



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 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 or coating, grinding or sanding, degreasing or parts cleaning, landfills, waste piles, wastewater and solid waste treatment and disposal, and land application are process operations that use hazardous materials and that can lead to contamination of stormwater runoff. Pollutants from the wastewater and solid waste treatment and disposal areas result from waste pumping, additions of treatment chemicals, mixing, aeration, clarification, and solids dewatering.

- Alter the activity to prevent exposure of pollutants to stormwater.
- Move activity indoors.
- Cover the area with a permanent roof.
- Minimize contact of stormwater with outside manufacturing operations through berming and drainage routing (run-on prevention).
- Connect process equipment area to public sewer or facility wastewater treatment system.
- Clean regularly the stormwater system.
- Use catch basin filtration inserts (PTP-06: Media Filtration) as a means to capture particulate pollutants.

- Some municipalities require that secondary containment areas (regardless of size) be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- The preferred (and possibly the most economical) action to reduce stormwater pollution is to alter the nature of activity such that pollutants are not exposed to stormwater. This may mean performing the activity during dry periods only or substituting benign materials for more toxic ones.
- Actions other than altering the activity include enclosing the activity in a building and connecting the floor drains to the sanitary sewer.
- The area used by the activity may be so great as to make enclosure prohibitively expensive. Building cost can be reduced by not covering the sides, and thus eliminating the need for ventilating and lighting systems.
- When certain parts of the activity are the worst source of pollutants, those parts can be segregated and enclosed or covered.
- Curbs can be placed around the immediate boundaries of the process equipment. The storm drains from these interior areas can be connected to the facility’s process wastewater system.
- 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.

***Treatment***

If stormwater becomes polluted, used in a mechanical process, or as a cooling or cleaning solution, it should be captured and treated. If you do not have your own process wastewater treatment system, consider discharging to the public sewer system. Use of the public sewer might be allowed under the following conditions:

- It may be possible under unusual circumstances to connect a much larger area to the public sewer, as long as the rate of stormwater discharges do not exceed the capacity of the wastewater treatment plant. The stormwater could be stored during the storm and then transferred to the public sewer when the normal flow is low, such as at night.
- The majority of the pollutants in stormwater are discharged over time by the small, high frequency storms. Less polluted runoff from the infrequent large storms can be bypassed to the storm drain. To implement this BMP, a hydraulic evaluation of the downstream sewer system should occur in consultation with the local sewer authority.

**Maintenance**

- Routine preventive maintenance, including checking process equipment for leaks.

**Limitations**

- Providing cover may be expensive.

- Space limitations may preclude enclosing some equipment
- Storage sheds often must meet building and fire code requirements.

**Additional Information**

Possible stormwater contaminants from operation and maintenance described above include heavy metals, toxic materials, and oil and grease. 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 is also a potential for liquid waste from lagoons or surface impoundments, associated with outdoor equipment operations, to overflow to surface waters or soak the soil, which eventually can be picked up by stormwater runoff.

Industries that generate large volumes of process wastewater typically have their own treatment system that discharges directly to the nearest receiving water. These industries have the discretion to use their wastewater treatment system to treat stormwater within the constraints of their permit requirements for process treatment. It may also be possible for the industry to discharge the stormwater directly to its effluent outfall without treatment as long as the total loading or concentration of the discharged process water and stormwater does not exceed the loading or concentration had a stormwater treatment device been used. This could be achieved by reducing the loading from the process wastewater treatment system. Check with the local sewer authority, as this option would be subject to permit constraints and potentially regular monitoring.

**Primary References**

*Caltrans Storm Water Quality Handbooks, Construction Contractor’s Guide and Specifications*, April 1997.

**Subordinate References**

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

*Publications That Can Work For You!*; California Department of Toxic Substances Control, Sacramento, CA, 1991 (A list and order form for waste minimization publications from the State).

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

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