

SC-11 Spill Prevention, Control, and Cleanup

Description

Many activities that occur at an industrial or commercial site have the potential to cause accidental spills. Preparation for these spills, with proper training and reporting systems implemented, can minimize the discharge of pollutants to the environment.

Spills and leaks are one of the largest contributors of stormwater pollutants. Spill prevention and control plans are applicable to any site at which hazardous materials are stored or used. An effective plan should have spill prevention and response procedures that identify hazardous material storage areas, specify material handling procedures, describe spill response procedures, and provide locations of spill cleanup equipment and materials. The plan should include steps to identify and characterize potential spills, eliminate and reduce spill potential, respond to spills when they occur in an effort to prevent pollutants from entering the stormwater drainage system, and train personnel to prevent and control future spills. An adequate supply of spill cleanup materials must be maintained on-site.

Approach

General Pollution Prevention Protocols

- Develop procedures to prevent/mitigate spills to storm drain systems.
- Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- Establish procedures and/or controls to minimize spills and leaks. The procedures should provide the following:
 - ✓ A description of the facility, owner and address, activities, chemicals, and quantities present

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Substitute Products

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered

 Good Housekeeping	
 Preventative Maintenance	✓
 Spill and Leak Prevention and Response	✓
 Material Handling & Waste Management	
 Erosion and Sediment Controls	
 Employee Training Program	✓
 Quality Assurance and Record Keeping	✓



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- ✓ A facility map of the location(s) of industrial materials
- ✓ Notification and evacuation procedures
- ✓ Cleanup instructions
- ✓ Identification of responsible departments
- ✓ Identification of key spill response personnel
- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of process materials brought into the facility.



Spill and Leak Prevention and Response

Spill Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- If illegal dumping is observed at the facility:
 - ✓ Post “No Dumping” signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
 - ✓ Add some landscaping and beautification to hot spots to discourage illegal dumping.
 - ✓ Bright lighting and/or entrance barriers might also be needed to discourage illegal dumping.
- Store and contain liquid materials so if the container ruptures, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.
- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collect runoff from the storage tank area.



Preventative Maintenance

- Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.

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- Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain*.
- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.
- Label all containers according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
- Identify key spill response personnel.

Spill Response

- Clean up leaks and spills immediately.
- Place a stockpile of spill cleanup materials where it will be readily accessible (e.g., near storage and maintenance areas).
- 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 a certified laundry (rags) or disposed of as hazardous waste.
 - ✓ If possible use physical methods for the cleanup of dry chemicals (e.g., brooms, shovels, sweepers, or vacuums).
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Chemical cleanups of material can be achieved with the use of adsorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.

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- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Reporting

- Report spills that pose an immediate threat to human health or the environment to the Regional Water Quality Control Board or local authority as location regulations dictate.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center at 800-424-8802 (24 hours).
- Report spills to 911 for dispatch and cleanup assistance when needed. Do not contact fire agencies directly.
- Establish a system for tracking incidents. The system should be designed to identify the following incident-related information:
 - ✓ Types and quantities (in some cases) of wastes
 - ✓ Patterns in time of occurrence (time of day/night, month, or year)
 - ✓ Mode of dumping (e.g., abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, and accidents/spills)
 - ✓ Cleanup procedures
 - ✓ Responsible parties



Employee Training Program

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills:
 - ✓ Employees should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
 - ✓ Employees should be familiar with the spill prevention, control, and countermeasure (SPCC) plan.
- Employees should be educated about aboveground storage tank requirements. Employees responsible for aboveground storage tanks and liquid transfers should be thoroughly familiar with the SPCC plan, and the plan should be readily available.
- Train employees to recognize and report illegal dumping incidents.

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Other Considerations (Limitations and Regulations)

- State regulations require that facilities with a storage capacity of 10,000 gallons or more of petroleum prepare a SPCC plan (California Health & Safety Code Chapter 6.67).
- State regulations also exist for storage of hazardous materials, including the preparation of area and business plans for emergency response to releases or threatened releases (California Health & Safety Code Chapter 6.95).
- Consider requiring smaller secondary containment areas (less than 200 square feet) to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

Requirements

Costs (including Capital and Operation & Maintenance)

- Costs will vary depending on the size of the facility and the necessary controls.
- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Maintenance (including Administrative and Staffing)

- Develop an SPCC plan, provide and document training, conduct inspections of material storage areas, and supply spill kits.
- Extra time is needed to properly handle and dispose of spills, which results in increased labor costs.



Quality Assurance and Record Keeping

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of best management practices (BMPs). A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. Set up a record keeping and reporting system for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge

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- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- Date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Supplemental Information

Aboveground Tank Leak and Spill Control

Accidental releases of materials from aboveground liquid storage tanks present the potential for contaminating stormwater with many different pollutants. Materials spilled, leaked, or lost from tanks can accumulate in soils or on impervious surfaces and be carried away by stormwater runoff.

The most common causes of unintentional releases are the following:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from a truck or rail car to a storage tank or from a storage tank to a truck or rail car

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Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Employ the following practices to enhance the code requirements:

- Place tanks in a designated area.
- Encapsulate tanks located in areas where firearms are discharged in concrete or the equivalent.
- Ensure that designated areas are impervious, paved with Portland cement concrete, and free of cracks and gaps to contain leaks and spills.
- Store liquid materials in double walled tanks approved by Underwriters Laboratories or surrounded by a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, install a dead-end sump in the drain.
- Drain all other liquids to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Pass accumulated stormwater in petroleum storage areas through an oil/water separator.

Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanges, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from a truck or rail car to a storage facility or from a storage facility to a truck or rail car.
- Visually inspect a new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, tank walls, and the piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that might weaken the tank or container system.
- Frequently relocate accumulated stormwater during the wet season.

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- Have a qualified professional periodically conduct integrity testing.

Vehicle Leak and Spill Control

Major spills on roadways and other public areas are generally handled by highly trained hazmat teams from local fire departments or environmental health departments. In addition to implementing the spill prevention, control, and clean up practices above, use the following measures related to specific activities and pertaining to leaks and smaller spills at vehicle maintenance shops.

Vehicle and Equipment Maintenance

- Perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills.
- Regularly inspect vehicles and equipment for leaks, and repair any identified leaks immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment on-site.
- Always use secondary containment such as a drip pan or drop cloth to catch spills or leaks when removing or changing fluids.
- Immediately drain all fluids from wrecked vehicles.
- Store wrecked vehicles or damaged equipment under cover.
- Place drip pans or absorbent materials under heavy equipment when not in use.
- Use absorbent materials on small spills rather than hosing down the spill.
- Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave full drip pans or other open containers lying around.
- Oil filters disposed of in trash cans or dumpsters can leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a nonleaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

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Vehicle and Equipment Fueling

- Design the fueling area to prevent the run-on of stormwater and the runoff of spills:
 - ✓ Cover fueling area if possible.
 - ✓ Use a perimeter drain or slope pavement inward with drainage to a sump.
 - ✓ Pave fueling area with concrete rather than asphalt.
- If a dead-end sump is not used to collect spills, install an oil/water separator.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage “topping-off” of fuel tanks.
- Use secondary containment when transferring fuel from a tank truck to a fuel tank.
- Use absorbent materials on small spills and general cleaning rather than hosing down the area. Remove the absorbent materials promptly.
- Carry out all federal and state requirements regarding underground storage tanks, or install aboveground tanks.
- Do not use mobile fueling of mobile industrial equipment around the facility; instead, transport the equipment to designated fueling areas.
- Keep your SPCC plan up to date.
- Train employees in proper fueling and cleanup procedures.

Industrial Spill Prevention Response

In developing a spill prevention and response program to meet stormwater regulations, facility managers should use information provided in this fact sheet and the spill prevention/response portions of the fact sheets in this handbook for specific activities.

The program should:

- Integrate with existing emergency response/hazardous materials programs (e.g., the fire department);
- Contain procedures to prevent/mitigate spills to storm drain systems;
- Identify responsible departments;
- Contain standardized reporting procedures; containment, storage, and disposal activities; documentation; and follow-up procedures;

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- Address spills at municipal facilities, as well as public areas; and
- Provide training concerning spill prevention, response, and cleanup for all appropriate personnel.

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References and Resources

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