United States Environmental Protection Agency
Office of Water Washington, D.C.
EPA 832-F-99-071 September 1999

Storm Water Management Fact Sheet
Spill Prevention Planning

DESCRIPTION

Spill prevention is prudent both economically and environmentally, because spills increase operating costs and lower productivity. An important tool in preventing spills is a Spill Prevention Plan. A Spill Prevention Plan specifies materials handling procedures and storage requirements and identifies spill cleanup procedures for areas and processes in which spills may potentially occur. The plan standardizes process operating procedures and employee training in an effort to minimize accidental pollutant releases that could contaminate storm water runoff.

Spill prevention should be part of a comprehensive Best Management Practice program to prevent runoff contamination. This program should also include storm water contamination assessment, flow diversion, record keeping, internal reporting, employee training, and preventive maintenance.

Typically, most businesses and public agencies that generate hazardous waste and/or produce, transport, or store petroleum products are required by State and federal law to prepare spill control and cleanup plans. Therefore, a Spill Prevention and Response Plan may have already been developed as a result of other environmental regulatory requirements. Existing plans should be re-evaluated and revised to address storm water management issues.

APPLICABILITY

A Spill Prevention Plan is applicable to facilities that transport, transfer, and/or store hazardous materials, petroleum products, or fertilizers that can contaminate storm water runoff. An important part of an effective Spill Prevention Plan is establishing a method for quick notification of the appropriate emergency response teams in the event of a spill. In some plants, each area or process may have a separate team leader and/or response team. Figure 1 illustrates a sample spill prevention team roster that can help in quick identification of Spill Prevention team leaders and their responsibilities.

ADVANTAGES AND DISADVANTAGES

The advantages of an effective Spill Prevention Plan include reducing storm water contamination and maintaining the water quality of the receiving water. Spill Prevention Plans are often good ways of standardizing procedures and employee training to decrease the likelihood of spills.

Spill Prevention Planning can be limited by the following:

- Lack of employee motivation to implement the plan.
- Lack of commitment from senior management.
- Key individuals identified in the Spill Prevention Plan may not be properly trained in the areas of spill prevention, response, and cleanup.

KEY PROGRAM COMPONENTS

Before preparing a Spill Prevention Plan, a facility should do the following:

POLLUTION PREVENTION TEAM **MEMBER ROSTER**	**Worksheet Completed by:** _____ **Title:** _____ **Date:** _____
Leader: _____	Title: _____ Office Phone: _____
Responsibilities: _____ _____	
Members: (1) _____	Title: _____ Office Phone: _____
Responsibilities: _____ _____	
(2) _____	Title: _____ Office Phone: _____
Responsibilities: _____ _____	
(3) _____	Title: _____ Office Phone: _____
Responsibilities: _____ _____	

Source: EPA, 1992.

FIGURE 1 SAMPLE SPILL PREVENTION TEAM ROSTER

- Conduct a materials inventory throughout the facility.
- Evaluate past spills and leaks.
- Identify non-storm water discharges and non-approved connections to storm water.
- Collect and evaluate storm water.
- Summarize the findings of this assessment.

Once these tasks have been accomplished, the facility should prepare its Spill Prevention Plan. The plan should include:

- A description of the facility, including the owner's name and address, the nature of the facility activity, and the general types of chemicals used in the facility.

- A site plan showing the locations of chemical storage areas, storm drains, tributary drainage areas with drainage arrows, all surface water bodies on or next to the site, and any devices to stop spills from leaving the site (i.e., collection basins). Spill prevention devices should also have a description written on the map. Table 1 contains a list of features that should be indicated on the site map.

- Notification procedures to be used in the event of a spill. These should include phone numbers of key personnel and appropriate regulatory agencies, such as local Pollution Control Agencies and the local Sewer Authority.

- Specific instructions regarding cleanup procedures.

- A single designated person who has overall responsibility for spill response. Key personnel should be trained in the use of this plan, and all employees should have basic knowledge of spill control procedures.

A summary of the plan should be written and posted at appropriate points in the building (i.e., meeting rooms, cafeteria, and areas with a high spill potential). The summary should identify the spill cleanup coordinators, location of cleanup kits, and phone numbers of regulatory agencies to be contacted in the event of a spill.

Implementing the Spill Prevention Plan should include the following:

- Spill cleanups should begin immediately. No emulsifier or dispersant should be used.

- In fueling areas, absorbent should be packaged in small bags for convenient use and small drums should be available for storage. Absorbent materials should not be washed down the floor drain or into the storm sewer.

- Emergency spill containment and cleanup kits should be located at the facility site. The contents of the kit should be appropriate to the type and quantities of chemical or goods stored at the facility.

Some structural methods to consider when developing a Spill Prevention Plan include:

- **Containment diking**--Containment dikes are temporary or permanent earth or concrete berms or retaining walls that are designed to hold spills. Diking can be used at any industrial facility, but is most common for controlling large spills or releases from liquid storage and transfer areas. Diking can provide one of the best protective measures against the contamination of storm water because it surrounds the area of concern and keeps spilled materials separated from the storm water outside of the diked area.

- **Curbing**--Similar to containment diking, a curb is a barrier that surrounds an area of concern. Unlike diking, curbing is unable to contain large spills and is usually implemented on a small-scale basis. However, curbing is common at many facilities and in small areas where liquids are handled and transferred.

Collection basins--Collection basins are permanent structures in which large spills or contaminated storm water is contained and stored before cleanup or treatment. Collection basins are designed to receive spills, leaks, etc., and to prevent pollutants from being released into the environment. Unlike containment dikes, collection basins can receive and contain materials from many locations across a facility.

TABLE 1 CRITERIA FOR DESIGNING A SITE MAP

DEVELOPING A SITE MAP	**Worksheet** **Completed by:** _____ **Title:** _____ **Date:** _____

Instructions: Draw a map of your site including a footprint of all buildings, structures, paved areas, and parking lots. The information below describes additional elements.

- All outfalls and storm water discharges
- Drainage areas of each storm water outfall
- Structural storm water pollution control measures, such as:
  - -Flow diversion structures
  - -Retention/detention ponds
  - -Vegetative swales
- Name of receiving waters (or if through a Municipal Separate Sewer System)
- Locations of past spills and leaks
- Locations of high-risk, waste-generating areas and activities common sites such as:
  - -Fueling stations
  - -Vehicle/equipment washing and maintenance areas
  - -Area for unloading/loading materials
  - -Above-ground tanks for liquid storage
  - -Industrial waste management areas (landfills, waste piles, treatment plants, disposal areas)
  - -Outside storage areas for raw materials, by-products, and finished products
  - -Outside manufacturing areas
  - -Other areas of concern (specify: _____)

Source: EPA, 1992.

In addition to preventing the release of the substance to surface waters, any spilled substances must be cleaned up and disposed to protect plant personnel from potential health and fire hazards. Methods of cleanup, recovery, treatment, or disposal include:

- Physical. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Mechanical. Mechanical methods include the use of vacuum cleaning systems and pumps.
- Chemical. Chemical cleanups of material can be achieved with the use of sorbents, gels, and foams. Sorbents are compounds that immobilize materials by surface absorption or adsorption in the sorbent bulk. Gelling agents interact with the spilled

chemical(s) by concentrating and congealing to form a rigid or viscous material more conducive to a mechanical cleanup. Foams are mixtures of air and aqueous solutions of proteins and surfactant-based foaming agents. The primary purpose of foams is to reduce the vapor concentration above the spill surface, thereby controlling the rate of evaporation.

IMPLEMENTATION

Past experience has shown that the biggest obstacle to an effective Spill Prevention Plan is its implementation. Qualitatively, implementation of a well prepared Spill Prevention Plan should significantly decrease contamination of storm water runoff.

A facility Spill Prevention Plan should be reviewed at least annually and following any spills to evaluate the Spill Prevention Plan's level of success and how it can be improved. The plan should also be reviewed when a new material is introduced to any of the facility's processes.

COSTS

If a facility already has a Spill Control and Cleanup Plan in place, modification to address storm water contamination concerns will require minimal cost. If a facility will be developing a Spill Prevention Plan for the first time, the initial cost will depend on the type of material at the facility, the facility size, and other related parameters. Costs for structural containment devices will also need to be identified for each facility.

REFERENCES

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

2. Washington State Department of Ecology, 1992. *Storm Water Management Manual for Puget Sound*.

ADDITIONAL INFORMATION

Blymeyer Engineers, Inc.
Danielle Ormsty
1829 Clement Avenue
Alameda, CA 94501

EMPE, Inc.
Bill Basham
220 Athens Way
Plaza I, Suite 410
Nashville, TN 37228

Environmental Management and Training, LLC.
Normand Wei
7284 Vista Bonita Drive
Las Vegas, NV 89129

City of Fort Lauderdale
Jeff Halsey
218 SW 1st Avenue
Fort Lauderdale, FL 33301

State of Illinois
Jorge Patino, Storm Water Engineer
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62702

United States Postal Service
Charles Vidich
6 Griffin Road North
Windsor, CT 06006-7030

The mention of trade names or commercial products does not constitute endorsement or recommendation for the use by the U.S. Environmental Protection Agency.

For more information contact:

Municipal Technology Branch
U.S. EPA
Mail Code 4204
401 M St., S.W.

OWM MTB
Excellence in compliance through optimal technical solutions
MUNICIPAL TECHNOLOGY BRANCH