



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	

Description

Prevent or reduce the discharge of pollutants to stormwater from outdoor process equipment operations and maintenance by reducing the amount of waste created, enclosing or covering all or some of the equipment, installing secondary containment, and training employees. This management practice is likely to create significant reductions in sediment, heavy metals, toxic materials, and oil and grease.

Approach

Outside process equipment operations can contaminate stormwater runoff. Activities such as rock grinding or crushing, painting, coating, grinding, sanding, degreasing or parts cleaning, landfills, wastewater, solid waste treatment and disposal, and lumber mills are examples of process operations that use hazardous materials, which could cause contamination of stormwater runoff. To explain one example in detail, pollutants from wastewater treatment and disposal areas may be generated by pumping stations, storage of chemicals, addition of treatment chemicals, solids dewatering and land application, emergency generators, and discharge of treated wastewater.

Waste spilled, leaked, or lost from outdoor process equipment operations may build up in soils or on other surfaces and be carried away by stormwater runoff. There may also be a potential for liquid waste from lagoons or impoundments to overflow into surface waters or contaminate soil and groundwater.

An industry that generates large volumes of process wastewater will typically have an onsite treatment system that discharges directly to the nearest receiving water. A National Pollutant Discharge Elimination System (NPDES) permit must be obtained from the Tennessee Department of Environment and Conservation (TDEC) for most industries (see TDEC website for additional information). Alternatively, the industry may discharge to the municipal wastewater collection system with permission from the wastewater system operator. In most areas within Knoxville, this entity is the Knoxville Utilities Board (KUB), which may require pretreatment depending on the pollutant loading. KUB also has to meet requirements for NPDES permitting and may require monitoring and sampling programs.

The preferred (and the most economical) action to reduce stormwater pollution is to alter the nature of each activity such that pollutants are not exposed to stormwater. This often means performing the activity during dry periods only or substituting benign materials for more toxic ones.

General Guidelines

- Design each activity to prevent exposure of pollutants to stormwater. It is preferable to move activities with potential for pollution indoors or cover with a permanent roof.
- Minimize contact of stormwater runoff with outside manufacturing operations through curbs, berms and swales.
- Connect drains in the process equipment area to the public sanitary sewer or to the facility wastewater treatment system. Curbs (for secondary containment) are usually placed around the immediate boundaries of the process equipment.
- Regularly inspect and clean the stormwater drainage system. Additional BMPs may be required for stormwater treatment prior to allowing stormwater runoff to leave the site. For example, consider the use of catch basin filtration inserts (see ST-06, Media Filtration Systems) as a means to capture particulate pollutants that are not likely to dissolve in water. Oil/water separators (see ST-07) are necessary for many types of industries and commercial facilities.
- Reducing the amount of waste that is created and consequently the amount that must be stored or treated is another way to reduce the potential for stormwater contamination from outside manufacturing activities.

Considerations for Connecting to Sanitary Sewer System

If stormwater runoff becomes polluted, is used in a mechanical process or as a cooling or cleaning solution, then it must be captured and treated. The preferred option is to treat wastewater onsite. If there is not an onsite process wastewater treatment system, consider discharging to the public sanitary sewer system. Any connections to the sanitary sewer system must be approved by the wastewater system operator (in most cases, this will be KUB). The following conditions may receive favorable consideration from KUB for such a connection:

- If a surge tank is used to limit discharge to the sanitary sewer system to acceptable levels of minimal flows.
- If a bypass control valve is installed to route clean stormwater away from sanitary sewer into the storm drainage system.

Maintenance

- Routine inspections and preventive maintenance should be performed daily on all outdoor process equipment areas. Check process equipment for leaks and spills, particularly at valves, flanges, seams and welds, gaskets, and other connections.

Limitations

- Providing an enclosed structure or permanent roof may be very expensive for processes with large volumes of material.
- Storage sheds must meet building code and fire code requirements.

References

21, 33, 99, 103, 138 (see BMP Manual Chapter 10 for list)