

INDUSTRIAL STORMWATER

FACT SHEET SERIES



U.S. EPA Office of Water
EPA-833-F-06-044
February 2021

Sector AC: Electronic and Electrical Equipment and Components, Photographic, and Optical Goods Manufacturing Facilities

What is the NPDES stormwater permitting program for industrial activity?

Activities, such as material handling and storage, equipment maintenance and cleaning, industrial processing or other operations that occur at industrial facilities are often exposed to stormwater. The runoff from these areas may discharge pollutants directly into nearby waterbodies or indirectly via storm sewer systems, thereby degrading water quality.

In 1990, the U.S. Environmental Protection Agency (EPA) developed permitting regulations under the National Pollutant Discharge Elimination System (NPDES) to control stormwater discharges associated with eleven categories of industrial activity. As a result, NPDES permitting authorities, which may be either EPA or a state environmental agency, issue stormwater permits to control runoff from these industrial facilities.

What types of industrial facilities are required to obtain permit coverage?

This fact sheet specifically discusses stormwater discharges from electronic and electrical equipment and components, photographic, and optical goods manufacturing facilities as defined by Standard Industrial Classification (SIC) Major Groups 36 and 38 and (SIC 357). Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit.

- ◆ Computer and Office Equipment (SIC 3571-3579)
- ◆ Electronic and Electrical Equipment and Components, Except Computer Equipment (SIC 3612-3699)
- ◆ Measuring, Analyzing, and Controlling Instruments; Photographic and Optical Goods, Watches and Clocks (SIC 3812-3873)

What does an industrial stormwater permit require?

Common requirements for coverage under an industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI. The SWPPP is a written assessment of potential sources of pollutants in stormwater runoff and control measures that will be implemented at your facility to minimize the discharge of these pollutants in runoff from the site. These control measures include site-specific best management practices (BMPs), maintenance plans, inspections, employee training, and reporting. The procedures detailed in the SWPPP must be implemented by the facility and updated as necessary, with a copy of the SWPPP kept on-site. The industrial stormwater permit also requires collection of visual, analytical, and/or compliance monitoring data to determine the effectiveness of implemented BMPs. For more information on EPA's industrial stormwater permit and links to State stormwater permits, go to www.epa.gov/npdes/stormwater and click on "Industrial Activity."

What pollutants are associated with my facilities activities?

Pollutants conveyed in stormwater discharges from facilities involved with the manufacturing of electronic and electrical equipment and components, photographic, and optical goods will vary. There are a number of factors that influence to what extent industrial activities and significant materials can affect water quality.

- ◆ Geographic location
- ◆ Topography
- ◆ Hydrogeology
- ◆ Extent of impervious surfaces (e.g., concrete or asphalt)
- ◆ Type of ground cover (e.g., vegetation, crushed stone, or dirt)
- ◆ Outdoor activities (e.g., material storage, loading/unloading, vehicle maintenance)
- ◆ Size of the operation
- ◆ Type, duration, and intensity of precipitation events

Most of the actual manufacturing and processing activity at the types of facilities discussed here are normally done indoors and will not be exposed to stormwater. The types of activities where exposure to stormwater may occur consist primarily of loading/ unloading activities, and the storage and handling of raw materials, by-products, final products or waste products. A wide variety of materials are used at these facilities including metals, acids used for chemical etching, alkaline solutions, solvents, various oils and fuels and miscellaneous chemicals. Tanks or drums of these materials may be exposed to stormwater during loading/un-loading operations, or through outdoor storage or handling at some facilities.

Liquid wastes which may be exposed at least temporarily include spent solvents and acids, miscellaneous chemicals and oily wastes. These wastes may be contaminated with a variety of heavy metals and chlorinated hydrocarbons. Used equipment, scrap metal and wire, soiled rags and sanding materials may also be exposed to stormwater and constitute a potential source of pollutants. In addition, some facilities may have dumpsters containing nonhazardous wastes or manufacturing debris which may be exposed to stormwater.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at electronic and electrical equipment and components, photographic, and optical goods manufacturing facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Electronic and Electrical Equipment and Components, Photographic, and Optical Goods Manufacturing Facilities

Activity	Pollutant Source	Pollutant
Outdoor material loading/unloading	Wooden pallets, spills/leaks from material handling equipment, raw materials, finished products, solvents	Total suspended solids (TSS), oil and grease, organics
Outdoor material and equipment storage	Sulfuric acid, alkaline solutions, solvents miscellaneous chemicals, oily wastes, lead, silver, copper, zinc, spent solvents and acids, scrap metal and wire, oily rags	Organics, oil and grease, acids, alkalinity, heavy metals

Note: Activities may have additional pollutant sources that contain PFAS and can come into contact with stormwater discharges. Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that include PFOA, PFOS, GenX, and many other chemicals.

What BMPs can be used to minimize contact between stormwater and potential pollutants at my facility?

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in stormwater discharges from electronic and electrical equipment and components, photographic, and optical goods manufacturing facilities. You will likely need to implement a combination or suite of

BMPs to address stormwater runoff at your facility. Your first consideration should be for pollution prevention BMPs, which are designed to prevent or minimize pollutants from entering stormwater runoff and/or reduce the volume of stormwater requiring management. Prevention BMPs can include regular cleanup, collection and containment of debris in storage areas, and other housekeeping practices, spill control, and employee training. It may also be necessary to implement treatment BMPs, which are engineered structures, intended to treat stormwater runoff and/or mitigate the effects of increased stormwater runoff peak rate, volume, and velocity. Treatment BMPs are generally more expensive to install and maintain and include oil-water separators, wet ponds, and proprietary filter devices.

BMPs must be selected and implemented to address the following:

Good Housekeeping Practices

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Common areas where good housekeeping practices should be followed include trash containers and adjacent areas, material storage areas, vehicle and equipment maintenance areas, and loading docks. Good housekeeping practices must include a schedule for regular pickup and disposal of garbage and waste materials and routine inspections of drums, tanks, and containers for leaks and structural conditions. Practices also include containing and covering garbage, waste materials, and debris. Involving employees in routine monitoring of housekeeping practices has proven to be an effective means of ensuring the continued implementation of these measures. Industrial facilities can conduct activities that use, store, manufacture, transfer, and/or dispose of PFAS containing materials. Successful good housekeeping practices to minimize PFAS exposure to stormwater could include inventorying the location, quantity, and method of storage; using properly designed storage and transfer techniques; providing secondary containment around chemical storage areas; and using proper techniques for cleaning or replacement of production systems or equipment.

Minimizing Exposure

Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters. Examples of BMPs for exposure minimization include covering materials or activities with temporary structures (e.g., tarps) when wet weather is expected or moving materials or activities to existing or new permanent structures (e.g., buildings, silos, sheds). Even the simple practice of keeping a dumpster lid closed can be a very effective pollution prevention measure. Another example could include locating PFAS-containing materials and residues away from drainage pathways and surface waters.

Erosion and Sediment Control

BMPs must be selected and implemented to limit erosion on areas of your site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

Management of Runoff

Your SWPPP must contain a narrative evaluation of the appropriateness of stormwater management practices that divert, infiltrate, reuse, or otherwise manage stormwater runoff so as to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of stormwater, inlet controls, snow management, infiltration devices, and wet retention measures. Incorporating treatment like granular activated carbon may be helpful to remove certain pollutants like PFAS.

A combination of preventive and treatment BMPs will yield the most effective stormwater management for minimizing the offsite discharge of pollutants via stormwater runoff. Though not specifically outlined in this fact sheet, BMPs must also address preventive maintenance records or logbooks, regular facility inspections, spill prevention and response, and employee training.

All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements, others are quite involved. You must regularly inspect all BMPs to ensure they are operating properly, including during runoff events. As soon as a problem is found, action to resolve it should be initiated immediately.

Implement BMPs, such as those listed below in Table 2 for the control of pollutants at electronic and electrical equipment and components, photographic, and optical goods manufacturing facilities, to minimize and prevent the discharge of pollutants in stormwater. Identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings. BMPs listed in Table 2 are broadly applicable to electronic and electrical equipment and components, photographic, and optical goods manufacturing facilities; however, this is not a complete list and you are recommended to consult with regulatory agencies or a stormwater engineer/consultant to identify appropriate BMPs for your facility.

Table 2. BMPs for Potential Pollutant Sources at Electronic and Electrical Equipment and Components, Photographic, and Optical Goods Manufacturing Facilities

Pollutant Source	BMPs
Outdoor material loading and unloading	☐ Confine loading/unloading activities to a designated area outside drainage pathways and away from surface waters. ☐ Perform loading/unloading activities indoors or in a covered area. ☐ Cover loading/unloading area with permanent cover (e.g., roofs) or temporary cover (e.g., tarps). ☐ Close storm drains during loading/unloading activities in surrounding areas. ☐ Avoid loading/unloading materials in the rain. ☐ Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment. ☐ Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks. ☐ For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank. ☐ Where liquid or powdered materials are transferred in bulk to/from truck or rail cars, ensure hose connection points at storage containers are inside containment areas, or drip pans are used in areas where spillage may occur which are not in a containment area. ☐ Install an oil/water separator in catch basins. ☐ Inspect all containers prior to loading/unloading of any raw or spent materials. ☐ Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. ☐ Dead-end sump where spilled materials could be directed. ☐ Use dry cleanup methods instead of washing the areas down. ☐ Train employees on proper loading/unloading techniques and spill prevention and response.

Table 2. BMPs for Potential Pollutant Sources at Electronic and Electrical Equipment and Components, Photographic, and Optical Goods Manufacturing Facilities (continued)

Pollutant Source	BMPs
Outdoor material storage	☐ Cover storage areas with roofs or tarps. ☐ Confine storage of raw materials, parts, and equipment to designated areas away from high traffic, outside drainage pathways and away from surface waters. ☐ Provide secondary containment around chemical storage areas. ☐ If containment structures have drains, ensure that the drains have valves, and that valves are maintained in the closed position. Institute protocols for checking/testing stormwater in containment areas prior to discharge. ☐ Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. ☐ Direct stormwater runoff to an on-site retention pond. ☐ Ensure that all containers are properly sealed and valves closed. ☐ Conduct container integrity testing and provide leak detection. ☐ Inspect storage tanks and piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks and perform preventive maintenance. ☐ Plainly label all containers. ☐ Maintain an inventory of fluids to identify leakage. ☐ Wash and rinse containers indoors before storing them outdoors. ☐ Provide transfer of PFAS containing materials and their proper collection and disposal methods in the event of a release from their container. ☐ Train employees on proper spill prevention and response techniques. ☐ Train employees on proper waste control and disposal.
Waste management	☐ Store waste in enclosed and/or covered areas. ☐ Store wastes in covered, leak proof containers (e.g., dumpsters, drums). ☐ Cover the dumpsters or move them indoors. ☐ Use linked dumpsters that do not leak. ☐ Provide a lining for the dumpsters. ☐ Direct runoff to on-site retention pond. ☐ Ensure hazardous and solid waste disposal practices are performed in accordance with applicable federal, state, and local requirements. ☐ Ship all wastes to offsite licensed landfills or treatment facilities.
Particulate emission management	☐ Clean around vents and stacks. ☐ Place tubs around vents and stacks to collect particulates. ☐ Inspect air emission control systems (e.g., baghouses) regularly and repair or replace when necessary.

What if activities and materials at my facility are not exposed to precipitation?

The industrial stormwater program requires permit coverage for a number of specified types of industrial activities. However, when a facility is able to prevent the exposure of ALL relevant activities and materials to precipitation, it may be eligible to claim no exposure and qualify for a waiver from permit coverage.

If you are regulated under the industrial permitting program, you must either obtain permit coverage or submit a no exposure certification form, if available. Check with your permitting authority for additional information as not every permitting authority program provides no exposure exemptions.

Where do I get more information?

For additional information on the industrial stormwater program, visit www.epa.gov/npdes/stormwater.

A list of names and telephone numbers for each EPA Region or state NPDES permitting authority can also be found at this link. Click on "contacts" to find the appropriate contact information.

References

Information contained in this Fact Sheet was compiled from EPA's past and present Multi-Sector General Permits and from the following sources:

- ◆ City of Phoenix, Arizona, Street Transportation Department. 2004. Best Management Practices for Section AC—Electronic & Electrical Equipment or Components, Photographic & Optical Goods Manufacturers.
<http://phoenix.gov/STREETS/electronic.pdf>
- ◆ Pierce County Washington Public Works and Utilities. "Stormwater Pollution Prevention Manual: A Guide to Best Management Practices for Industries, Businesses, and Homeowners."
www.co.pierce.wa.us/pc/services/home/enviroment/water/wq/bmpmanual.htm
- ◆ U.S. EPA. 1992. Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. EPA 832-R-92-006.
www.epa.gov/npdes/stormwater
- ◆ U.S. EPA Region 9. 1999. Oil/Water Separators: Best Environmental Practices for Auto Repair and Fleet Maintenance. EPA-909-E-99-001.
www.epa.gov/region09/cross_pr/p2/autofleet/separator.pdf
- ◆ U.S. EPA, Office of Science and Technology. 1999. Preliminary Data Summary of Urban Stormwater Best Management Practices. EPA-821-R-99-012.
www.epa.gov/OST/stormwater
- ◆ U.S. EPA, Office of Wastewater Management. *NPDES Stormwater Multi-Sector General Permit for Industrial Activities (MSGP)*.
www.epa.gov/npdes/stormwater/msgp