

OBJECTIVES

- Proper storage of materials
 - Storage areas
 - Documentation
- Maintain storage areas and handling procedures
 - Training
 - Inspections
 - General Practices
- Reduce potential of specific pollutants
 - Non-stormwater discharges
 - Hazardous Materials

DESCRIPTION

Responsible management of common chemicals, such as fertilizers, solvents, paints, cleaners, and automotive products, can significantly reduce polluted runoff. Such products must be handled properly in all stages of development, use, and disposal. Material storage encompasses the selection of the individual product, the correct use and storage of the product, and the responsible disposal of associated waste(s).

CONSIDERATIONS

Consider the proper use and storage of all materials used including, but not limited to: soil, salt, hazardous chemicals (acids, paints, and so on), fertilizers, detergents, asphalt, pesticides, petroleum products, and so on. Compatibility should be considered when outlining storage locations.

Storage locations (if indoors) need to meet building and fire code requirements.

A storage area for hazardous materials should be confined to hazardous materials only. Storage procedures need to consider the manufacturer's recommendations, and an understanding of incompatible materials should be achieved when storing hazardous materials. The appendix of this BMP Manual includes an Incompatible Materials Chart along with a list of highly hazardous chemicals. See BMP Fact Sheet GH-8 Hazardous Materials for more information.

RECOMMENDATIONS AND PROTOCOLS

Storage areas should be dedicated areas. These areas can be storage sheds, buildings, "lean-to" structures, identified locations within a building, and so on.

For the objectives listed, the following represent further recommendations and protocols for general material storage:

Storage areas

- Ensure sufficient access for material procurement and inspections
- Store materials away from high-traffic areas
- Consider "isolation" measures such as berms, containment devices, and similar to reduce the potential for run-off from leaks or spills
- Do not place storage areas over or immediately adjacent to drains or waterways

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- Storage areas should be located on highly impervious surfaces such as concrete
- Outdoor stockpile areas shall be provided protective measures to reduce run-on and run-off, including diversion berms and covers
- Do not store incompatible materials with each other
- Cover material containers with tarps or similar acceptable materials if not stored in a locker or similar storage facility
- Ensure proper spacing of materials in storage areas to allow access for addressing spills or leaks.
- Assure storage facility is constructed of proper materials and meets local fire and building codes
- Equip storage areas with the appropriate spill clean-up materials. See BMP Fact Sheet GH-10, Spill Prevention and Control for more information.

Documentation

- Keep an updated inventory list of stored materials. The inventory list should be checked during regular inspections
- Label all containers with contents and proper handling instructions. At times, insufficient labeling will lead to improper use or disposal
- Keep an Incompatible Materials Chart relatively close to the storage area for easy reference
- Keep MSDS sheets readily available for all materials
- See "Documentation" section within this fact sheet for more information

Training

- Train employees on material usage and incompatibilities.
- Train employees on spill response procedures; see BMP Fact Sheet GH-10 Spill Prevention and Control for more information.
- Train employees on understanding MSDS
- See BMP Fact Sheet GH-1, Employee Training and Education for more information
- Notify employees to any changes in the inventory of stored hazardous materials

Inspections

- See "Inspections and Measurements" section within this fact sheet

General Practices

- Store bagged and boxed materials on pallets.
- Keep ample supply of appropriate spill clean up material near storage areas.
- Do not "overload" storage areas. Provide ample room for access and inspections.
- Inspect outdoor storage areas after a defined rain event.
- Keep storage areas clean and free of debris.
- Remove and dispose expired materials

Reduce potential of specific pollutants

- Secondary containment should be provided for hazardous chemicals and chemicals identified as specific pollutants (i.e. nitrogen and phosphorus as outlined in the Chesapeake Bay TMDL)
- Highly hazardous chemicals can be placed in appropriate lockers to help contain any leaks

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- Consider secondary containment for material handling procedures for hazardous or toxic chemicals.
- Refer to BMP Fact Sheet GH-5 for non-stormwater discharges and recommended practices for preventing/reducing polluted discharges

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 general material storage, templates are provided within the BMP manual to assist the municipality with documentation compliance. The templates can be used for compliance; however, the following documents are recommended as a minimum for compliance:

- **Training Record:** This document is used to provide record of a training event or session relative to material storage or use.
- **Training and Education Log:** Enter a completed training record for general material storage and use into the log.
- **Hazardous Materials Inventory List:** Keep an updated inventory of stored hazardous materials. This may be a section of a master material inventory list.
- **Event Record:** If a discharge is observed in a storage area, an event record should be executed that also outlines response and remediation procedures.
- **Activity Record:** Complete when remediation is conducted or improvements are made to storage areas.
- **Inspection Record:** Complete an inspection based on the recommendations in the section titled "INSPECTIONS AND MEASUREMENTS" or as outlined in your SWMP
- **Inspection, Event, and Activity Log:** Enter an inspection, activity, or event record for material storage or use into the log as outlined within this BMP. A record (and corresponding log entry) is not necessary for each and every time material is stored or used.
- **MSDS**
- **Master Material Inventory List**
- **Municipal Yard Map:** Organize and complete a municipal yard map (including locations of interior building features). Identify the material storage areas on the map. Place a copy of the map within your SWMP documentation.

INSPECTIONS AND MEASUREMENTS

Frequency of inspections for storage areas is recommended as follows:

- *Rain Event Inspection:* Conduct an inspection of the storage after a defined rain event (if storage area is located outside). A defined rain event is determined in the SWMP.

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- *Regular Inspection:* If a rain event does not dictate an inspection, inspect the storage area on a monthly basis (if inside) or every two weeks (if outside). See BMP Fact Sheet GH-21 for more information regarding outdoor storage.

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

Integrity of storage containers: replace leaking or cracked containers

Evidence of leaks: isolate and clean-up leaks; replace leaking containers

Cleanliness: Sweep and remove debris or trash

Inventory: assure inventory matches records and is accounted for

Isolation measures: assure implemented measures (i.e. berms, containment devices, and so on) are sound and in working order

Tarps or plastic sheets (if applicable): repair or replace torn or damaged tarps or plastic sheets

Contaminated soils/materials (if applicable): inspect contaminated soil stockpiles and materials until proper disposal. Assure contaminated soil stockpiles are intact and no run-on or run-off is observed

Storage layout: assure containers and materials are neatly stored and as recommended by the manufacturer

Miscellaneous: observe and correct any signs of corrosion, pest damage, or other observed item that may result in leaking containers, spills, and so on

Spill Prevention and Control Materials: Replace used or defunct spill clean-up materials

Signs: Assure placards properly represent the hazardous materials stored

Effectiveness can be demonstrated by following the recommendations of this fact sheet. Specifically, effectiveness can be established if discharges are not observed from storage areas.

SOURCES

U.S. Environmental Protection Agency Materials Management at
<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=109&minmeasure=6>

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