

INDUSTRIAL STORMWATER

FACT SHEET SERIES

Sector Y: Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Industries



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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 rubber, miscellaneous plastic products, and manufacturing facilities as described by Standard Industrial Classification (SIC) Major Group 30. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- ◆ Tires and inner tubes (SIC 3011)
- ◆ Rubber and plastic footwear (SIC 3021)
- ◆ Rubber and plastic hose and belting (SIC 3052)
- ◆ Gaskets, packaging, and sealing devices (SIC 3053)
- ◆ Fabricated rubber products, not elsewhere classified (SIC 3061 and 3069)
- ◆ Miscellaneous plastic products (SIC 3081 and 3089)
- ◆ Miscellaneous manufacturing industries (SIC 3991-3999)

Also discussed are stormwater discharges from miscellaneous manufacturing industries (except jewelry, silverware, and plateware) commonly identified by SIC Major Group 39 (except for 391). Miscellaneous manufacturing industries specifically include manufacturers of:

- ◆ Musical instruments (SIC 3931)
- ◆ Games, toys, and athletic goods (SIC 3942-3949)
- ◆ Pens, pencils, and artists' supplies (SIC 3951-3955, except 3952)
- ◆ Buttons, pins, and needles (SIC 3961 and 3965)

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 activities at my facility?

Pollutants conveyed in stormwater discharges from facilities involved with the manufacturing of rubber, miscellaneous plastic, and other products 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 activities associated with this industry normally occur indoors. However, there is a wide variety of materials used at these facilities which may include:

- ◆ Solvents
- ◆ Acids and caustic
- ◆ Carbon black
- ◆ Plasticizers
- ◆ Paint
- ◆ Processing oils
- ◆ Resins
- ◆ Rubber compounds and solutions
- ◆ Scrap plastic and rubber
- ◆ Fuels such as diesel or gasoline
- ◆ Adhesives
- ◆ Zinc
- ◆ Miscellaneous chemicals

Tanks, drums, or bags of these materials (including raw materials, by-products, final products, or waste products) may be exposed to stormwater during loading/unloading operations or through outdoor storage or handling at some facilities. Other items which may be exposed to stormwater include surplus processing machinery, scrap metal, PVC pipe, and rags.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at Rubber, miscellaneous plastic product, and miscellaneous manufacturing facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities

Activity	Pollutant Source	Pollutant
Outdoor material loading/unloading	Wooden pallets, spills/leaks from material handling equipment, solvents, resins	Total suspended solids (TSS), oil and grease, organics
Outdoor material and equipment storage	Solvents, acids and caustic, plasticizers, paint, lubricating oils, processing oils, resins, rubber compounds, mineral spirits, zinc, scrap metal, scrap plastic and rubber, plastic pellets, PVC pipe, and rags	Organics, zinc, hydrocarbons, oil and grease, acids, alkalinity

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 rubber, miscellaneous plastic products, and miscellaneous 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.

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.

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.

Additionally, identifying weaknesses in current facility practices will aid the permittee in determining appropriate BMPs that will achieve a reduction in pollutant loadings.

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 rubber, miscellaneous plastic products and miscellaneous 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 rubber, miscellaneous plastic products and miscellaneous 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 Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities

Pollutant Sources	BMPs
Outdoor material unloading/loading	<ul style="list-style-type: none"> <li data-bbox="441 1440 1440 1497"><input type="checkbox"/> Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters. <li data-bbox="441 1514 1440 1541"><input type="checkbox"/> Close storm drains during loading/unloading activities in surrounding areas. <li data-bbox="441 1558 1440 1585"><input type="checkbox"/> Use a dead-end sump where materials could be directed. <li data-bbox="441 1602 1440 1629"><input type="checkbox"/> Inspect containers for leaks or damage prior to loading/unloading. <li data-bbox="441 1646 1440 1703"><input type="checkbox"/> Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks. <li data-bbox="441 1719 1440 1776"><input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <li data-bbox="441 1793 1440 1850"><input type="checkbox"/> Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials. <li data-bbox="441 1866 1440 1923"><input type="checkbox"/> Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment. <li data-bbox="441 1940 1440 1967"><input type="checkbox"/> Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks.

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Outdoor material unloading/loading (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank. <input type="checkbox"/> 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. <input type="checkbox"/> Place catch trays between the dock and trailer at shipping and receiving bays to capture solids. <input type="checkbox"/> Enclose material handling systems. <input type="checkbox"/> Cover materials entering and leaving areas. <input type="checkbox"/> Use dry cleanup methods instead of washing the areas down. <input type="checkbox"/> Regularly sweep area to minimize debris on the ground and dispose of materials properly. <input type="checkbox"/> Provide dust control if necessary. When controlling dust, sweep and/or apply water or materials that will not impact surface or ground water. <input type="checkbox"/> Develop and implement spill prevention, containment, and countermeasure (SPCC) plans. <input type="checkbox"/> Train employees in spill prevention, control, cleanup, and proper materials management techniques. <input type="checkbox"/> Inspect pallets for protruding nails or broken boards.
Outdoor material storage	<ul style="list-style-type: none"> <input type="checkbox"/> Cover storage areas with roofs or tarps. <input type="checkbox"/> Confine storage of raw materials, parts, and equipment to designated areas away from high traffic, outside drainage pathways and away from surface waters. <input type="checkbox"/> Provide secondary containment around chemical storage areas. <input type="checkbox"/> 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. <input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <input type="checkbox"/> Direct stormwater runoff to an on-site retention pond. <input type="checkbox"/> Ensure that all containers are properly sealed and valves closed. <input type="checkbox"/> Conduct container integrity testing and provide leak detection. <input type="checkbox"/> Inspect storage tanks and piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks and perform preventive maintenance. <input type="checkbox"/> Plainly label all containers. <input type="checkbox"/> Maintain an inventory of fluids to identify leakage. <input type="checkbox"/> Wash and rinse containers indoors before storing them outdoors. <input type="checkbox"/> Train employees on proper spill prevention and response techniques. <input type="checkbox"/> Train employees on proper waste control and disposal.
Waste management	<ul style="list-style-type: none"> <input type="checkbox"/> Store waste in enclosed and/or covered areas. <input type="checkbox"/> Store wastes in covered, leak proof containers (e.g., dumpsters, drums). <input type="checkbox"/> Cover the dumpsters or move them indoors. <input type="checkbox"/> Use linked dumpsters that do not leak. <input type="checkbox"/> Provide a lining for the dumpsters.

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Waste management (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Dispose or recycle packaging properly. <input type="checkbox"/> Ensure hazardous and solid waste disposal practices are performed in accordance with applicable federal, state, and local requirements. <input type="checkbox"/> Ship all wastes to offsite licensed landfills or treatment facilities.
Particulate emission management	<ul style="list-style-type: none"> <input type="checkbox"/> Clean around vents and stacks. <input type="checkbox"/> Place tubs around vents and stacks to collect particulates. <input type="checkbox"/> Inspect air emission control systems regularly and repair or replace when necessary.
<i>Rubber Manufacturers - Zinc material management</i>	
Material storage	<ul style="list-style-type: none"> <input type="checkbox"/> Store zinc bags indoors. <input type="checkbox"/> Use of special large volume sacks (2,500 pound sacks rather than 50- to 100-pound sacs) with less potential for releases of zinc. <input type="checkbox"/> Store materials in use in sealable container. <input type="checkbox"/> Provide an airspace between the container and the cover to minimize “puffing” losses when the container is opened. <input type="checkbox"/> Use automatic dispensing and weighing equipment. <input type="checkbox"/> Use pre-weighed bags that can be thrown directly into the mixer to reduce spillage. <input type="checkbox"/> Clean up spills without washing zinc into storm drains. <input type="checkbox"/> Train employees on proper handling and emptying of zinc bags.
Dumpsters	<ul style="list-style-type: none"> <input type="checkbox"/> Cover the dumpsters or move them indoors. <input type="checkbox"/> Use linked dumpsters that do not leak. <input type="checkbox"/> Provide a lining for the dumpsters.
Dust collectors or baghouses	<ul style="list-style-type: none"> <input type="checkbox"/> Repair or replace improperly operating baghouses. <input type="checkbox"/> Provide regular maintenance.
Grinding operations from which zinc dust may be released	<ul style="list-style-type: none"> <input type="checkbox"/> Use dust collection system or reduce the amount of dust generated.
Zinc stearate coating operations	<ul style="list-style-type: none"> <input type="checkbox"/> Develop a spill prevention/response plan. <input type="checkbox"/> Use dry cleanup methods for spills. <input type="checkbox"/> Use alternate compounds to zinc stearate.
<i>Plastics Manufacturers - Plastic Pellet Management</i>	
Management	<ul style="list-style-type: none"> <input type="checkbox"/> Conduct regularly scheduled self evaluations to identify problem areas. <input type="checkbox"/> Encourage information sharing between companies. <input type="checkbox"/> Develop educational materials for employees, including those involved in transporting pellets.
Education and training	<ul style="list-style-type: none"> <input type="checkbox"/> Educate key officials and company managers regarding the fate and effects and the economic disadvantages of pellet loss. <input type="checkbox"/> Educate company employees regarding environmental hazards of pellet loss and employee responsibility for corrective actions. <input type="checkbox"/> Train pellet handlers to operate equipment, particularly fork lifts, in a manner that minimizes the potential for pellet loss.

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Equipment and facilities	<ul style="list-style-type: none"> <input type="checkbox"/> Install a containment system to capture stormwater runoff. <input type="checkbox"/> Implement dry cleanup procedures. <input type="checkbox"/> Install connecting hoses equipped with valves that will close automatically when the connection is broken. <input type="checkbox"/> Direct the water flow from rail hopper cars and bulk trucks through a screen to capture the pellets rather than spilling them onto the ground. <input type="checkbox"/> Seal expansion joints in concrete floors with a flexible material to facilitate cleanup. <input type="checkbox"/> Install alarms in the pellet conveying system. <input type="checkbox"/> Pave all pellet handling areas, including loading docks and rail sidings. <input type="checkbox"/> Place screening in storm drains. <input type="checkbox"/> Place control devices where they can be serviced without losing pellets. <input type="checkbox"/> Equip bag-handling stations with vacuum hoses to facilitate spill cleanup. <input type="checkbox"/> Use tarps or containment devices to collect pellets as they are spilled. <input type="checkbox"/> Install grating at doorways for wiping feet. <input type="checkbox"/> Modify loading systems so that transfer lines can be completely emptied, with any residual resin being contained when loading ceases. <input type="checkbox"/> Ensure equipment is secured and stored properly.
Operations	<ul style="list-style-type: none"> <input type="checkbox"/> Place portable screens underneath connection points when making and breaking all connections. <input type="checkbox"/> Secure outlet caps and seals before moving full or empty rail hopper cars and trucks. <input type="checkbox"/> Implement handling procedures that minimize punctures and pellet spillage. <input type="checkbox"/> Inspect pellet packaging before offloading. <input type="checkbox"/> Repair punctured bags immediately.
Good housekeeping	<ul style="list-style-type: none"> <input type="checkbox"/> Implement daily and routine housekeeping and spill response procedures. <input type="checkbox"/> Develop standard operating procedures for containing and cleaning up spills. <input type="checkbox"/> Conduct routine inspections for the presence of loose pellets on the facility grounds, including parking lots, drainage areas, driveways, etc.
Packaging	<ul style="list-style-type: none"> <input type="checkbox"/> Use reinforced bags and containers lined with puncture-resistant material. <input type="checkbox"/> Minimize the use of valved bags or seal valved bags immediately after filling. <input type="checkbox"/> Use sealed containers instead of break bulk packaging.
Shipping	<ul style="list-style-type: none"> <input type="checkbox"/> Use containers for cargo shipping rather than individual pallets. <input type="checkbox"/> Identify the person responsible for sealing the ports on rail hopper cars and bulk trucks, and document sealing. <input type="checkbox"/> Close and secure the rail hopper car valve with strong wire or aircraft cable in addition to the normal sealing mechanism. <input type="checkbox"/> Visually confirm that each compartment and tube of shipping vehicles is empty. <input type="checkbox"/> Inspect interiors of trailers and sea containers for defects that may puncture pellet packaging. Consider vandalism exposure when selecting leased track sites.

Table 2. BMPs for Potential Pollutant Sources at Rubber, Miscellaneous Plastic Products, and Miscellaneous Manufacturing Facilities (continued)

Pollutant Sources	BMPs
Shipping (continued)	<input type="checkbox"/> Avoid on-deck pellet storage. <input type="checkbox"/> Seal empty rail hopper cars and bulk trucks before returning them to shipper.
Recycling and waste disposal	<input type="checkbox"/> Store waste pellets in properly labeled containers. <input type="checkbox"/> Recycle or resell waste pellets. <input type="checkbox"/> Check broken and discarded packaging for residual pellets. <input type="checkbox"/> Inspect handling and storage procedures. <input type="checkbox"/> If an outside vendor is used for waste removal, train in material handling, spill prevention and control.

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 see www.epa.gov/npdes/stormwater/msgp.

A list of names and telephone numbers for each EPA Region or state NPDES permitting authority can be found at www.epa.gov/npdes/stormwatercontacts.

References

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

- ◆ City of Phoenix, Arizona, Street Transportation Department, Stormwater Management Section. 2004. Prevent Storm Water Contamination Best Management Practices for Section Y - Rubber, Plastic Products & Miscellaneous Manufacturing. Major Groups 30 and 39 (Except 3910-19). <http://phoenix.gov/STREETS/rubplas.pdf>
- ◆ U.S. EPA, Office of Air and Water Programs - Effluent Guidelines Division. 1974. Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Tire and Synthetic Segment of the Rubber Processing Point Source Category. EPA-820-B-80-100.
- ◆ 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/

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- ◆ U.S. EPA, Office of Wastewater Management. *NPDES Stormwater Multi-Sector General Permit for Industrial Activities (MSGP)*.
www.epa.gov/npdes/stormwater/msgp