

INDUSTRIAL STORMWATER

FACT SHEET SERIES

Sector AA: Fabricated Metal Products Manufacturing Facilities



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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 the fabricated metal products manufacturing facilities as defined by Standard Industrial Classification (SIC) Major Groups 34 and 39. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- ◆ Fabricated metal products, except machinery and transportation equipment and cutting (SIC 3411-3499)
- ◆ Jewelry, silverware, and plated ware (SIC 3911-3915)
- ◆ Coating, engraving, and allied services (SIC 3479)

This fact sheet does not cover discharges from establishments not requiring permit coverage including those engaged in manufacturing and rolling of ferrous and nonferrous metals, forgings or stampings, electrolytic, or other processes for refining copper from ore.

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 facility's activities?

Pollutants conveyed in stormwater discharges from facilities involved with the manufacturing of fabricated metal 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

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at fabricated metal products manufacturing facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Fabricated Metal Products Manufacturing Facilities

Activity	Pollutant Source	Pollutant
Tool workpiece interface/shaving, chipping	Used metal working fluid with fine metal dust	Total suspended solids (TSS), chemical oxygen demand (COD), oil and grease
Parts/tools cleaning, sand blasting, metal surface cleaning, removal of applied chemicals	Solvent cleaners, abrasive cleaners, alkaline cleaners, acid cleaners, rinse waters	Spent solvents, TSS, acid/alkaline waste, oil
	Solvents, cold and hot dips, cleaning parts, degreasing	Acid, coolants, clean composition, degreaser, mineral spirits, pickle liquor, spent caustic, sludge.
Making structural components	Cuttings, scraps, turnings, fines	Metals
Painting operations	Paint and paint thinner spills, sanding, spray painting	Paints, spent solvents, heavy metals, TSS
	Empty containers, paint application wastes, spills, over spraying, storage areas	Paint wastes, thinner, varnish, heavy metals, spent chlorinated solvents
Cleanup of spills and drips	Used absorbent materials	TSS, spilled material
Transportation or storage of materials	Wood dunnage/pallets	BOD, TSS
Metal preparation	Grinding, welding, sawing, shaving, brazing, bending, cutting, etching	Steel scraps, aluminum scraps, brass, copper, dust, chips and borings, steel scale, Teflon, manganese.
Surface treatment	Finishing, plating, case hardening, chemical coating, coating, polishing, rinsing, abrasive cleaning, electroplating	Acid, aromatic solvent, corn cob, lubricants, sand, oil, pH, nitrates, nitrites, carbon, phosphates, borates, nitrogen, oily sludge, nickel, chromium, hydrofluoric acid.
Galvanizing	Spills, leaks, transporting materials	Acid solution, phosphates, zinc chromate, hexavalent chromium, nickel.
Heavy equipment use and storage	Leaking fluids, fluids replacement, washing equipment, use on poor surface area, soil disturbance	Oil, heavy metals, organics, fuels, TSS, hydraulic oil, diesel fuel, gasoline
Equipment/vehicle maintenance	Leaking fluids, fluids replacement, washing equipment	Oil, grease
	Vehicle fueling	Gas/diesel fuel, fuel additives

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Fabricated Metal Products Manufacturing Facilities (continued)

Activity	Pollutant Source	Pollutant
Storage of uncoated structural steel	Stored on porous pavement	Aluminum, lead, zinc, copper, iron, oxide, oil, nickel, manganese.
Storing galvanized steel directly on the ground	Galvanizing material drippage or leaching	Metals: zinc, nickel, cadmium, chromium.
Vehicle/equipment traffic	Soil disturbance and erosion	TSS from erosion, hydraulic fluid loss/spillage
Cleaning equipment/vehicles	Chemicals disposed improperly, spillage	Oil, grease, surfactants, chromates, acid, hydroxide, nitric acid

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 fabricated metal products 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.

Measures to control pollutants at metal fabricating operations should focus primarily on the storage of waste and raw materials, chemical storage areas, and equipment storage and service areas. Since most of the operations occur indoors, procedures are often only needed to minimize exposure of pollutants to stormwater runoff in association with the handling and transporting of materials. Of primary importance is the control of activities and use of chemicals that have been identified as potential sources of pollutants.

The most effective discharge controls for these facilities are BMPs targeted toward source control. This includes utilizing inside storage as much as possible and implementing programs for recycling scrap materials. Many of these practices require the use of covers, indoor storage, and indoor operations. Some structural measures would provide an additional control to reduce the potential for exposure at these facilities. These include source reduction diversion dikes, grass swales, vegetative covers, and sedimentation ponds. Preventive controls are typically low in cost and relatively easy to implement, as the majority of the facilities in this industry already employ these practices. In addition, directing flows to privately owned treatment works or retention ponds will be the most effective measure.

The industry also must give consideration to the non-stormwater discharges associated with improper disposal of materials from the indoor processes due to the extensive use of chemicals in the preparation and finishing phases of metal preparation and fabrication. The industry also involves grinding, welding, and sanding operations that will require special consideration to control potential pollutants that could accumulate and be subject to stormwater runoff.

Most of the measures commonly implemented to reduce pollutants in stormwater associated with the fabricated metals industry are generally uncomplicated practices. Some of the practices may be predicated on the size of the operation, the types of processes that are exercised from a full-scale plant operation to a more specialized company that conducts only a portion of the operations usually found in the fabricating industry.

All fabricated metal products facilities should implement BMPs in the following areas of the site:

- ◆ Metal fabricating areas
- ◆ Storage areas for raw metal
- ◆ Receiving, unloading, and loading areas
- ◆ Heavy equipment storage
- ◆ Metal working fluid areas
- ◆ Unprotected liquid storage tanks
- ◆ Chemical cleaners and rinse water
- ◆ Raw steel collection areas
- ◆ Paints and painting equipment
- ◆ Vehicle and equipment maintenance areas
- ◆ Hazardous waste storage areas
- ◆ Transporting chemicals to storage areas
- ◆ Finished products (galvanized)
- ◆ Wooden pallets and empty drums

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 fabricated metal product 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 fabricated metal product 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 Fabricated Metal Products Manufacturing Facilities

Pollutant Source	BMPs
Metal fabricating areas	<ul style="list-style-type: none"> <input type="checkbox"/> Sweep fabrication areas frequently to avoid heavy accumulation of steel ingots, fines, and scrap. <input type="checkbox"/> Absorb dust through a vacuum system to avoid accumulation on roof tops and onto the ground. <input type="checkbox"/> Sweep all accessible paved areas on a regular basis. <input type="checkbox"/> Maintain floors in a clean and dry condition using dry cleanup techniques. <input type="checkbox"/> Remove waste and dispose of regularly. <input type="checkbox"/> Train employees on good housekeeping measures.
Raw material storage areas	<ul style="list-style-type: none"> <input type="checkbox"/> Store materials in a covered area whenever possible. <input type="checkbox"/> Organize storage areas so there is easy access in case of a spill. <input type="checkbox"/> Label stored materials to aid in identifying spill contents. <input type="checkbox"/> Minimize the amount of material stored to avoid corrosive activity from long-term exposed materials. <input type="checkbox"/> Dike or berm the area to prevent or minimize run-on. <input type="checkbox"/> Keep area neat and orderly; stack neatly on pallets or off the ground. <input type="checkbox"/> Cover exposed materials.

Table 2. BMPs for Potential Pollutant Sources at Fabricated Metal Products Manufacturing Facilities (continued)

Pollutant Source	BMPs
Receiving, unloading, and loading areas	<ul style="list-style-type: none"> <input type="checkbox"/> Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters. <input type="checkbox"/> Close storm drains during loading/unloading activities in surrounding areas.
Receiving, unloading, and loading areas (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Use a dead-end sump where materials could be directed. <input type="checkbox"/> Inspect containers for leaks or damage prior to loading/unloading. <input type="checkbox"/> Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks. <input type="checkbox"/> Provide diversion berms, dikes or grassed swales around the perimeter of the area to limit run-on. <input type="checkbox"/> Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials. <input type="checkbox"/> Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment. <input type="checkbox"/> Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks <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"/> 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. <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.
Heavy equipment storage areas	<ul style="list-style-type: none"> <input type="checkbox"/> Vehicles should be stored indoors when possible. <input type="checkbox"/> If stored outdoors, use gravel, concrete, or other porous surfaces to minimize or prevent heavy equipment from creating ditches or other conveyances that would cause sedimentation runoff and increase TSS loadings. <input type="checkbox"/> Provide covering for outdoor storage areas. <input type="checkbox"/> Divert drainage to the grass swales, filter strips, retention ponds, or holding tanks. <input type="checkbox"/> Direct drainage systems away from high traffic areas into collection systems. <input type="checkbox"/> Clean equipment prior to storage.
Metal working fluid areas	<ul style="list-style-type: none"> <input type="checkbox"/> Store used metal working fluid with fine metal dust indoors. <input type="checkbox"/> Use tight sealing lids on all fluid containers. <input type="checkbox"/> Use straw, clay absorbents, sawdust, or synthetic absorbents to confine or contain any spills. <input type="checkbox"/> Establish recycling programs for used fluids when possible. <input type="checkbox"/> Conduct daily inspections of each machine to identify problems and trends and reduce fluid waste.

Table 2. BMPs for Potential Pollutant Sources at Fabricated Metal Products Manufacturing Facilities (continued)

Pollutant Source	BMPs
Metal working fluid areas (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Use pumps, spigots, and funnels when transferring metal working fluid to reduce the amount of lost fluid and the risk of spilling fluids. <input type="checkbox"/> Fix leaking seals and gadgets to prevent leaks.
Unprotected liquid storage tanks	<ul style="list-style-type: none"> <input type="checkbox"/> If area is uncovered, connect sump outlet to sanitary sewer (if possible) or an oil/water separator, catch basin filter, etc. If connecting to a sanitary sewer check with the system operator to ensure that the discharge is acceptable. If implementing separator or filter technologies ensure that regular inspections and maintenance procedures are in place. <input type="checkbox"/> Develop and implement spill plans. <input type="checkbox"/> Train employees in spill prevention and control. <p data-bbox="472 688 691 716">Above ground tanks</p> <ul style="list-style-type: none"> <input type="checkbox"/> Provide secondary containment, such as dikes, with a height sufficient to contain a spill (the greater of 10 percent of the total enclosed tank volume or 110 percent of the volume contained in the largest tank). <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"/> Use double-walled tanks. <input type="checkbox"/> Keep liquid transfer nozzles/hoses in secondary containment area. <input type="checkbox"/> Include overflow protection. <p data-bbox="472 1058 748 1085">Portable containers/drums</p> <ul style="list-style-type: none"> <input type="checkbox"/> Store drums indoors when possible. <input type="checkbox"/> Store drums, including empty or used drums, in secondary containment with a roof or cover (including temporary cover such as a tarp that prevents contact with precipitation). <input type="checkbox"/> Provide secondary containment, such as dikes or portable containers, with a height sufficient to contain a spill (the greater of 10 percent of the total enclosed tank volume or 110 percent of the volume contained in the largest tank). <input type="checkbox"/> Clearly label drum with its contents.
Chemical cleaners and rinse water	<ul style="list-style-type: none"> <input type="checkbox"/> Use drip pans and other spill devices to collect spills or solvents and other liquid cleaners. <input type="checkbox"/> Recycle wastewater. <input type="checkbox"/> Store recyclable waste indoors or in covered containers. <input type="checkbox"/> Substitute nontoxic cleaning agents when possible.
Raw steel collection areas	<ul style="list-style-type: none"> <input type="checkbox"/> Keep collection areas clean. <input type="checkbox"/> Keep materials in a covered storage bin or inside until pickup. <input type="checkbox"/> Collect scrap metals, fines, iron dust and store under cover and recycle.
Paints and painting equipment	<ul style="list-style-type: none"> <input type="checkbox"/> Paint and sand indoors when possible. <input type="checkbox"/> If done outside, enclose sanding and painting areas with tarps or plastic sheeting. <input type="checkbox"/> Avoid painting and sandblasting operations outdoors in windy weather conditions. <input type="checkbox"/> Use tarps, drip pans, or other spill collection devices to contain and collect spills. <input type="checkbox"/> Use effective spray equipment that delivers more paint to the target and less overspray. <input type="checkbox"/> Mix paints and solvents in designated areas away from drains, ditches, piers, and surface waters, preferably indoors or under cover.

Table 2. BMPs for Potential Pollutant Sources at Fabricated Metal Products Manufacturing Facilities (continued)

Pollutant Source	BMPs
Paints and painting equipment (continued)	<ul style="list-style-type: none"> <input type="checkbox"/> Have absorbent and other cleanup items readily available for immediate cleanup of spills. <input type="checkbox"/> Allow empty paint cans to dry before disposal. <input type="checkbox"/> Keep paint and paint thinner away from traffic areas to avoid spills. <input type="checkbox"/> Recycle paint, paint thinner, and solvents. <input type="checkbox"/> Establish and implement effective inventory control to reduce paint waste, including tracking date received and expiration dates. <input type="checkbox"/> Use water-based paints when possible. <input type="checkbox"/> Train employees to use the spray equipment properly.
Metal chip storage areas	<ul style="list-style-type: none"> <input type="checkbox"/> Store waste chips indoors, if possible. <input type="checkbox"/> Cover outdoors chip storage containers. <input type="checkbox"/> Place chip storage containers on asphalt or concrete surfaces. <input type="checkbox"/> Be sure fluid has completely drained before placing chips in storage containers. <input type="checkbox"/> Continue draining fluids, if necessary. This can be done as simply as tilting containers towards one end and allowing excess fluids to drain through a hole into a residue container. <input type="checkbox"/> Inspect area for leaks or spills. <input type="checkbox"/> Monitor and maintain containers on a regular basis. Empty storage or residue containers and do not allow them to overflow.
Hazardous waste storage areas	<ul style="list-style-type: none"> <input type="checkbox"/> Cover and/or enclose storage areas (including temporary cover such as a tarp that prevents contact with precipitation). <input type="checkbox"/> All hazardous waste must be stored in sealed drums. <input type="checkbox"/> Establish centralized satellite drum-storage areas. <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"/> Check for corrosion and leakage of storage containers. <input type="checkbox"/> Label materials clearly. <input type="checkbox"/> Properly dispose of outdated materials. <input type="checkbox"/> Dike or use grass swales, ditches, or other containment to prevent run-on or runoff in case of spills. <input type="checkbox"/> Post notices prohibiting dumping of materials into storm drains. <input type="checkbox"/> Store containers, drums, and bags away from high traffic routes and surface waters. <input type="checkbox"/> Do not stack containers in such a way as to cause leaks or damage to the containers. <input type="checkbox"/> Use pallets to store containers when possible. <input type="checkbox"/> Store materials with adequate space for traffic without disturbing drums. <input type="checkbox"/> Maintain low inventory level of chemicals based on need. <input type="checkbox"/> Train employees in spill prevention and control and proper hazardous waste management

Table 2. BMPs for Potential Pollutant Sources at Fabricated Metal Products Manufacturing Facilities (continued)

Pollutant Source	BMPs
Equipment/vehicle maintenance areas	<p>Good Housekeeping</p> <ul style="list-style-type: none"> <input type="checkbox"/> Eliminate floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. <input type="checkbox"/> Prevent spills and drips. <input type="checkbox"/> Use drip plans, drain boards, and drying racks to direct drips back into a sink or fluid holding tank for reuse. <input type="checkbox"/> Drain all parts of fluids prior to disposal. Oil filters can be crushed and recycled. <input type="checkbox"/> Promptly transfer used fluids to the proper container; do not leave full drip pans or other open containers around the shop. Empty and clean drip pans and containers. <input type="checkbox"/> Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. <input type="checkbox"/> Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). <input type="checkbox"/> Maintain an organized inventory of materials. <input type="checkbox"/> Eliminate or reduce the number or amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. <input type="checkbox"/> Clean up leaks, drips, and other spills without using large amounts of water. <input type="checkbox"/> Prohibit the practice of hosing down an area where the practice would result in the exposure of pollutants to stormwater. <input type="checkbox"/> Clean without using liquid cleaners whenever possible. <input type="checkbox"/> Perform all cleaning at a centralized station so the solvents stay in one area. <input type="checkbox"/> If parts are dipped in liquid, remove them slowly to avoid spills. <input type="checkbox"/> Do not pour liquid waste down floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections. <p>Minimizing Exposure</p> <ul style="list-style-type: none"> <input type="checkbox"/> Perform all cleaning operations indoors or under covering when possible. Conduct the cleaning operations in an area with a concrete floor with no floor drainage other than to sanitary sewers or treatment facilities. <input type="checkbox"/> If operations are uncovered, perform them on concrete pad that is impervious and contained. <input type="checkbox"/> Park vehicles and equipment indoors or under a roof whenever possible and maintain proper control of oil leaks/spills <input type="checkbox"/> Inspect vehicles closely for leaks and use pans to collect fluid when leaks occur. <p>Management of Runoff</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use berms, curbs, grassed swales or similar means to ensure that stormwater runoff from other parts of the facility does not flow over the maintenance area. <input type="checkbox"/> Collect the stormwater runoff from the cleaning area and providing treatment or recycling. Discharge vehicle wash or rinse water to the sanitary sewer (if allowed by sewer authority), wastewater treatment, a land application site, or recycled on-site. DO NOT discharge washwater to a storm drain or to surface water. <p>Inspections and Training</p> <ul style="list-style-type: none"> <input type="checkbox"/> Inspect the maintenance area regularly to insure BMPs are implemented. <input type="checkbox"/> Train employees on proper waste control and disposal procedures.

Table 2. BMPs for Potential Pollutant Sources at Fabricated Metal Products Manufacturing Facilities (continued)

Pollutant Source	BMPs
Vehicle fueling	<ul style="list-style-type: none"> <input type="checkbox"/> Conduct fueling operations (including the transfer of fuel from tank trucks) on an impervious or contained pad or under a roof or canopy where possible. Covering should extend beyond spill containment pad to prevent rain from entering. <input type="checkbox"/> When fueling in uncovered area, use a concrete pad (not asphalt - not chemically resistant to the fuels being handled). <input type="checkbox"/> Use drip pans where leaks or spills of fuel can occur and where making and breaking hose connections. <input type="checkbox"/> Use fueling hoses with check valves to prevent hose drainage after filling. <input type="checkbox"/> Use spill and overflow protection devices. <input type="checkbox"/> Cleanup spills and leaks immediately. <input type="checkbox"/> Minimize/eliminate run-on onto fueling areas. <input type="checkbox"/> Collect stormwater runoff and provide treatment or recycling. <input type="checkbox"/> Use dry cleanup methods for fuel area rather than hosing the fuel area down. Sweep up absorbents as soon as spilled substances have been absorbed. <input type="checkbox"/> Regularly inspect and perform preventive maintenance on storage tanks to detect potential leaks before they occur. <input type="checkbox"/> Inspect the fueling area for leaks and spills. <input type="checkbox"/> Provide curbing or posts around fuel pumps to prevent collisions from vehicles. <input type="checkbox"/> Discourage "topping off" of fuel tanks. <input type="checkbox"/> Train personnel on vehicle fueling BMPs.
Vehicle and equipment cleaning	<ul style="list-style-type: none"> <input type="checkbox"/> Designate vehicle and equipment wash areas that drain to recycle ponds or process wastewater treatment systems. <input type="checkbox"/> Conduct vehicle washing operation indoors or in a covered area. <input type="checkbox"/> Clean washwater residue from portions of the site that drain to stormwater discharges. <input type="checkbox"/> Train employees on proper procedure for washing vehicles and equipment including a discussion of the appropriate location for vehicle washing.
Transporting chemicals to storage areas	<ul style="list-style-type: none"> <input type="checkbox"/> Store drums as close to operational building as possible. <input type="checkbox"/> Label all drums with proper warning and handling instructions. <input type="checkbox"/> Forklift operators should be trained to avoid puncturing drums. <input type="checkbox"/> Provide transfer of PFAS containing materials and their proper collection and disposal methods in the event of a release from their container.
Finished products (galvanized) storage	<ul style="list-style-type: none"> <input type="checkbox"/> Store finished products indoors, on a wooden pallets concrete pad, gravel surface, or other impervious surface.
Wooden pallets and empty drums	<ul style="list-style-type: none"> <input type="checkbox"/> Clean contaminated wooden pallets. <input type="checkbox"/> Cover empty drums. <input type="checkbox"/> Cover contaminated wooden pallets. <input type="checkbox"/> Store drums and pallets indoors. <input type="checkbox"/> Clean empty drums. <input type="checkbox"/> Store pallets and drums on concrete pads.

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 present Multi-Sector General Permits and from the following sources:

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