment of all critical materials in each storage/production area. Inspect all containment apparatus for cracks or other damage. Monitor stormwater accumulation in exterior containment. Inspect for leaks in conveyance systems for fuel, asphalt release, boiler chemicals, and admix solutions. Inspect oil-water separators for proper fluid levels and presence of oil and sludge. Check for adequate freeboard at the truck washout holding and recycle basin.

Maintenance: Repair or replace damaged containment devices promptly. Repair leaks in conveyance systems promptly. Leaking pipe perforations or seams in the walls of catch basins and separators are indicated by water levels below the lip of the outlet pipe. These leaks can be patched with an appropriate grout.

Wastewater/Stormwater: The truck washout/wastewater re-use areas at concrete batch plants must be designed and capable of accommodating full volumes generated. If the holding capacity is overwhelmed, the wastewater must be mechanically evaporated, reused in process, or hauled to an approved wastewater disposal site. Boiler water and boiler blow-down that contains chemical additives is considered wastewater and must be contained and disposed properly. Discharge from softeners treating process water may need to be evaluated and/or permitted by PHD, DEQ, and/or IDWR.

TRADE CONTRACTOR

Typical Businesses Application: These BMPs apply to painting contractors, drywall installers, cabinet shops, stone polishers, and other trades that don't fit in any other classes and there are critical materials present.

Cross Reference: Businesses in this class may possibly need to reference *Vehicle Wash* BMPs.

Discussion of Risk: These facilities are most likely to present risk through generation of wastewaters and waste fluids. Paint and drywall businesses have need for washing equipment and often don't have access to public sewer or don't collect wastewater from cleaning outside with a hose and buckets or similar. Stone polishing operations often discharge wastewater to the ground that may contain toxic metals. Cabinet shops generate waste solvents that may be stored or handled improperly. Smaller businesses that generate small quantities of waste fluids can have trouble finding legitimate ways to dispose of this waste due to economies of scale.

Figure 29: Poor example of contractor waste fluid containers stored outside. Contents displaced by stormwater.

BMP – TRADE CONTRACTOR

Containment: Prefabricated and concrete curb containment systems are most common at these facilities. Containment may be waived for glues and resins that have high viscosity and pass the paint filter test. (See Appendix D – *EPA Method 9095B*.)

Standard Operating Procedures: Spray gun cleaning must occur in an enclosed cleaning device or other process approved through IDEQ Air Quality and may not include spraying on the ground. Consolidate and confine waste collection and storage. Identify reliable, repeatable disposal methods for waste fluids. Establish acceptable clean-up practices that minimize waste and collect all wastewater for proper disposal. Be aware of BMPs and rules regarding air quality when handling solvents and other volatile compounds and their wastes.

Self Inspection: Check that all chemicals are stored inside and in containment. Give particular vigilance for **not** allowing waste fluid buckets to be left outside. Monitor employee practices.

Maintenance: Caulk cracks along concrete curb containment areas as they appear.

Wastewater/Stormwater: When washing latex paint and drywall tools or equipment, all associated wastewater must discharge to public sewer. Sludge and wastewater from rock polishing must be collected in their entirety and the water fraction discharged to public sewer or recycled/evaporated. Solids from sludge can be disposed of in solid waste unless they meet criteria for hazardous waste.

VEHICLE WASH

Typical Businesses Effected: These BMPs apply to commercial pay car/truck washes and to ANY business that washes vehicles or fleet equipment on site.

Cross Reference: Fleet and truck washing can be associated with virtually any of the business classes and other BMPs in this manual.

Discussion of Risk: Vehicle washing is a ubiquitous practice that generates non-domestic wastewater which is contaminated with surfactants, corrosives, coolants, oils, fuels, metals, and other contaminants. Gross misperception exists regarding discharge of this wastewater to the ground surface which may be as little as 100 - 300 feet above our drinking water. In many business environments, washing is performed by multiple operators or drivers who have low perception of risk and little accountability in this area. Because of their perceived 'everyday' or 'biodegradable' nature, wash detergents and other additives are often stored improperly and disposed of on the ground with the wastewater. Commercial wash facilities and wash bays connected to public sewer present minimal risk. Though, many such facilities have concrete slabs with heated ethylene or propylene glycol flowing through tubes embedded in the slab. Releases from these heating systems are not likely to be identified promptly nor remediated. Disposal of vehicle wash wastewater to the ground is a violation of Idaho State rules.

BMP – COMMERCIAL PUBLIC CAR/TRUCK WASH

Containment: Chemical drums and buckets are typically stored in rooms with *Concrete Box* or whole-room containment design. The floor of the containment area should be sloped to a blind sump or to a floor drain that must be connected to public sewer. Typically, machines that mix/pressurize the wash water are located in containment as well because they are prone to leaking a water/chemical mix. For the same reason, a floor drain in this area is better than a blind sump. Doorway thresholds to the containment area must be upslope and sealed to contain any plausible release.

Standard Operating Procedures: Pre-wash may not occur outside a wash bay unless the area is sloped and drained to public sewer. Manage sump wastes as per guideline in Appendix E – *The Key to Managing Your Sump Waste*.

Self Inspection: Include regular checks on the glycol level in the slab heating system. Assure that all leaks of water-chemical mix are contained by tight floors, curbs, and joints. Check concrete areas for cracks.

Wastewater: All commercial car wash facilities are required to be connected to public sewer. Therefore, oil-water separator maintenance will be under the jurisdiction of the municipality or sewer district. The standards for maintenance of the separator will be essentially the same as those stated in this manual. It can be noted that because of the high volumes of flow and presence of surfactant, the separator will not tend to collect oil and will primarily act as a settling chamber for large amounts of sediment. The sediment, or sludge, must be evaluated for hazardous waste per IDEQ guidelines (See Appendix E). If it is not classified as hazardous waste as per IDEQ rule, then the sludge must be dewatered (fluids drained to sewer) and disposed of with solid waste. Sludge may not be disposed of on site.

BMP – FLEET & TRUCK WASH

Containment: Drums of wash chemicals should be stored in containment rooms or on containment pallets. Washing activity should be on a pad or in a bay sized to accommodate all pieces of equipment and all reasonable overspray.

Standard Operating Procedures: Because these BMP's are so easily forgotten or ignored due to perception of low risk and employee demographics, these BMP procedures must be clearly posted and employees held accountable following them through training and designation of a responsible party to assure their use.

Wastewater: When public sewer is not available, wastewater from the wash process must be contained by an appropriately sized wash pad (see *Fueling Pad*, page 11, for construction standard) and stored in an approved holding tank or pond. Plans and specifications must be submitted to IDEQ and PHD. Plans must account for precipitation collected on the wash pad if uncovered. Commercial evaporators may be necessary as weather in this region does not allow enough net evaporation during the winter season.

Wastewater recycling units can be used in this BMP but it should be noted that they normally require a large maintenance input, and backwash or change-out discharge will still need to be pumped and hauled on occasion. This discharge may not occur to the surface or subsurface on site. Sump waste solids must be disposed of in accordance with IDEQ guidelines (See Appendix E).

WOOD PRODUCTS

Typical Businesses Application: The first set of BMPs below applies best to larger dimensional lumber and plywood mills. Post & pole treatment is addressed in a separate BMP below. Smaller specialty products such as trim, glue-lam, and cabinet shops may find appropriate practices in the *Trade Contractor* BMP (Page 35).

Cross Reference: Businesses in this class may need to reference *Auto/Fleet & Heavy Equipment Maintenance, Vehicle Washing*, and *Fueling Site* BMPs.

Discussion of Risk: Traditional mills are large complex businesses that can store, convey, and consume vast quantities of critical materials. Hydraulic oils are ubiquitous throughout the plant in rolling stock, conveyors, and other mechanical equipment. Large quantities of oily wastewater are generated from washing rolling stock. Compressors discharge oily condensate. Boiler additives are carried in steam condensate that is difficult to contain. Large volumes of diesel and gas are stored and dispensed. Dust suppressants and deicers are stored and applied to the ground or in chip truck boxes. Solvents are used in parts washing and degreasing. Chain oils, gear oils, saw oils, motor oils, compressor oils, and waste oils are stored and moved in large volumes. Arsenic, chromium, and copper used in post & pole treatment are notorious for contaminating soils and groundwater when BMPs are not used. These toxins can leach from treated product even when cured and handled per typical standards.

BMP – DIMENSIONAL LUMBER & VENEER MILLS

Containment: Box-type concrete containment is common as are double-walled tanks for fuel and oil storage. Prefabricated containment is often used for drums in service locations. Whole-room containment is the best solution for boiler chemicals and associated conveyance piping and pumps. Hydraulic systems should be contained to the maximum extent practical with fabricated pans or box-type concrete under reservoirs and pumps. Floor containment for hydraulics may be acceptable as long as floors are crack-free and risk from a blow-out is considered minimal. Containment may be waived for glues and resins that have high viscosity (Appendix D – *EPA Method 9095B, Paint Filter Test*).

Standard Operating Procedures: Because of the large staff present, a clearly communicated protocol and accountability should be in place to address any poor process, overflow, leak, or other critical material malfunction upon identification by any employee. Post current contact information regarding parties responsible for correcting poor handling and storage conditions.

Self Inspection: Check for full containment of all critical materials in each storage/production area. Inspect all containment apparatus for cracks or other damage. Monitor stormwater accumulation in exterior containment. Inspect for leaks in conveyance systems for fuel, hydraulics, and boiler chemicals. Monitor for the proper collection and disposal of all wastewater streams.

Maintenance: Repair hydraulic leaks as soon as possible. Assure that containment devices are cleaned frequently to allow for required containment volume.

Wastewater/Stormwater: All wastewater from vehicle/equipment washing must go to an approved wastewater disposal system. Catch basins and separators associated with vehicle/equipment washing must be sized adequately to separate solids out of the waste stream. Catch basins and separators need to be cleaned out frequently following sludge disposal guidelines published and administered by IDEQ (See Appendix E). Evaporators may prove cost effective but check with IDEQ Air Quality for any review or permits required. Boiler water and boiler blow-down that contains corrosion inhibitors and other chemicals is considered wastewater and must be contained and disposed of via methods approved by PHD and/or DEQ. Discharge from softeners treating process water may also need to be evaluated and/or permitted by PHD, DEQ, and/or IDWR.

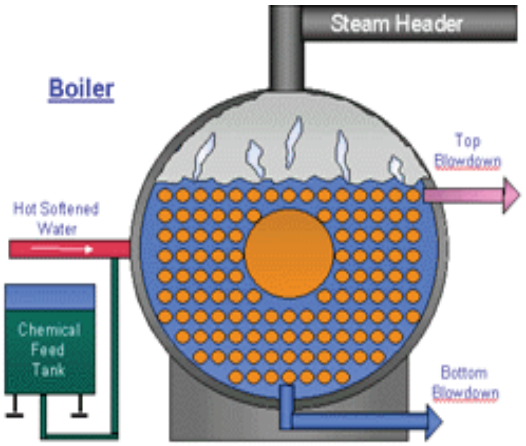


Figure 30: Boiler blowdown and condensate contain chemical additives, so must be contained in a closed non-discharging system or disposed of as wastewater.

BMP –Post & Pole Treatment

Containment: Whole-room containment is obligatory for drip pads and storage/conveyance apparatus in a post & pole facility. New facilities will be required to install the current BMP standard including sub-grade liners, with monitoring sumps, underneath all footprint used to handle chemical. Facilities should provide covered shed areas for storing treated product in the yard during seasonal precipitation. The amount of covered area provided should take into account expected production rates and typical residence time of the product on site before shipping.

Standard Operating Procedures: These facilities have developed protocols based on industry standard, with possible oversight from multiple agencies including USEPA. Before treated product is moved into the yard, much attention must be given to drip/dry time based on variables such as temperature and humidity. Solution collected in recovery, containment, and holding pits should be evacuated to primary holding tanks whenever possible. Equipment that works on the drip pad should not be used in a way that can allow that equipment to track contaminated dusts and sludge into the yard.

Self Inspection: Perform regular high resolution depth/volume monitoring of CCA solution recovery and storage pits in order to identify possible loss of solution through structural failure in the containment or conveyance apparatus. A permanently affixed depth measuring gauge can assist with monitoring pits. Establish a regular frequency for inspecting expansion joints on the drip pad. Keep written documentation of all observations.

Maintenance: Drip pads require vigilant maintenance to keep expansion joints water tight.

Wastewater/Stormwater: Extreme care must be taken to properly drip and dry treated product before it is placed outside or exposed to precipitation. Washing of fork-lifts and loaders that work on the drip pad must occur on the drip pad in order to contain contaminated wash water for re-use in process.

APPENDIX A:
GUIDELINES ON HANDLING SOLVENT CONTAMINATED RAGS

(Abbreviated from IDEQ October 2001 RCRA Series – Management of Solvent-Contaminated Rags)

Handling Solvent Contaminated Reusable Rags

Solvent-contaminated rags may be **sent to a regulated commercial laundering facility that is regulated under a Clean Water Act wastewater discharge permit**. If a business is using launderable, reusable cloth rags or wipes, the contaminated cloth rags are not subject to generator, transporter, and permitted treatment, storage, and disposal facility requirements and are not "counted" as a hazardous waste if:

1) Free liquids are properly removed by wringing, pressing, centrifuging or other effective means (the waste solvent should be reused or stored in a properly labeled container and treated as hazardous waste).
2) Rags are stored and transported properly in a non-leaking, closed, properly labeled, fire resistant container and kept away from sources of ignition. Also, contaminated rags from more than one process with incompatible solvents are not stored in the same container.
3) On-site documentation is maintained and available for review.

Handling of Solvent Contaminated Rags that are not Reused

If a business is using rags and wipes that are not laundered for reuse, a different set of requirements applies. When these rags become too dirty to use, they are considered a solid waste subject to a waste determination and applicable hazardous waste regulations. Hazardous waste regulations typically apply if the rags exhibit characteristics for ignitability or toxicity. In other words, if your rags exhibit predefined characteristics for ignitability or toxicity, they can not be disposed of in regular local trash service. If you have any questions or need further clarification, please refer to Idaho's DEQ website. Follow the link to Waste Management & Remediation to Hazardous Waste to Solvents to Management of Solvent Contaminated Rags. If you would like to talk to someone, there is contact information for a Hazardous Waste Compliance Manager listed on their Solvents page.

It is recommended that all free liquids are removed for reuse to reduce the amount of hazardous waste produced. Air-drying solvent-contaminated rags to allow volatile constituents to evaporate is not a permissible form of treatment or disposal. Evaporation merely transfers the hazardous constituents from the rag to the air.

Rags should be stored and transported in a non-leaking, closed, properly labeled, fire resistant container and be kept away from sources of ignition. Also, contaminated rags from more than one process with incompatible solvents are not stored in the same container.

On-site documentation should be maintained and available for review.

Consideration of Alternative Less Toxic Solvents

In many instances, it is possible to eliminate or reduce the generation of hazardous waste rags. A generator may consider nonhazardous solvents or mechanical methods of cleaning such as power washing or steam cleaning using non-hazardous detergents.

APPENDIX B:
WEB RESOURCES/WASTE MANAGEMENT

ASSISTANCE WITH ENVIRONMENTAL COMPLIANCE – Bottom of page links for *Industry Specific Assistance* regarding environmental compliance at body shops, auto repair, hot mix asphalt, dry cleaners, etc.
http://www.deq.idaho.gov/assistance-resources.aspx

HANDLING PARTS WASHER WASTE
http://www.deq.idaho.gov/media/660543-solvent_fact-sheet-0711.pdf

MANAGING HAZARDOUS WASTE – Definitions, links and other info
http://www.deq.idaho.gov/hazardous-waste

NON-DOMESTIC WASTEWATER APPLICATION CHECKLIST – Checklist for obtaining approval for disposing of non-domestic wastewater on site, to be submitted to DEQ. Notify PHD:
http://www.deq.idaho.gov/assistance-resources/for-engineers-developers/checklists.aspx

PAINTS AND COATINGS ASSISTANCE - The Paint and Coatings Resource Center (PCRC) is maintained by the National Center for Manufacturing Sciences (NCMS). The PCRC is one of the Compliance Assistance Centers developed by industry-government partnerships, with support from EPA's Office of Compliance.
www.paintcenter.org/about.cfm

PANHANDLE HEALTH DISTRICT – Critical Materials Program:
http://panhandlehealthdistrict.org/environmental-health/critical-materials-program-2#tab-1-2

RATHDRUM PRAIRIE AQUIFER – How the aquifer was created: http://www.iceagefloodsinstitute.org/

RULES ON BURNING OF USED OIL – See especially pages 70 & 71.
http://adminrules.idaho.gov/rules/current/58/0101.pdf

VEHICLE MAINTENANCE - http://ccar-greenlink.org/

Safety, Pollution Prevention, and HazMat training, as well as Education and Environmental best practices for the global motor vehicle industry.

- Designed for individuals working in the automotive industry to gain clear and accurate understanding of HazMat handling regulations
- Helps dealerships, distribution centers and other facilities avoid costly violations

WASTE HAULING – Spokane River Forum Guide http://spokaneriver.net/wastedirectory/vendor/

WASTE MANAGEMENT – Washington Dept of Ecology Guide:
http://www.ecy.wa.gov/programs/hwtr/business_type/index.html

SEE ALSO YELLOW PAGES; "ENVIRONMENTAL SERVICE"S OR "WASTE DISPOSAL – HAZARDOUS"

APPENDIX C:
JURISDICTIONAL GUIDANCE

JURISDICTION	AREAS OF RESPONSIBILITY	CONTACT INFORMATION
KOOTENAI COUNTY	Stormwater disposal standards; Zoning and permits for commercial industrial activity; Permits for building structures including some containment and large tank settings.	Community Development – (Building/ Planning/Zoning): 446-1070
CITIES	Stormwater disposal standards; Zoning and permits for commercial industrial activity; Permits for building structures including some containment and large tank settings.	Athol: 683-2101 Coeur d'Alene: 769-2267 Hauser: 777-9315 Hayden: 772-4411 Post Falls: 773-8708 Rathdrum: 687-2700 Spirit Lake: 623-2131
IDAHO DEPARTMENT OF ENVIRONMENTAL QUALITY	Underground storage tank compliance and inspection; Hazardous materials rules (RCRA) and inspection; Stormwater disposal BMP's; Chemical release reporting, response, remediation. Education and assistance.	769-1422
IDAHO DEPARTMENT OF WATER RESOURCES	Underground Injection Control – discharge of stormwater and wastewater to subsurface via injection wells	762-2800
PANHANDLE HEALTH DISTRICT	Critical materials storage and handling education/assistance and compliance inspection; on-site subsurface wastewater disposal	415-5220
IDHAO DEPARTMENT OF AGRICULTURE	Pesticide applicator licensing. Pesticide container disposal.	208-332-8500

APPENDIX D:
EPA METHOD 9095B – PAINT FILTER TEST

EPA METHOD 9095B

PAINT FILTER LIQUIDS TEST

1.0 SCOPE AND APPLICATION

1.1 This method is used to determine the presence of free liquids in a representative sample of waste.

1.2 The method is used to determine compliance with 40 CFR 264.314 and 265.314.

2.0 SUMMARY OF METHOD

2.1 A predetermined amount of material is placed in a paint filter. If any portion of the material passes through and drops from the filter within the 5-min test period, the material is deemed to contain free liquids.

3.0 INTERFERENCES

3.1 Filter media were observed to separate from the filter cone on exposure to alkaline materials. This development causes no problem if the sample is not disturbed.

3.2 Temperature can affect the test results if the test is performed below the freezing point of any liquid in the sample. Tests must be performed above the freezing point and can, but are not required to, exceed room temperature of 25 °C.

4.0 APPARATUS AND MATERIALS

4.1 Conical paint filter -- Mesh number 60 +/- 5% (fine meshed size). Available at local paint stores such as Sherwin-Williams and Glidden.

4.2 Glass funnel -- If the paint filter, with the waste, cannot sustain its weight on the ring stand, then a fluted glass funnel or glass funnel with a mouth large enough to allow at least 1 in. of the filter mesh to protrude should be used to support the filter. The funnel should be fluted or have a large open mouth in order to support the paint filter yet not interfere with the movement, to the graduated cylinder, of the liquid that passes through the filter mesh.

4.3 Ring stand and ring, or tripod.

4.4 Graduated cylinder or beaker -- 100-mL.

5.0 REAGENTS

5.1 None.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

A 100-mL or 100-g representative sample is required for the test. If it is not possible to obtain a sample of 100 mL or 100 g that is sufficiently representative of the waste, the analyst may use larger size samples in multiples of 100 mL or 100 g, i.e., 200, 300, 400 mL or g. However, when larger samples are used, analysts shall divide the sample into 100-mL or 100-g portions and test each portion separately. If any portion contains free liquids, the entire sample is considered to have free liquids. If the sample is measured volumetrically, then it should lack major air spaces or voids.

7.0 PROCEDURE

7.1 Assemble test apparatus as shown in Figure 1.

7.2 Place sample in the filter. A funnel may be used to provide support for the paint filter. If the sample is of such light bulk density that it overflows the filter, then the sides of the filter can be extended upward by taping filter paper to the inside of the filter and above the mesh. Settling the sample into the paint filter may be facilitated by lightly tapping the side of the filter as it is being filled.

7.3 In order to assure uniformity and standardization of the test, material such as sorbent pads or pillows which do not conform to the shape of the paint filter should be cut into small pieces and poured into the filter. Sample size reduction may be accomplished by cutting the sorbent material with scissors, shears, a knife, or other such device so as to preserve as much of the original integrity of the sorbent fabric as possible. Sorbents enclosed in a fabric should be mixed with the resultant fabric pieces. The particles to be tested should be reduced smaller than 1 cm (i.e., should be capable of passing through a 9.5 mm (0.375 inch) standard sieve). Grinding sorbent materials should be avoided as this may destroy the integrity of the sorbent and produce many "fine particles" which would normally not be present.

7.4 For brittle materials larger than 1 cm that do not conform to the filter, light crushing to reduce oversize particles is acceptable if it is not practical to cut the material. Materials such as clay, silica gel, and some polymers may fall into this category.

7.5 Allow sample to drain for 5 min into the graduated cylinder.

7.6 If any portion of the test material collects in the graduated cylinder in the 5-min period, then the material is deemed to contain free liquids for purposes of 40 CFR 264.314 and 265.314.

8.0 QUALITY CONTROL

8.1 Duplicate samples should be analyzed on a routine basis.

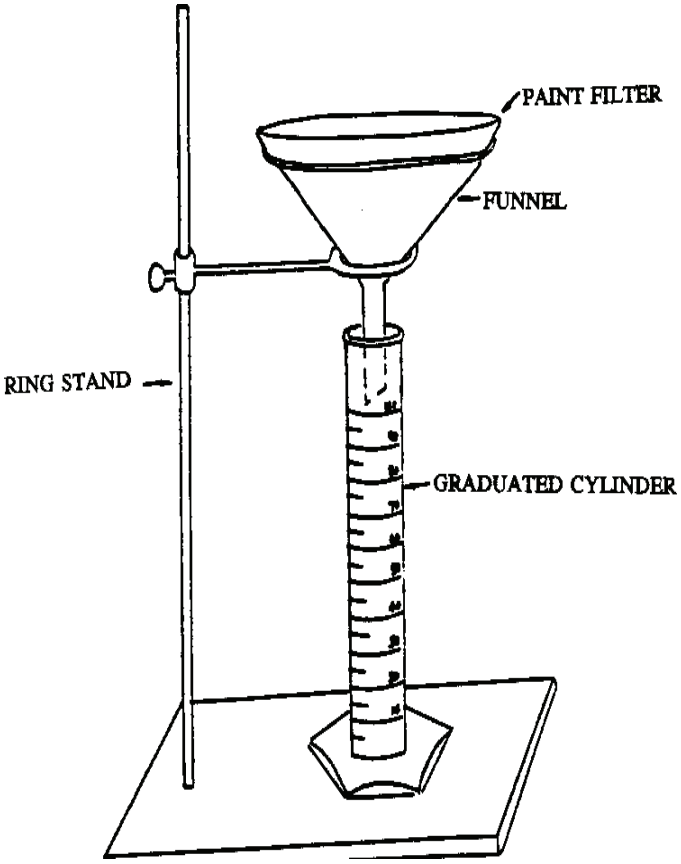
9.0 METHOD PERFORMANCE

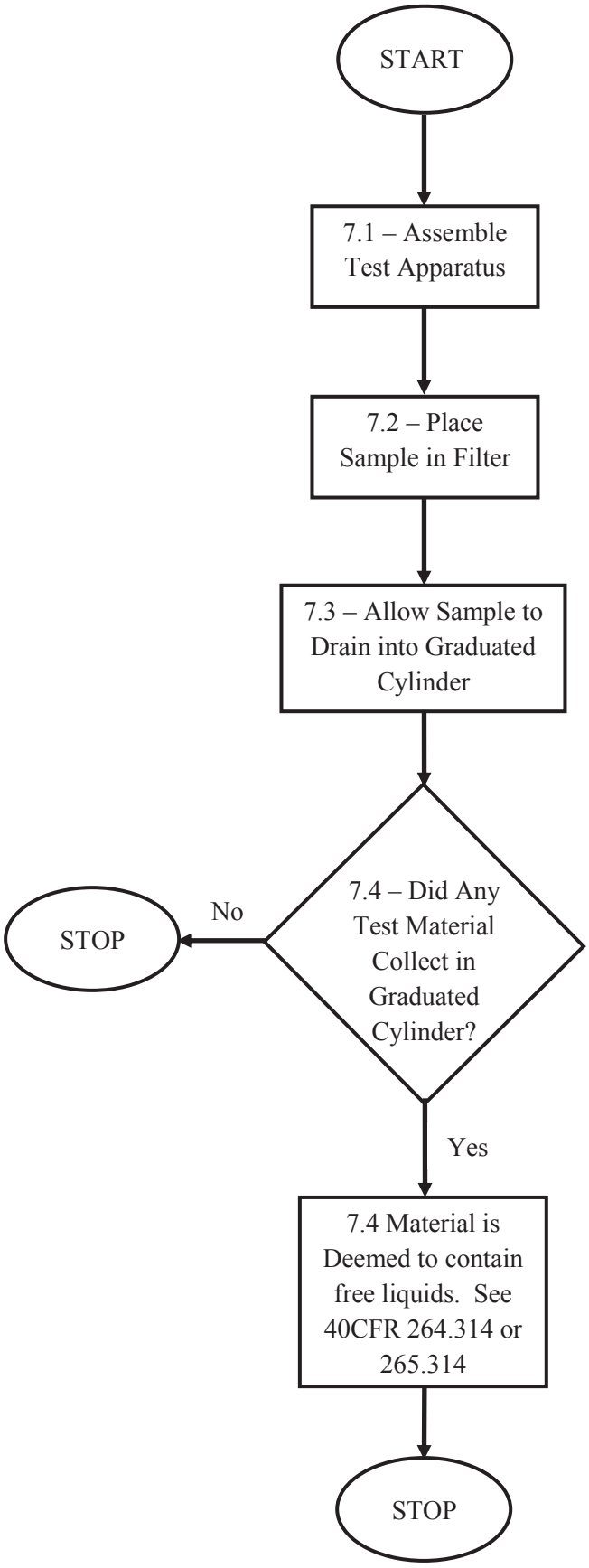
9.1 No data provided.

10.0 REFERENCES

10.1 None provided.

PAINT FILTER LIQUIDS TEST 9095B
Apparatus/Method





APPENDIX E:
SUMP WASTE HANDLING

(Reprinted from DEQ Brochure – PID 0205, CA 30060, July 2013)

THE KEY TO MANAGING YOUR SUMP WASTE; Determining if it's hazardous

Rules and Regulations

Idaho has adopted the Code of Federal Regulations (CFR) title 40 parts 124, 260-266, 268, 270, and 279 by reference into state rules and regulations. These regulations require persons who generate solid waste to determine whether the waste is a hazardous waste before disposing of it (40 CFR § 262.11). Sump wastes are considered a solid waste.

Owners and/or operators of facilities where collection sumps are in operation must be able to demonstrate they have adequately determined if the contents of the sumps are hazardous waste prior to shipping the sump waste off-site for disposal (40 CFR § 262.11).

How to determine if your waste is hazardous

Regulations allow this determination to be made by chemical analysis of samples or by "knowledge of process," provided the knowledge of process is accurate. This "knowledge of process" may include the knowledge that listed hazardous wastes have or have not entered the sump (40 CFR part 261 subpart D).

Facilities that limit the type of use (e.g., washing of new or used cars) and access (e.g., company-related cars only) to the sump may be able to show that no hazardous constituents/wastes are used in the processes that discharge or drain into the sump, thereby establishing that the sump contains no hazardous wastes.

On the other hand, if the sump is associated with engine washing or degreasing processes, used oil or used antifreeze spills or disposal, the use or spillage of hazardous chemicals/materials, or an area where there are no controls on who has access to the sump, the "knowledge of process" nonhazardous determination is not allowed. When this happens, a sample of the sump waste may have to be submitted to a laboratory for chemical analysis.

Testing

Chemical analysis is generally performed to determine hazardous waste characteristics, including the following:

- Flash point to determine ignitability
- pH to determine corrosivity
- Toxicity characteristic leaching procedure (TCLP) to determine toxicity

If pesticides are associated with the sump, a pesticide scan test is also required.

Preliminary screening tests (e.g., total metals rather than TCLP metals Method 1311), which tend to be less expensive, may be used as part of the determination. However, if the results reveal concentrations of total metal in excess of the TCLP levels, additional samples and analyses for the TCLP level of the specific metal involved may be necessary to determine if the sump waste is hazardous.

How often do you need to test?

Facilities that do not change their process and that continue to control access may only need to test the sump waste one time.

Facilities that restrict access, for example to private vehicles only (as opposed to commercial trucks), may need to test the sump waste periodically, perhaps once a year.

Facilities that do not restrict access, such as public car washes, or are involved with truck washing where cargo holds are washed, need to test the sump waste each time prior to removal and disposal.

Where to dispose of your sump waste

If the analyses show the sump waste is a ***hazardous waste*** and the generator of the waste is a small or large quantity generator, the waste must be disposed of in a permitted hazardous waste treatment, storage, and disposal (TSD) facility in accordance with the Resource Conservation and Recovery Act/Hazardous Waste Management Act (RCRA/HWMA) hazardous waste regulations. A list of TSD facilities may be obtained from the Idaho Department of Environmental Quality (DEQ) upon request. All analytical results must be kept on file at the facility for at least three years but preferably indefinitely.

If the analyses show the sump waste is a ***nonhazardous waste,*** it may be disposed of in a municipal solid waste landfill (MSWLF). However, prior to disposal at the MSWLF, all nonhazardous sump waste must pass the paint filter test (Method 9095), a test to determine whether free liquids exist in the waste ("Test Method for Evaluating Solid Waste, Physical/ Chemical Methods," EPA Publication SW-846).

Some MSWLFs will not allow sludges to be dumped unless the total petroleum hydrocarbon (TPH) level is tested and found to be below 1,000 parts per million Where it exists, this is a local requirement and not part of state and federal hazardous waste regulations.

Check with the specific MSWLF you plan to use. If the test is required, it can be done at the same time as the test for hazardous constituents. Additionally, sump wastes that are not hazardous but do contain significant levels of TPH should not be placed on the ground, since the waste may cause surface or ground water contamination.

Thank-you for your efforts to protect our drinking water!