

OBJECTIVES

- Reduce specific pollutants that can contaminate stormwater run-off or discharge into waterways
 - Oil and grease
 - Organic chemicals/compounds
 - Inorganic chemicals/compounds
 - Non-stormwater discharges
- Implement and conduct activities to reduce the potential for polluted/illicit discharges
 - Training
 - Spill Response and Prevention
 - Repair Activities
 - General Practices
 - Commercial Repair Facility

DESCRIPTION

Vehicles and equipment can easily contribute pollutants to stormwater runoff or discharge directly to receiving waters (or conveyances that discharge to waters). Vehicle or equipment maintenance and repair is potentially a significant source of stormwater pollution. This is primarily due to the use of materials and wastes generated that are harmful to humans and the environment. Engine repair (e.g. parts cleaning) and replacement of fluids (e.g. oil changes) can impact receiving waters through stormwater run-off. Implementation of a select group of practices will prevent or reduce the potential discharge of pollutants through stormwater, along with non-stormwater discharges. Spills and leaks can be common or occur when vehicles and equipment are parked or stored. Uncontained spills and leaks can result in polluted discharges.

CONSIDERATIONS

Following the recommendations within this BMP Fact Sheet in conjunction with associated BMPs for Good Housekeeping, along with proper documentation practices, will reduce the potential of polluted discharges into the MS4, local waterways, and groundwater.

Wastes that can be generated in vehicle and equipment repair and storage locations include, but are not limited to: solvents, antifreeze, brake fluid, oils, petroleum products, battery fluids, lubrication fluids, metals, and brake pad dust.

Consider using a commercial repair center in lieu of a self-maintained facility for vehicle and equipment repairs. Commercial repair stations tend to be better equipped to handle wastes and spills associated with repairing vehicles.

Individual vehicles and equipment should be consistently stored or parked in the same locations. This would allow consistent controls for specific vehicles and equipment including drip pans or "isolation" from drains.

RECOMMENDATIONS AND PROTOCOLS

For the objectives listed, the following represent further recommendations and protocols for vehicle and equipment repair:

Reduction of Specific Pollutants

Oil & Grease and Inorganic/Organic Chemicals

- Recycle used motor oil, diesel oil, and other vehicle fluids whenever possible. Use secondary containment when transferring to storage containers
- "Spot clean" leaks and drips regularly to remove specific pollutants
- Choose cleaning agents that can be recycled
- Do not pour liquid waste to drains, sinks, or storm sewer inlets
- Dry sweep and do not hose down work areas
- Keep drip pans or other containment devices under stored vehicles or working area of vehicles and equipment
- Parts cleaning should be conducted at a centralized station with adequate containment
- Conduct repairs and maintenance indoors to reduce potential exposure to rain
- Keep ample spill response materials available

Other considerations

- Place signs in repair area in locations such as sinks reminding employees not to pour waste material or hazardous chemicals into drains
- Other items such as oil filters can be recycled - recycle when ever possible
- If steam cleaning or pressure washing is necessary, "isolate" area and collect into a containment unit or blind sump (if installed)
- Report and address leaking vehicles
- Dispose of all waste materials according to applicable laws and regulations
- If repairs or maintenance is conducted outdoors, use a tarp or drip pans beneath the vehicle or equipment to capture all spills and drips.
- Identify and mark drains where discharges are prohibited in the immediate area

Implementation and Activity Protocols for Reduction of Potential Discharges

Training

- Provide employees with training and exercises on proper handling and disposal of engine fluids and waste materials
- Ensure employees are aware of locations and use of spill control and containment materials

Spill Response and Prevention

- Place spill clean-up materials in readily available locations in repair and storage areas (clearly mark location of spill clean-up materials)
- Clean spills with rags or other absorbant materials
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and recommended practices for preventing/reducing polluted discharges
- Train employees on Spill Prevention and Control (see BMP Fact Sheet GH-10) relative to vehicles and equipment

Repair Activities

- Make sure incoming vehicles and equipment are inspected for leaking fluids and oil
- Consider drain boards or sinks to solvent or fluid holding tanks and containers for proper disposal at a later time.
- Designate specific areas for replacing motor oil, coolant, and other fluids.
- Drain all fluids from wrecked or heavily damaged vehicles and equipment

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- Consider using recycled materials
- Consider water-based or detergent-based cleaning systems in lieu of organic solvents for parts cleaning
- Ensure an adequate supply of absorbant materials and drip pans to reduce down time looking for materials (including spill response materials)

General Practices

- Place drip pans or absorbent pads under observed leaks
- Do not wash down areas where leaks have collected on ground surfaces; use dry cleaning methods such as rags and brooms
- If parking areas warrant a wash down, do not hose down. Follow proper procedures for steam cleaning or pressure washing. Install containment devices to collect washwater from pressure washing. Protect adjacent inlets even with containment devices installed with temporary-type BMPs
- Inspect ground surfaces around parked vehicles and equipment prior to use for signs of leaks
- It is acceptable to mop a floor after dry absorbant materials have been used to clean up a spill. Do not dispose of mop water to storm sewer or other related types of drainage channels that would affect receiving waterways. Use of non-caustic detergents is recommended.
- Store collected fluids and oils in appropriate containers and place in proper material storage locations. See BMP Fact Sheet GH-13 General Material Storage and BMP Fact Sheet GH-8 Hazardous Materials for more information.
- Separate waste oils and fluids and consider disposal to recycling entities

Commercial Repair Facility

- If a commercial facility is used for repairs, obtain a letter from the facility outlining its practices including spill prevention and response and waste disposal procedures.

DOCUMENTATION

Proper documentation practices are essential for any municipal SWMP to show compliance with the Clean Water Act, NPDES, and generally the requirements of the permit issued to allow discharges through the defined MS4. As with all sections of an MS4 permit, all documentation should be centralized.

For vehicle and equipment repair and storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. Consider the following templates for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to vehicle and equipment repair or storage.
- **Training and Education Log:** Enter a completed training record for vehicle and equipment repair and storage into the log.
- **Event Record:** Complete an event record for a major spill/leak or a considerable discharge is observed.

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- **Activity Record:** Complete an activity record for remediation efforts or implementation of activities that increase the effectiveness of the BMP. An activity record should be completed in conjunction with BMP Fact Sheet GH-7 Waste Handling and Disposal for disposal of collected oils and fluids.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP for vehicle and equipment repair and storage areas
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for vehicle and equipment repair and storage into the log.
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the vehicle and equipment repair and storage areas on the map. Locations for general parking of vehicles and equipment should also be on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

According to the EPA, it is difficult to quantify the effectiveness of vehicle and equipment repair BMPs. However, it has been demonstrated that implementation of such practices has decreased the concentration of pollutants in stormwater run-off.

Frequency of inspections for vehicle and equipment repair and storage is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the repair and storage areas after a defined rain event (if areas are located outside). A defined rain event is determined in the SWMP.
- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the repair and storage areas once a month

Items that should be inspected and maintained in vehicle and equipment repair and storage areas (and recommended maintenance actions):

- *Containment berms (if applicable):* Repair and patch broken or missing berm sections
- *Cleanliness:* Sweep and remove debris or trash
- *Paving surface:* check for leaks or spills
- *Vehicles and Equipment:* check for leaks; address as applicable
- *Tanks/Containers:* check fittings, connections, integrity of unit, or other structural components for leaks, cracks, failures, or damage. Replace as necessary
- *Oil/water separators, holding tanks, filters:* replace broken or leaking units; replace and/or clean debris build-up (includes drain grates)
- *Drains/inlets:* Check for discharges and integrity of units.
- *Special Equipment (i.e. oil/water separator, basin inserts, etc):* Clean or replace as necessary
- *Spill Prevention and Control Materials:* Replace used or defunct spill clean-up materials. Ensure adequate quantity of materials are readily available
- *Signs:* Replace missing signs identifying restrictions and allowances in repair area

Effectiveness can be demonstrated by several means. Two specific types of measurements include (1) properly implementing and maintaining practices (and documentation of implementation and maintenance) recommended in this fact sheet and (2) including relative activities as a part of an

analytical monitoring program. A successful analytical monitoring program will require collecting and testing samples prior to implementation of the practices, and continually (at defined frequencies) collecting and analyzing samples after implementation of the practices. The BMP would be considered effective (as a part of larger collection of BMPs listed for improvements) if reductions in particular pollutants or chemicals are observed.

SOURCES

U.S. Environmental Protection Agency Municipal Vehicle and Equipment Maintenance at <http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=112&minmeasure=6>

JEA Industrial at <http://www.jea.com/about/pub/downloads/ip/CleanConn-Nov08.pdf>

California Stormwater Quality Association, Municipal Stormwater Best Management Practice Handbook (2004 edition) at <http://www.cabmphandbooks.com/Municipal.asp>

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program at <http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf>

CALTRANS BMP Field Manual, January 2003 edition at http://www.dot.ca.gov/hq/construc/stormwater/BMP_Field_Manual_Master_5x8_revision5.pdf