



Targeted Constituents				
● Significant Benefit		▶ Partial Benefit		○ Low or Unknown Benefit
○ Sediment	● Heavy Metals	● Floatable Materials	● Oxygen Demanding Substances	
● Nutrients	● Toxic Materials	● Oil & Grease	○ Bacteria & Viruses	○ Construction Wastes
Implementation Requirements				
● High		▶ Medium		○ Low
▶ Capital Costs	○ O & M Costs	○ Maintenance		▶ Training

Description

Prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading and storage of materials by enclosing or covering materials, installing secondary containment, and preventing stormwater run-on. This management practice is likely to create a significant reduction in nutrients, heavy metals, toxic materials, oxygen demanding substances, and oil and grease.

Approach

- The loading/unloading of materials usually takes place outside. Loading or unloading of materials occurs in two ways: materials in containers or direct liquid transfer. Materials spilled, leaked or lost during loading/unloading may collect in the soil or on other surfaces and be carried away by runoff or when the area is cleaned. Rainfall may wash pollutants from machinery used to unload or move materials. The loading or unloading may involve rail or truck transfer.
- The most important factors in preventing these constituents from entering stormwater is:
 - Limit exposure of material to rainfall.
 - Prevent stormwater run-on.
 - Check equipment regularly for leaks.
 - Contain spills during transfer operations.
- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer, treatment plant, or treated in a manner consistent with permit requirements.

Training

- Train employees and subcontractors on the proper material delivery and storage practices including review of the Spills Prevention, Control and Countermeasures (SPCC) Plan.

- Make sure fork lift operators are properly trained to limit spills or damaged containers.
- Employees should be periodically trained to be well acquainted with the Material Safety Data Sheets. They should be aware of material content, potential hazards to mixing with other materials stored on-site, and safety procedures required in the event of a spill or leak.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored on site.
- Train all “exposed” employees in emergency spill clean-up procedures should they be present when dangerous materials or liquid chemicals are unloaded.
- Park tank trucks or delivery vehicles so that spills or leaks can be contained with drip pans under hoses or other secondary containment.
- Cover the loading/unloading docks to reduce exposure of materials to rain.
- Place a seal or door skirt between trailer and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on:
 - With diversion grading, berming or swales, and
 - Position roof downspouts to direct stormwater away from loading/unloading areas.
- Look for dust or fumes during loading or unloading operations.
- When loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
 - The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement concrete should be used to pave the area.
 - Transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
 - Transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer if given approval by the local sewer authority. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
 - Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and

breaking connections.

- Drip pan systems should be installed between the rails to collect spillage from tank cars.

Material Storage Areas and Practices

- Designate storage areas at the project site with conspicuous signs and employee training.
- Store materials indoors within existing structures or sheds when available.
- Have proper storage instructions posted at all times in an open and conspicuous location.
- Locate the storage area away from the storm drain system and watercourses.
- Prevent spills or leakage of liquid materials from contaminating soil or soaking into the ground by placing storage areas on impervious surfaces.
- Provide curbs or dikes around the perimeter of material storage areas to prevent run-on from adjacent areas as well as runoff of stormwater from the material storage areas.
- Minimize the hazardous material inventory stored on site. Attempt to store only the volume of materials needed before another delivery is possible. Schedule more frequent deliveries of less material.
- Do not store hazardous chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet under cover and when possible, in secondary containment.
- Parking lots or other surfaces near bulk materials storage areas should be swept periodically to remove debris blown or washed from storage area.
- Install pellet traps at stormwater discharge points where plastic pellets are loaded and unloaded.
- Keep hazardous chemicals in their original containers and keep them well labeled.
- Keep ample supply of storm drain seals near drains and inlets.
- Keep ample supply of appropriate spill clean up material near storage areas.

Spill Clean-up

- Contain and clean up any spill immediately according to the SPCC Plan.
- Different materials pollute in different amounts. Make sure that each employee knows what a “significant spill” is for each material they use, and what is the appropriate response for “significant” and “insignificant” spills. A significant spill should be defined after review of the Materials Safety Data Sheet or other

descriptive documentation that presents the contents and proper handling procedures.

General Measures

- Hazardous materials and wastes should be stored in covered containers and protected from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup procedures for the site.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Designate a foreman or supervisor to oversee and enforce proper spill prevention and control measures.

Cleanup

- Clean up leaks and spills immediately.
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.
- Minor Spills
 - Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
 - Use absorbent materials on small spills rather than hosing down or burying the spill.
 - Remove the absorbent materials promptly and dispose of properly.
 - The practice commonly followed for a minor spill is:
 1. Contain the spread of the spill.
 2. Recover spilled materials.
 3. Clean the contaminated area and/or properly dispose of contaminated materials.

- Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps shall be taken:
 1. Notify the Engineer immediately and follow up with a written report.
 2. Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper City officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
 3. For spills of state reportable quantities or into a waterbody or adjoining shoreline, the contractor shall notify the TDEC – Department of Water Pollution Control at (615) 532-0625.
 4. For spills of federal reportable quantities or into a waterbody or adjoining shoreline, the contractor shall notify the National Response Center at (800) 424-8802.
 5. Notification should first be made by telephone and followed up with a written report.
 6. The services of a spills contractor or a Haz-Mat team shall be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staff has arrived at the job site.
 7. Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the City/County Police Department, OSHA, etc.

See CP-13 and 14 for details about spill prevention and control while maintaining or fueling vehicles and equipment.

Maintenance

- Inspect storage areas before and after rainfall events, and at least weekly during other times.
- Inspect to ensure that designated storage areas are kept clean and well organized.
- Repair and/or replace perimeter controls, containment structures, and covers as needed to keep them properly functioning.
- Conduct regular inspections to identify repairs necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks:
 - valves,
 - pumps,
 - flanges, and
 - connections.

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds must meet building & fire code requirements.
- Space and time limitations may preclude all transfers from being performed

indoors or under cover.

- It may not be possible to conduct transfers only during dry weather.

**Primary
References**

California Storm Water Best Management Practice Handbooks, Industrial Handbook, CDM et.al. for the California SWQTF, 1993.

Caltrans Storm Water Quality Handbooks, CDM et.al. for the California Department of Transportation, 1997.

**Subordinate
References**

Best Management Practices for Industrial Storm Water Pollution Control, Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Storm Water Management for Industrial Activities: Developing Pollution Prevention Plans, and Best Management Practices, EPA 832-R-92-006, EPA, 1992.

Water Quality Best Management Practices Manual, City of Seattle, 1989.

Blueprint for a Clean Bay-Construction-Related Industries: Best Management Practices for Storm Water Pollution Prevention; Santa Clara Valley Nonpoint Source Pollution Control Program, 1992.

Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.