STORMWATER POLLUTION PREVENTION PLANS

For

STORMWATER RUNOFF
At
INDUSTRIAL ACTIVITIES

North Carolina Division of Water Quality
Water Quality Section
Stormwater and General Permits Unit
February 1994 (Reprinted November 1998)

NCDENR

STORMWATER POLLUTION PREVENTION PLANS

Stormwater Pollution Prevention Plans

for North Carolina Stormwater NPDES Permits

North Carolina Division of Environmental Management
Permits and Engineering Unit
February, 1994

Introduction

A Stormwater Pollution Prevention Plan (SPPP, also called herein the Plan) is a document developed by a facility to address ways to manage, operate, and react to minimize the likelihood of causing stormwater pollution. The Plan provides a flexible means to develop site-specific measures of pollutant reduction and control; it is a specific type of pollution prevention plan that addresses stormwater pollution. The Plan is a requirement of most of the general permits in North Carolina and will be included as a requirement in individual permits when they are issued. The Plan is to be designed to achieve two main objectives:

(1) Identify potential sources of pollution.

(2) Describe the methods by which the facility will reduce the amount of pollutants carried in the discharging stormwater and will maintain compliance with the permit requirements.

The Plan does not need to be prepared by a Registered Professional Engineer. The Plan is not to be submitted to the Division of Environmental Management (DEM) or the United States Environmental Protection Agency (EPA) unless requested. The Plan shall be *available for review* by DEM upon request. If requested by DEM, the Plan must be submitted for review. If the Plan is found to be deficient, the Permittee must present to DEM within 30 days a time schedule for amending the Plan to correct the deficiencies.

For existing facilities the Plan must be developed and implemented within 12 months of issuance of the individual permit or issuance of the certification of coverage in the case of a general permit. For new facilities, the Plan must be developed and available for review prior to beginning the operating activity which requires the permit.

Plan Components

Components of a Stormwater Pollution Prevention Plan shall include, as a minimum, the items in the following sections:

Site Plan
Stormwater Management Plan
Spill Prevention and Response Plan
Preventive Maintenance Plan and Good Housekeeping Plan
Training Schedule

Specific permit provisions regarding these components are as follows in the bold type face:

SITE PLAN

A. Site Plan. The site plan shall provide a description of the physical facility and the potential pollutant sources which may be expected to contribute to contamination of stormwater discharges. The site plan shall contain the following:

GENERAL LOCATION MAP

(1) A general location map (USGS quadrangle map, or appropriately drafted equivalent map), showing the facility's location in relation to transportation routes and surface waters, and the name of the receiving water(s) to which the stormwater outfall(s) discharges, or if the discharge is to a municipal separate storm sewer system, the name of the municipality and the ultimate receiving waters, and accurate latitude and longitude of the point(s) of discharge.

This general location map requirement may be satisfied by the map requirement which was completed for the Form 1 submission for those facilities that filed individual permit applications. For most facilities, this map will already exist in other current records maintained by the facility and a copy should be made for inclusion in the Plan. This map does not have to be a topographic map, but it must indicate the path by which stormwater drainage from the site reaches receiving waters or a municipal separate storm sewer system.

NARRATIVE DESCRIPTION

(2) A narrative description of storage practices, loading and unloading activities, outdoor process areas, dust or particulate generating or control processes, and waste disposal practices.

Describe the storage practices for raw materials (including fuels or other energy sources), intermediate products, byproducts, waste materials, and finished products. Loading and unloading activities associated with these materials should be described (identification should specify which of these activities are conducted outdoors or otherwise have potential for exposure to stormwater). Outdoor process areas and types of processes and equipment used which are exposed to stormwater should be described with particular emphasis on those that may cause stormwater contamination. Dust or particulate generating processes such as crushing, mixing, burning, drying operations, should

be described. Waste disposal for solids, liquids, residuals (sludges), etc. should be described.

SITE MAP

(3) A site map drawn to scale with the distance legend indicating location of industrial activities (including storage of materials, disposal areas, process areas, and loading and unloading areas), drainage structures, drainage areas for each outfall and activities occurring in the drainage area, building locations and impervious surfaces, the percentage of each drainage area that is impervious. For each outfall, a narrative description of the potential pollutants which could be expected to be present in the stormwater discharge.

The facility site map is basically an illustration of the overall site and location, and should indicate property boundaries, buildings and operation or process areas, as well as provide information on drainage, stormwater control structures, and receiving streams. Locating these features on the map will help you assess where potential stormwater pollutants are located on your site, where they mix with stormwater, and where stormwater leaves your site.

All of this information is essential in identifying the best opportunities for stormwater pollution prevention or control. Attached Figures 2.3 and 2.4 are good examples of site maps with different layers of information to help you locate sources of pollutants on your site. When properly drafted, your site map will be a very useful tool to assist in designing the proper pollution preventive measures and controls, thereby preventing further degradation of water quality by reducing additional water pollution.

Outfalls and drainage areas. Once boundaries and facility structures have been shown on your site map, you should identify all of the stormwater outfalls (also called "discharge points") on your site. A stormwater outfall is the point where stormwater enters a natural waterway or a separate storm sewer system. If your facility has its own stormwater conveyance system, locate where the pipes or conveyances discharge to a stream, river, lake, or other water body. If your facility discharges to a municipal separate storm sewer system, your on-site drainage point into the system is an outfall. However, on many sites, storm water is simply collected in ditches. The discharge points may not be so obvious, particularly when it is not raining. In these cases, it may be necessary to inspect your site during a rain storm to identify your discharge points. Clearly label each outfall either with letters (A, B, C, etc.) or numbers (1, 2, 3, etc.) so that you can easily reference these discharge points in other sections of your Plan.

Determine the drainage area of each outfall by working back from the stormwater outfalls that you have identified. A topographic map can help with this task if one with a suitable scale is readily available. For larger facilities (greater than 25 acres), 7.5 minute topographic maps, available from the U.S. Geological Survey (USGS), probably have the level of detail necessary to determine site drainage patterns. For smaller sites, examination of a topographic map may not reveal very much about the drainage patterns of the site. A simple alternative is to examine the contours of your site. A visual observation of flows or the use of small floatables or dyes in concentrated flows are simple methods to determine drainage patterns on your facility. Drainage patterns may be very obvious in such cases, such as drainage down a particular hill on a site. In areas where the site appears to be relatively flat, a rough study of storm water flow during a rain event should provide you with a sufficient sense of the flow patterns.

Structural stormwater controls. Other features to include on the site map are the locations and identification of existing structural control measures already in place that are used to control or direct stormwater runoff. A structural control measure is any physically constructed feature you have onsite that is used specifically to change the way that stormwater flows or that is used to remove pollutants from stormwater. Examples of structural controls include: retention/detention ponds, flow diversion structures (including ditches and culverts), vegetative swales, porous pavement, sediment traps, and any soil stabilization or erosion control practices. Each structure should be clearly identified on the site map, as illustrated in the attached example.

Surface waters. On the site map, you should label all surface water bodies on or next to the site. This includes any stream, river, lake, or other water body (see attached example). Each water body should be identified by name. If you do not know the name of the water body, you can check the USGS topographical maps discussed above for the legal name. Your municipal government may also have municipal maps that identify small streams by name. If your stormwater runoff flows into a small, unnamed tributary, the name of the downstream water body will be sufficient.

Potential Pollutant Sources. To develop a useful site map for your facility's SPPP, you must also indicate other items on the map so that you understand what activities are taking place in each drainage area, and therefore, what types of pollutants may be present in stormwater from these areas. These features include, but are not limited to, the following:

Topography of the site (see above)

Location of exposed significant materials

Location of past spills and leaks [see (4) below]

High risk waste generation areas and activities common on industrial sites, such as:

Fueling stations
Vehicle and equipment maintenance
Vehicle and equipment washing
Loading and unloading areas
Above-ground liquid storage tanks
Industrial waste management areas and outside manufacturing
Outside storage of raw materials, by-products, or finished products.

SIGNIFICANT SPILLS

(4) A list of significant spills or leaks of pollutants that have occurred at the facility during the 3 previous years and any corrective actions taken to mitigate spill impacts.

EPA has defined "significant spills" to includes releases within a 24-hour period of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act and Section 102 of CERCLA. Reportable quantities are set amounts of substances in pounds, gallons, or other units and are listed in 40 CFR Part 117 and 40 CFR Part 302. This list is included in the Appendix. If your facility releases these listed hazardous substances to the environment in excess of these amounts you are required to notify the National Response Center at (800-424-8802) as soon as possible. Releases are defined to include any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment. These areas at your site where significant leaks or spills have occurred are areas on which you should focus very closely when selecting activity-specific or site-specific Best Management Practices (BMPs).

If several of these events have occurred at your facility, pay special attention to the section of this document which discusses spill prevention and response procedures. Adequate spill prevention and response procedures are one of the BMPs that should be included in your pollution prevention plan. Using the proper procedures will reduce the likelihood of spills or releases in the future, thus reducing the opportunities for spilled pollutants to come into contact with stormwater.

This information is used to target pollution prevention activities such as preventative maintenance, good housekeeping, spill prevention and response procedures, employee training, and stormwater management controls such as covering, flow diversion, erosion control and treatment that ultimately will reduce pollutant loading in stormwater discharges. Some of this information may already have been gathered in addressing

some of the other requirements such as: activity in an area, potential pollutants, and outfalls associated with an area.

NON-STORMWATER CERTIFICATION

(5) Certification that the stormwater outfalls have been evaluated for the presence of non-stormwater discharges. The certification statement will be signed in accordance with the requirements found in Part II, Standard Conditions, Section B #13 (of the General Permit).

[Part II. Section B. #13 of the General Permit]

13. Signatory Requirements

All applications, reports, or information submitted to the Director shall be signed and certified.

c. Certification. Any person signing a document under paragraphs a. or b. of this section shall make the following certification:

"I certify, under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."]

The Plan shall contain a certification (signed by the person who performed the test) that the discharge has been tested for the presence of non-stormwater discharges. This Certification shall contain at least the following information: description of the test results, the method used, the date of testing, on-site drainage points observed during the test, and a statement regarding the presence of non-stormwater.

Non-stormwater is not permitted to be discharged under the general stormwater permits (except for mining). In order to satisfy this requirement dye tracing or chemical tests may need to be conducted to make certain of the contents and origin of the flows discharging at the stormwater outfalls.

Dye may be poured into a floor drain or other such structure in the facility to track the route of the flow. This may lead to the discovery that a certain waste stream thought to be connected to the sanitary sewer is actually flowing to the stormwater discharge outfall. Care must be taken when using dye not to cause off-site stream discoloration

complaints. Consult DEM or other professionals before conducting the dye tests if there is uncertainty in how to properly perform the tests.

Another simple method is to observe stormwater discharge points during dry weather. If flow is observed from an outfall when there has been no rain for several days, it probably is not stormwater. Chemical analyses of flows may also reveal the presence of non-stormwater in a discharge. If tests show chemical characteristics in excess of typical stormwater, it is probably not all stormwater.

In some cases, it may be difficult to certify the discharge. For example, the facility may discharge to a storm sewer and not have access to the actual point of discharge. If this is the case, you should advise DEM in writing of the inability to perform the certification stating the reasons.

Examples of non-stormwater discharges include any water used directly in the manufacturing process (process water), air conditioner condensate without added chemicals, non-contact cooling water, vehicle or equipment wash water, or sanitary wastes. Connections of non-stormwater discharges to a stormwater collection system are common yet are often unidentified. Those types of discharges can be significant sources of water quality problems. If such connections are discovered, disconnect them or submit an NPDES Permit application to DEM. Such interconnections must be disconnected or covered by an NPDES permit.

As noted above, unless covered by an NPDES permit, non-stormwater discharges are illegal. Generally, non-stormwater discharges are issued individual or wastewater general NPDES permits based upon appropriate applications or Notice of Intents (NOIs). However, the general stormwater permits authorize the following types of non-stormwater discharges:

> All other discharges that are authorized by a non-stormwater NPDES permit.
>
> Uncontaminated groundwater, foundation drains, air-conditioner condensate without added chemicals, springs, discharges of uncontaminated potable water, waterline and fire hydrant flushings, water from footing drains, flows from riparian habitats and wetlands.
>
> Discharges resulting from fire-fighting.

DEM considers the following discharges to be permitted by Regulation under 15A North Carolina Administrative Code 2H .0106(f) provided that no water quality standards are contravened and it shall not be necessary for the Division to issue separate permits for these activities:

(1) filter backwash and draining associated with swimming pools;
(2) filter backwash from raw water intake screening devices;
(3) condensate from residential or commercial air conditioning units;
(4) individual non-commercial vehicle washing operations;

(5) flushing and hydrostatic testing water associated with utility distribution systems;
(6) discharges associated with emergency removal and treatment activities for spilled oil authorized by the federal or state on-scene coordinator when such removals are undertaken to minimize overall environmental damages due to an oil spill;
(7) groundwaters generated by well construction or other construction activities;
(8) landscape irrigation, foundation or footing drains, or water from crawl space pumps;
(9) street wash water; and
(10) flows from fire fighting.

STORMWATER MANAGEMENT PLAN

B. Stormwater Management Plan. The stormwater management plan shall contain a narrative description of the materials management practices employed which control or minimize the exposure of significant materials to stormwater, including structural and non structural measures. The stormwater management plan, at a minimum, shall incorporate the following:

TECHNICAL AND ECONOMIC FEASIBILITY

(1) A study addressing the technical and economic feasibility of changing the methods of operations and/or storage practices to eliminate or reduce exposure of materials and processes to stormwater. Wherever practicable the permittee shall cover all storage areas, material handling operations, manufacturing or fueling operations to prevent materials exposure to stormwater. In areas where elimination of exposure is not practicable, the stormwater management plan shall document the feasibility of diverting the stormwater runoff away from areas of potential contamination.

Storage practices (for raw material, intermediate products, byproducts, and final products). Wherever practical, roofs should be installed over storage areas, or the areas should be completely enclosed to keep precipitation from washing off pollutants. The trench drains in covered storage areas can be used to collect any incidental spills. These drains should be connected to dead storage sumps and managed accordingly. They should not be attached directly to storm drainage systems. Drainage should be diverted around storage areas or materials moved inside. Materials should be stored on pallets to avoid contact with the elements. Employees must be aware of the potential environmental problems caused when spilled products are not cleaned up.

Loading and unloading areas. Loading and unloading areas are best protected by roofs over docks. Berms or proper grading can be used to divert stormwater from loading and unloading areas where spills are likely to occur. Where storm drain grate inlets are located in loading and unloading areas, concrete or asphalt berms should be constructed to catch spills before they are discharged into the storm drain system. In addition to diverting or capturing spills, a berm could also detain leaks from delivery vehicles. When oil, engine lubricants, or other pollutants are seen ponding at the berms the pollutants must be removed and properly disposed of to keep them from being washed into the storm drain during rainfall events.

Outdoor process areas. Street and parking lot sweeping provides reduction in pollutant loading and is also effective for oil and grease removal when used in conjunction with speedy dry adsorbents. Loading areas should be swept to remove debris and other particulate contaminates. Another option for control of vehicle-deposited pollutants is structural stormwater runoff devices.

Dust or particulate control processes. Sweeping of streets, parking lots, and paved plant yard areas will control dust from being released into the air and water and onto land. Process equipment which emit dust or particulates should be controlled at the source by appropriately designed, operated and maintained air pollution control devices and practices. Dust from storage piles should be minimized by blocking wind from these areas, use of dust suppression materials, and/or covering the piles.

Waste disposal practices. On-site landfills, waste piles, dumpsters, and waste treatment units, can result in the considerable release of pollutants during storms. These areas are of particular concern due to the fact they often concentrate contaminants. Waste temporarily stored on-site such as dumpsters awaiting transfer to off-site disposal, should be kept under a roof where practical. If stored outside, tight fitting lids should be provided and kept closed except when loading waste material into the dumpster. Compactors which are loaded from the end or from within a building offer an alternative to dumpsters where the stored waste materials are less likely to come into contact with rainfall.

SECONDARY CONTAINMENT

(2) **A schedule to provide secondary containment for bulk storage of liquid materials, storage of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) water priority chemicals, or storage of hazardous materials to prevent leaks and spills from contaminating stormwater runoff. If the secondary containment devices are connected directly to stormwater conveyance systems, the connection shall be controlled by manually activated valves or other**

similar devices [which shall be secured with a locking mechanism] and any stormwater that accumulates in the containment area shall be at a minimum visually observed prior to release of the accumulated stormwater. Accumulated stormwater shall be released if found to be uncontaminated. Records documenting the individual making the observation, the description of the accumulated stormwater and the date and time of the release shall be kept for a period of five years.

A list of Section 313 Water Priority Chemicals is provided in the Appendix.

BEST MANAGEMENT PRACTICES

(3) A narrative description of Best Management Practices (BMPs) to be considered such as, but not limited to, oil and grease separation, debris control, vegetative filter strips, infiltration and stormwater detention or retention, where necessary. The need for structural BMPs shall be based on the assessment of potential of sources contributing significant quantities of pollutants to stormwater discharges and data collected through monitoring of stormwater discharges.

Traditional stormwater management practices are often the least expensive control options. These include items such as vegetative buffers, grass swales, catch basins, and infiltration devices. It is also possible that stormwater could be used for part of the manufacturing operation, thereby reducing the discharge and providing a free source of water at times. Ice and snow removal operations must be taken into consideration as they generate storm flows and may contain chemicals used to cause melting.

Specific BMPs have been developed for certain industries, activities, or pollutants of concern. In the case of stormwater, additional BMPs may be developed to address site-specific situations. Issues to be covered by these more advanced BMPs include pollution prevention, containment, mitigation, and disposal. Within each of these areas of concern, items to be considered include:

Prevention
Monitoring
Labeling
Covering
Vehicle Locations
Dry clean-up
Flow diversion

Containment
Spill storage basins
Vapor and dust control
Sealing of surfaces

Mitigation
Clean-up of leaks and spills
Liquid-solid separation
Chemical, physical, and biological treatment

Disposal
Land filling or land application
Reclamation or recycling
Discharge to stream or sewers
Haul off-site to disposal/treatment facility

INSPECTION OF STORMWATER CONVEYANCES

(4) Inspection schedules of stormwater conveyances and controls and measures to be taken to limit or prevent erosion associated with the stormwater systems.

SPILL PREVENTION AND RESPONSE PLAN

C. Spill Prevention and Response Plan. The Spill Prevention and Response Plan shall incorporate a risk assessment of potential pollutant sources based on a materials inventory of the facility. Facility personnel (or team) responsible for implementing the plan shall be identified in the plan. A responsible person shall be on-site at all times during facility operations that have the potential to contaminate stormwater runoff through spills or exposure of materials associated with the facility operations.

Development of spill prevention and response procedures is a very important element of an effective Stormwater Pollution Prevention Plan. The spill prevention and response plan is also referred to as a Spill

Prevention Control and Countermeasure (SPCC) Plan and may already be developed for many facilities. If your facility already has a spill prevention and response plan, it should be evaluated and revised if necessary to address the objectives of the Stormwater Pollution Prevention Plan. Following any spills, evaluate how the prevention plan worked and make changes or improvements as necessary. The SPCC Plan should describe:

- Areas where spills can occur and their discharge points
- Spill response team
- Safety measures
  - Spill response equipment and locations
  - Spill containment, diversion, isolation, and cleanup
  - Reporting procedures along with names and numbers
  - Material handling and storage

Spills and leaks together are one of the largest industrial sources of stormwater pollutants, and in most cases are avoidable. Establishing standard operating procedures such as safety and spill prevention procedures, along with proper employee training can reduce these accidental releases. Avoiding spills and leaks is preferable to cleaning them up after they occur, not only from an environmental standpoint, but also because spills cause increased operating costs and lower productivity.

Overlay the drainage area map with the locations of areas and activities with high material spill potential to determine where spills will most likely occur. Spill potential also depends on how materials are handled, the types and volumes of materials handled, and how materials are stored on your site. You must describe these factors in your plan.

The activities and areas where spills are likely to occur on your site include:

- Loading and unloading areas
- Storage areas
- Process activities
- Dust and particulate generating processes
- Waste disposal activities

Loading and unloading areas have a high spill potential because the nature of the activity involves transfer of materials from one container to another. The spill potential is affected by the integrity of the container, the form of the chemical being transferred, the design of the transfer area (bermed vs. direct connection to the stormwater collection system), the proximity of this area to the storage area, and procedures for loading and unloading. Evaluate the spill potential from all loading and unloading equipment, such as barges, railroad cars, tank trucks, and front end loaders, as well as storage and vehicle wash areas.

Storage areas, both indoor and outdoor, are potential spill areas. Outdoor storage areas are exposed to storm water runoff and may provide

direct contact between potential pollutants and stormwater. Indoor storage areas may contaminant stormwater if the drains in the storage area are connected to the storm sewer or if improper spill clean up procedures are used. This evaluation should consider the type, age, and condition of storage containers and structures (including tanks, drums, bags, bottles). An evaluation of the spill potential of storage areas should also focus on how employees handle materials.

All process areas are potential sources of stormwater contamination if the floor drains in these areas are connected to storm sewers. If these drains cannot be sealed, the process area should be evaluated for the adequacy of spill control structures such as secondary containment, if necessary. One should also consider normal housekeeping procedures. Some process areas are hosed down periodically and the resulting wash water contains pollutants. Outdoor process activities may contaminate stormwater if spills are diverted to the storm sewer.

Additionally, evaluate spill potential from the following stationary facilities:

Manufacturing areas
Warehouses
Chemical processing and/or blending areas
Temporary and permanent storage sites
Power generating facilities
Food processing areas
Tank farms
Service stations
Parking lots
Access roads

Additionally, evaluate the possibility of stormwater contamination from underground sources, such as tanks and pipes. Leaking underground storage tanks are often a source of stormwater contamination.

Material Handling and Storage Procedures

Throughout the process of developing various spill scenarios, ideas for eliminating or minimizing the spill or its impact will emerge. These solutions should be prioritized and adopted according to conditions of effectiveness, cost, feasibility, and ease of implementation. The following is a list of some suggested activities or alterations that may be made to reduce the potential that spills will occur or impact storm water quality:

Develop ways to recycle, reclaim and/or reuse process materials to reduce the volume brought into the facility.

Install leak detection devices, overflow controls, and diversion berms.

Disconnect drains from processing areas that lead to the storm sewer (however, be sure that any such action will not create a health hazard within your facility).

Adopt effective housekeeping practices.

Adopt a materials flow/plant layout plan (i.e., do not store bags that are easily punctured near high-traffic areas where they may be hit by moving equipment or personnel).

Perform regular visual inspections to identify signs of wear on tanks, drums, containers, storage shelves, and berms and to identify sloppy housekeeping, improperly stored materials, or other clues that could lead to potential spills.

Perform preventive maintenance on storage tanks, valves, pumps, pipes and other equipment.

Use filling procedures for tanks and other equipment that minimize spills.

Use material transfer procedures that reduce the chance of leaks or spills.

Substitute less or non-toxic materials for toxic materials.

Ensure appropriate security.

Spill Response Procedures and Equipment

In the event that a spill prevention measure fails, a swiftly executed response may prevent contamination of stormwater. Spill response plans are required by numerous programs for various reasons. However, this may be the first time that a spill response plan specifically addresses protection of stormwater quality.

Past experience has shown that the single most important obstacle to an effective spill response plan is its implementation. Develop the plan with its ease of implementation in mind. The spill response procedure should be clear, concise, step-by-step instructions for responding to the spill events at a particular facility. Organize the plan to facilitate rapid identification of the appropriate set of procedures. For example, you may find that the plan works best for your facility when organized by spill location. Another possible method of organization is by spilled material. The key component to implementation is the ability of employees to use the plan quickly and effectively. The specific approach you take will depend on the specific conditions at your facility such as size, number of employees and the spill potential of the site.

The spill response plan is developed based on the spill potential scenarios identified. It reflects a consideration of the potential magnitude and frequency of spills, of the types of materials spilled, and of the variety of potential spill locations. Specific procedures may be needed to correspond to particular chemicals onsite. At all

times during the operation of a facility, personnel with appropriate training and authority should be available to respond to spills.

The spill response plan should describe:

Identification of spill response "team" responsible for implementing the spill response plan.

Safety measures.

Procedures to notify appropriate authorities providing assistance (police, fire, hospital, Publicly-owned treatment works, etc.).

Spill containment, diversion, isolation, cleanup

Spill response equipment including:
Safety equipment such as respirators, eye guards, protective clothing, fire extinguisher, and two-way radios.
Cleanup equipment such as brooms, barriers, sweeps, adsorbents, containers, etc.

Following any spills, evaluate how the prevention plan was successful or unsuccessful in responding and how it can be improved.

PREVENTATIVE MAINTENANCE AND GOOD HOUSEKEEPING

D. **Preventative Maintenance and Good Housekeeping Program. A preventative maintenance program shall be developed. The program shall document schedules of inspections and maintenance activities of stormwater control systems, plant equipment and systems. Inspection of material handling areas and regular cleaning schedules of these areas shall be incorporated into the program.**

(1) Preventive Maintenance Program.

Most facilities already have preventive maintenance and/or good housekeeping programs which provide some degree of environmental protection. The Stormwater Pollution Prevention Plan should expand the current programs to focus on stormwater.

The facility should be maintained in a clean and orderly fashion. Perhaps this seems so obvious that it doesn't need to be stated. But carrying out this simple rule can actually go a long way towards preventing pollution.

Preventive maintenance involves the regular inspection and testing of plant equipment and operational systems. These inspections should uncover conditions such as cracks or slow leaks which could cause

breakdowns or failures that result in discharges of chemicals to storm sewers or surface waters. The program should prevent breakdowns and failures by adjustment, repair, or replacement of equipment. An effective preventive maintenance program should therefore include the following elements:

Identification of equipment, systems, and facility areas that should be inspected.

Schedule for periodic inspections or tests of these equipment and systems.

Appropriate and timely adjustment, repair, or replacement of equipment and systems.

Maintenance of complete records on inspections, equipment, and systems.

Identification of Equipment to Inspect. The first step is to identify which systems or equipment that may malfunction and cause spills, leaks, or other situations that could lead to stormwater contamination. Look back at what sources of potential stormwater contamination were identified during the pollutant source assessment phase. The following list identifies some types of equipment to include in your preventive maintenance inspection and testing program:

Pipes
Pumps
Storage tanks and bins
Pressure vessels
Pressure release valves
Process and material handling equipment
Stormwater management devices (oil/water separators, catch basins, or other structural or treatment BMPs)
Erosion control devices

Schedule Routine Preventive Maintenance Inspections. Once you have identified which equipment and areas to inspect at your facility, set schedules for routine inspections. Include examination for leaks, corrosion, support or foundation failure, or other forms of deterioration or leaks in your inspection. Look for spots or puddles of chemicals and document any detection of smoke, fumes, or other signs of leaks. Periodic testing of plant equipment for structural soundness is a key element of preventive maintenance. This can be done by making sure storage tanks are solid and strong enough to hold materials. Another important consideration is when and how often preventive maintenance inspections should be conducted to ensure that this practice is effective. Smaller facilities with little equipment and few systems may still find it necessary to conduct frequent inspections if the equipment is older and more susceptible to leaks or other discharges. Preventive maintenance inspections may be conducted as part of your regular visual inspections.

Equipment Repair or Replacement. Promptly repair or replace defective equipment found during inspections and testing. Keeping spare parts for equipment that needs frequent repair is another simple practice that can help avoid problems and equipment down-time.

Records on Preventive Maintenance. Include a suitable records system for scheduling tests and documenting inspections in the preventive maintenance program. Record test results and follow up with corrective action. Make sure records are complete and detailed. These records should be kept with other visual inspection records.

Facility Inspection. Identify qualified personnel to inspect designated equipment and plant areas for problems and the potential for stormwater pollution. A follow-up procedure should be used and records of inspections and actions kept. You might want to develop an inspection checklist that requires the inspector to observe the following items:

Corroded or open drums

Corroded or damaged tanks, tank supports, or drain valves

Torn bags or bags exposed to rain

Corroded or leaking pipes

Leaking or improperly closed valves or fittings

Leaking pumps or hose connections

Broken or cracked dikes, walls, or other physical barriers designed to prevent stormwater from reaching stored materials

Windblown dry chemicals

Improperly maintained or overloaded dry chemical conveying systems

There should be a place on the inspection form or checklist to record the date, time, name of inspector, weather conditions, and follow-up action(s) needed/taken.

A designated person shall keep records of incidents such as spills or other discharges, along with other information describing the quality and quantity of stormwater discharges.

(2) Good Housekeeping Program.

Good housekeeping practices are designed to maintain a clean and orderly work environment. Often the most effective first step towards preventing pollution in stormwater from industrial sites simply involves using good common sense to improve the facility's basic housekeeping methods. Poor housekeeping can result in more waste being generated than necessary and an increased potential for stormwater contamination.

A clean and orderly work area reduces the possibility of accidental spills caused by mishandling of chemicals and equipment and should reduce safety hazards to plant personnel. Well maintained material and chemical storage areas will reduce the possibility of stormwater mixing with pollutants.

There are some simple procedures a facility can use to promote good housekeeping, including improved operation and maintenance of industrial machinery and processes, material storage practices, material inventory controls, routine and regular clean-up schedules, maintaining well organized work areas, and educational programs for employees about all of these practices. The following sections describe these good housekeeping procedures and provide a checklist that you can use to evaluate and improve your facility's stormwater pollution prevention plan.

Operation and Maintenance. These practices ensure that processes and equipment are working well. Improved operation and maintenance practices are easy to implement. Here are a few examples of basic operation and maintenance BMPs that should be incorporated in your good housekeeping program:

Maintain clean, dry floors and ground surfaces by using brooms, shovels, vacuum cleaners, or cleaning machines.

Regularly pickup and dispose of garbage and waste material.

Make sure equipment is working properly.

Routinely inspect for leaks or conditions that could lead to discharges of chemicals.

Routinely inspect for contact of stormwater with raw materials, intermediate materials, waste materials, or products.

Ensure that spill cleanup procedures are understood by employees.

Material Storage Practices. Improper storage can result in the release of materials or chemicals that can cause stormwater runoff pollution. Proper storage techniques include:

Providing adequate aisle space to facilitate material transfer and easy access for inspections.

Storing containers, drums, and bags away form direct traffic routes to prevent accidental spills.

Stacking containers according to manufacturers' instructions to avoid damaging the containers due to improper weight distribution.

Storing containers on pallets or similar devices to prevent corrosion of the containers which can result when containers come in contact with moisture on the ground.

Assigning the responsibility of hazardous materials inventory to a limited number of people who are trained to handle hazardous materials.

Material Inventory Procedures. Keeping an up-to-date inventory of all materials (hazardous and non-hazardous) present on your site will track how materials are stored and handled onsite, identify which materials and activities pose the most risk to the environment, and help keep material costs down caused by overstocking. The following instructions explain the basic components of a complete material inventory:

Identify and list all chemical substances present in the workplace. Walk through the facility and review the purchase orders from the previous year. Obtain the Material Safety Data Sheet (MSDS) for each chemical substance.

Label all containers to show the name and type of substance, stock number, expiration date, health hazards, suggestions for handling, and first aid information. This information can usually be found on the MSDS. Unlabeled chemicals and chemicals with deteriorated labels are often disposed of unnecessarily or improperly.

Clearly mark on the inventory all hazardous materials that require special handling, storage, use, and disposal considerations.

Improved material tracking and inventory practices, such as instituting a shelf-life program, can reduce the waste that results from overstocking and the disposal of out-dated materials. Careful tracking of all materials ordered may also result in more efficient materials use.

Decisions on the amount of hazardous materials the facility stores should include an evaluation of your emergency control systems. Ensure that storage areas are designed to contain spills.

Employee Participation. Frequent and proper training of employees in good housekeeping techniques reduces the possibility that the chemicals or equipment will be mishandled. Motivating employees to reduce waste generation is another important pollution prevention technique. Here are some suggestions for involving employees in good housekeeping practices:

Incorporate information sessions on good housekeeping practices into the facility's employee training program.

Discuss good housekeeping at employee meetings.

Publicize pollution prevention concepts through posters.

Post bulletin boards with updated good housekeeping procedures, tips, and reminders.

TRAINING SCHEDULES

E. **Training schedules shall be developed and training provided at a minimum on an annual basis on proper spill response and cleanup procedures and preventative maintenance activities for all personnel involved in any of the facility's operations that have the potential to contaminate stormwater runoff. Facility personnel (or team) responsible for implementing the training shall be identified in the plan.**

Employees at all levels of responsibility shall be trained in the components and goals of the Plan. Periodic training dates must be identified. Training should address all parts of the Plan, including how and why tasks are to be implemented. Topics to include are:

Spill prevention and response
Good housekeeping
Material management practices
Basics of water pollution laws

Employee training is essential to effective implementation of the SPPP. The purpose of a training program is to teach personnel at all levels of responsibility the components and goals of the SPPP. When properly trained, personnel are more capable of preventing spills, responding safely and effectively to an accident when one occurs, and recognizing situations that could lead to stormwater contamination.

The following sections include ideas about how to create an effective stormwater pollution prevention training program for your facility.

Spill Prevention and Response. Spill prevention and response procedures are described in detail under the Spill Prevention and Response section. Discuss these procedures or plans in the training program in order to ensure that all plant employees, not just those on the spill response teams, are aware of what to do if a spill occurs. Specifically, all employees involved in the industrial activities of your facility should be trained on the following measures:

Identifying potential spill areas and drainage routes, including information on past spills and causes.

Reporting spills to appropriate individuals, without penalty (e.g., employees should be provided "amnesty" when they report such instances).

Specifying material handling procedures and storage requirements.

Implementing spill response procedures.

Onsite contractors and temporary personnel should also be informed of the plant operations and design features in order to help prevent accidental discharges or spills from occurring.

Good Housekeeping. Teach facility personnel how to maintain a clean and orderly work environment. The section on Preventive Maintenance and Good Housekeeping Programs outlines the items that follow. Emphasize these points in the good housekeeping portion of your training program:

Require regular vacuuming and/or sweeping

Promptly clean up spilled materials to prevent polluted runoff

Identify places where brooms, vacuums, sorbents, foams, neutralizing agents, and other housekeeping and spill response equipment are located.

Display signs reminding employees of the importance and procedures of good housekeeping

Discuss updated procedures and report on the status of practicing good housekeeping at every meeting

Provide instruction on securing drums and containers and frequently checking for leaks and spills

Outline a regular schedule for housekeeping activities to allow you to determine that the job is being done

Track and document the successful implementation of the housekeeping schedule on checklist or inspection forms

Materials Management Practices. Some suggestions for material management are as follows:

Neatly organize materials for storage

Identify all toxic and hazardous substances stored, handled, and produced onsite

Discuss handling procedures for these materials

Tools for a Successful Training Program. Here are some suggestions of training tools that you can include in your facility's training program:

Employee handbooks

Films and slide presentations

Drills

Routine employee meetings

Bulletin boards

Suggestion programs

Newsletters

Environmental excellence awards or other employee incentive programs

Providing employees with incentives, such as awards for practicing pollution prevention, is a good way to motivate personnel in working to achieve the goals of the Stormwater Pollution Prevention Plan.

How Often to Conduct Training. You should examine your plan to determine how often you should train the employees at your facility. Frequency should take into account the complexity of your management practices and the nature of your staff, including staff turnover and changes in job assignments. Facilities are required to specify a schedule for periodic training activities in their plan with a minimum of once per year. In any case you should regularly evaluate the effectiveness of your training efforts. In many cases, this will simply involve speaking with your employees to verify that information has been communicated effectively.

RESPONSIBLE PARTY

F. The Stormwater Pollution Prevention Plan shall identify a specific position(s) responsible for the overall coordination, development, implementation, and revision to the Plan. Responsibilities for all components of the Plan shall be documented and position(s) assignments provided. The permittee shall amend the Plan whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the potential for the discharge of pollutants to surface waters. This Plan shall be considered public information in accordance with Part II, Standard Conditions, Section E.8. of this general permit.