Industrial Stormwater

Fact Sheet Series

Sector N: Scrap Recycling and Waste Recycling Facilities

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What is the NPDES stormwater 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 various industries including scrap recycling and waste recycling facilities as defined by Standard Industrial Classification (SIC) Major Group Code 50 (5093). Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- *Scrap and waste recycling facilities (non-source separated, non-liquid recyclable materials)* engaged in processing, reclaiming, and wholesale distribution of scrap and waste materials such as ferrous and nonferrous metals, paper, plastic, cardboard, glass, and animal hides.
- *Waste recycling facilities (liquid recyclable materials)* engaged in reclaiming and recycling liquid wastes such as used oil, antifreeze, mineral spirits, and industrial solvents.
- *Recycling facilities* that only receive source-separated recyclable materials primarily from non-industrial and residential sources (i.e., common consumer products including paper, newspaper, glass, cardboard, plastic containers, aluminum and tin cans); including recycling facilities commonly referred to as material recovery facilities (MRF).

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 scrap recycling and waste recycling facilities 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

Each scrap recycling and waste recycling facility is unique in regards to sources, type, and volume of contaminated stormwater discharges. Sources of pollutants other than stormwater, such as illicit connections, spills, and other improperly dumped materials, may increase pollutant loadings in discharges. Each of the three types of facilities included in the scrap recycling and waste recycling facilities group are dissimilar from one another in the operations and types of materials handled. As a result, there is variation in pollutants for which BMPs may be necessary to address.

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at scrap recycling and waste recycling facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Scrap Recycling and Waste Recycling Facilities

Activity	Pollutant Source	Pollutant
Scrap and Waste Recycling Facilities (non-source separated, non-liquid recyclable materials)		
Stockpiling and storage of materials (including loading and unloading)	Leaking of various fluids from used automotive engines, radiators, brake fluid reservoirs, transmission housings, other vehicle parts, and lead-acid from batteries	PCBs, oil and grease, lubricants, paint pigments or additives, heavy metals, ionizing radioactive isotopes, transmission and brake fluids, fuel, battery acid, lead acid, antifreeze, benzene, chemical residue, heating oil, petroleum products, solvents, ionizing radioactive isotopes, infectious/bacterial contamination, asbestos, metals, total Kjeldahl nitrogen (TKN), battery acid, oily wastes, chemical residue
	Deterioration/corrosion of materials	
Material processing: Air pollution equipment (including incinerators, furnaces, wet scrubbers, filter houses, and bag houses)	Normal equipment operations that include the collection and disposal of filter bag material and ash, process wastewater from scrubbers, accumulation of particulate matter around leaking joint connections, malfunctioning pumps and motors (e.g., leaking gaskets, seals or pipe connections, leaking oil-filled transformer casings)	Hydraulic fluids, oils, fuels, grease and other lubricants, accumulated particulate matter, chemical additives, and PCBs from oil-filled electrical equipment.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	Pollutant Source	Pollutant
Material processing: Combustion engines	Spills and/or leaks from fuel tanks, spills/leaks from oil/hydraulic fuel reservoirs, faulty/leaking hose connections, worn gaskets, leaking transmissions, crankcases, and brake systems (if applicable), leaking battery casings and/or corroded terminals	Accumulated particulate matter, oil/ lubricants, gas/diesel fuel, fuel additives, antifreeze (ethylene glycol), battery acid, and products of incomplete combustion
Material processing: Material handling systems (forklifts, cranes, and conveyors)	Spills and leaks from fuel tanks, hydraulic and oil reservoirs due to malfunction parts (e.g., worn gaskets and parts, leaking hose connections, and faulty seals).	Hydraulic fluids, oils, fuels and fuel additives, grease and other lubricants, accumulated particulate matter, chemical additives, mercury, lead, battery acid
	Damaged or faulty electrical switches (mercury filled).	
	Damaged or leaking battery casings, including exposed corroded battery terminals.	
	Damaged or worn bearing housings	
Material processing: Stationary scrap processing facilities (balers, briquetters, shredders, shearers, compactors, engine block/ cast iron breakers, wire chopper, turnings crusher)	Leaks from hydraulic reservoirs, hose and fitting connections, worn gaskets, spills or leaks from fuel tanks, particulates/residue from scrap processing, malfunctioning pumps and motors (e.g., leaking gaskets, seals or pipe connections, leaking oil-filled transformer casings)	Heavy metals (e.g., zinc, copper, lead, cadmium, chromium) and hydraulic fluids, PCBs
Material processing: Hydraulic equipment and systems, balers/briquetter, shredders, shearers, compactors, engine block/ cast iron breaker, wire chopper, turnings crusher	Particulate/residue from material processing, spills and/or leaks from fuel tanks, spills/leaks from oil/hydraulic fuel reservoirs, faulty/leaking hose connections/fittings, leaking gaskets	Hydraulic fluids/oils, lubricants, particulate matter from combustion engines, PCBs (oil-filled electrical equipment components), heavy metals (nonferrous, ferrous)
Material processing: Electrical control systems (transformers, electrical switch gear, motor starters)	Oil leakage from transformers, leakage from mercury float switches, faulty detection devices	PCBs, mercury (float switches), ionizing radioactive material (fire/smoke detection systems)
Material processing: Torch cutting	Residual/accumulated particulates	Heavy metal fragments, fines
Material handling systems	Spills and/or leaks from fuel tanks, spills/leaks from oil/hydraulic fuel reservoirs, faulty/leaking hose connections/fittings, leaking gaskets	Accumulated particulate matter (ferrous and nonferrous metals, plastics, rubber, other), oil/lubricants, PCBs (electrical equipment), mercury (electrical controls), lead/battery acids
Vehicle maintenance	Parts cleaning, waste disposal of rags, oil filters, air filters, batteries, hydraulic fluids, transmission fluids, brake fluids, coolants, lubricants, degreasers, spent solvents	Gas/diesel fuel, fuel additives, oil/ lubricants, heavy metals, brake fluids, transmission fluids, chlorinated solvents, arsenic
Vehicle fueling	Spills and leaks during fuel transfer, spills due to "topping off'' tanks, runoff from fueling areas, washdown of fueling areas, leaking storage tanks, spills of oils, brake fluids, transmission fluids, engine coolants	Gas/diesel fuel, fuel additives, oil, lubricants, heavy metals

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	Pollutant Source	Pollutant
Vehicle and equipment cleaning and washing	Washing and steam cleaning	Solvent cleaners, oil/lubricants/additives, antifreeze (ethylene glycol)
Waste Recycling Facilities (liquid recyclable materials)		
Drum/individual container storage and handling	Leaks or spills due to faulty container/ drum integrity (e.g., leaking seals or ports). Container materials incompatible with waste material. Improper stacking and storage of containers	Mineral spirits, industrial solvents, immersion cleaners, dry cleaner, solvents, paint solvents, spent antifreeze
Return and fill stations	Leaks, spills, or overflows from tanker truck transfer of wastes and hose drainage. Leaking pipes, valves, pumps, worn or deteriorated gaskets or seals	Mineral spirits, industrial solvents, immersion cleaners, dry cleaner, solvents, paint solvents, spent antifreeze
Storage tank operations	Overfill of storage tanks, leaking pipes, valves, worn or deteriorated pumps seals. Leaking underground storage tanks.	Mineral spirits, industrial solvents, immersion cleaners, dry cleaner, solvents, paint solvents, spent antifreeze
Material handling equipment	Leaking fuel lines, worn gaskets, leaking hydraulic lines and connections	Fuel, hydraulic fluid, oil and grease
Vehicle and equipment maintenance (if applicable)	Replacement of fluids such as transmission and brake fluids, antifreeze, oil and other lubricants, washdown of maintenance areas, dumping fluids down floor drains connected to storm sewer system, outside storage of fluids and oily rags and waste material	Oil and grease, fuel, accumulated particulate matter, antifreeze
Vehicle or equipment washing (if applicable)	Wash water or steam cleaning	Oil, detergents, chlorinated solvents, suspended solids and accumulated particulate matter
Recycling Facilities		
Unknowing acceptance of nonrecyclable materials and/or small quantities of household hazardous wastes	Inbound recyclable materials	Dependent on material
Outdoor material storage	Deterioration of wastepaper and unprocessed aluminum beverage containers	Biochemical oxygen demand (BOD)
Processing and storage	Illicit connections or improper dumping to floor drains discharging to a storm sewer system Washing down tipping floor areas	Dependent on material
Vehicle maintenance	Replacement of fluids such as transmission and brake fluids, antifreeze, oil and other lubricants, washdown of maintenance areas, dumping fluids down floor drains connected to storm sewer system, outside storage of fluids and oily rags and waste material	Oil and grease, gas/diesel fuel, accumulated particulate matter, antifreeze (ethylene glycol)

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 scrap recycling and waste recycling 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 scrap recycling and waste recycling 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 scrap recycling and waste recycling 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 Scrap Recycling and Waste Recycling Facilities

Activity	BMPs
Scrap and Waste Recycling Facilities (non-source separated, non-liquid recyclable materials)	
Inbound recyclable and waste material control	❑ Provide information/education to suppliers of scrap and recyclable waste materials on draining and properly disposing of residual fluids (e.g., from vehicles and equipment engines, radiators and transmissions, oil filled transformers, and individual containers or drums), prior to delivery to your facility. ❑ Create a written list of materials that will not be accepted at the facility and materials that will be accepted, but require special handling procedures. ❑ Train employees engaged in the inspection and acceptance of inbound recyclable materials. ❑ Inspect incoming materials for items on the prohibited materials/ special handling list. Have truck drivers picking up loads offsite conduct preliminary inspections for items on the list before hauling. ❑ Check incoming scrap materials for potential fluid contents and batteries. ❑ Drain all fluids from vehicles upon arrival at the site. Segregate the fluids and properly store or dispose of them. Drain fluids only in designated area over impervious surfaces or drip pans. Contain the area to prevent stormwater run-on and runoff. Cover area with roofs or tarps. ❑ Keep waste streams separate (e.g., waste oil and mineral spirits). ❑ Store liquid wastes, including used oil, in materially compatible and non-leaking containers and disposed or recycled in accordance with RCRA. Nonhazardous substances that are contaminated with a hazardous substance are considered a hazardous substance. ❑ Recycle antifreeze, gasoline, used oil, mineral spirits, and solvents.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Inbound recyclable and waste material control (continued)	❑ Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. ❑ Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). ❑ Drain oil filters before disposal or recycling. ❑ Store cracked batteries in a nonleaking secondary container. ❑ 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. ❑ Do not pour liquid waste down floor drains, sinks, or outdoor storm drain inlets ❑ Plug floor drains that are connected to the storm or sanitary sewer. If necessary, install a sump that is pumped regularly. ❑ Inspect the maintenance area regularly for proper implementation of control measures. ❑ Filter stormwater discharges with devices such as oil/water separators. ❑ Train employees on proper waste control and disposal procedures. ❑ Establish and implement procedures to educate auto scrap providers of need to remove mercury switches from hood and trunk lighting units and anti-lock break system units.
Outside scrap material storage: (liquids)	❑ Use drip pans under all vehicles and equipment waiting for processing. ❑ Store batteries on impervious surfaces. Curb, dike, or berm this area. ❑ Confine storage to designated areas. ❑ Cover all storage areas with a permanent (e.g., roofs) or temporary cover (e.g., canvas tarps). ❑ Install diversion devices such as curbing, berms, containment trenches, culverts, or dikes around storage areas. ❑ Install oil/water separators, sumps, and dry absorbents for areas where potential sources pf residual fluids are stockpiled (e.g., automobile engine storage areas). ❑ Inspect the storage yard for filled drip pans and other problems regularly. ❑ Train employees on procedures for storage and inspection items.
Scrap material storage: (bulk solid materials)	❑ Minimize runoff from coming into areas where significant materials are stored (e.g., diversion structures such as curbing, berms, containment trenches, surface grading, and elevated concrete pads) or other equivalent measure. ❑ Use adsorbents or collect leaks or spills of oil, fuel, transmission, and brake fluids (e.g., dry absorbent, drip pans). ❑ Locate spill pans under stored vehicles. ❑ Install media filters such as catch basin and sand filters. ❑ Install oil/water separator in storage areas with vehicle transmissions and engines. ❑ Provide nonrecyclable waste storage bins and containers. ❑ Conduct periodic inspections. Conduct preventative maintenance as necessary. ❑ Provide equipment operator training to minimize damage to controls (e.g., curbing and berms).

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Other storage: (lightweight materials)	❑ Maintain good integrity of all storage containers. ❑ Install safeguards (such as diking or berming) against accidental releases. ❑ Inspect storage tanks to detect potential leaks and perform preventive maintenance. ❑ Inspect piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks. ❑ Train employees on proper filling and transfer procedures.
Scrap processing operations	❑ Provide containment bins or equivalent for shredded material, especially lightweight materials such as fluff (preferably at the discharge of these materials from the air classification system). ❑ Provide cover over hydraulic equipment and combustion engines. Provide dry-cleanup materials (e.g., dry-adsorbents, drip pans, etc.) to prevent contact of hydraulic fluids, oils, fuels, etc., with stormwater runoff. ❑ Site process equipment on elevated concrete pads or provide runoff diversion structures around process equipment, berms, containment trenches surface grading, or other equivalent measure. Discharge runoff from within bermed areas to a sump, oil/water separator, media filter, or discharge to sanitary sewer. ❑ Stabilize high traffic areas (e.g., concrete pads, gravel, and pavement around processing equipment) where practicable. ❑ Provide alarm, pump shutoff, or sufficient containment for hydraulic reservoirs in the event of a line break. ❑ Provide site gages or overfill protection devices for all liquid and fuel storage reservoirs and tanks. ❑ Schedule frequent cleaning of accumulated fluids and particulate residue around all scrap processing equipment. ❑ Schedule frequent inspections of equipment for spills or leakage of fluids, oil, fuel, and/ or hydraulic fluids due to malfunctioning, worn, or corroded parts or equipment. ❑ Conduct routine preventive maintenance of equipment per original manufacturer's equipment (OME) recommendations. Replace worn or malfunctioning parts. ❑ Conduct periodic maintenance and clean out of all sumps, oil/water separators, and/or media filters. Dispose of residual waste materials properly (e.g., according to RCRA). ❑ Install retention/detention ponds or basins, sediment traps, vegetated swales or strips for pollutant settling/filtration. ❑ Establish spill prevention and response procedures, including employee training. ❑ Provide training to equipment operators on how to minimize exposure of runoff to scrap processing areas.
Scrap lead acid battery program	❑ Store batteries indoors on an impervious surface. Raise batteries off the floor with pallets or store in covered, leak-proof containers. ❑ Separate all scrap batteries from other scrap materials. ❑ Establish procedures for the collection, storage, handling, and disposition of cracked or broken batteries in accordance with applicable Federal regulations (e.g., RCRA). ❑ Establish special handling procedures for cracked or broken batteries. Neutralize acid leaks with sodium carbonate, soda ash, or other absorbent materials.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Scrap lead acid battery program (continued)	❑ Establish inspection and acceptance procedures for scrap lead-acid batteries. Provide supplier training on acceptance practices for scrap batteries. ❑ Provide employee training on the safe handling, storage, and disposition of scrap batteries.
Supplies for Process Equipment	❑ Locate storage drums containing liquids, including oils and lubricants indoors. Alternatively, site palletized drums and containers on an impervious surface and provide sufficient containment around the materials. Provide sumps and/or oil/water separators, if necessary. ❑ Conduct periodic inspections of containment areas and containers/drums for corrosion. ❑ Perform preventive maintenance of BMPs, as necessary. ❑ Instruct employees on proper material handling and storage procedures.
Vehicle and equipment maintenance	Good Housekeeping ❑ Plug floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. ❑ Maintain an organized inventory of materials used in the maintenance shop. ❑ Use drip plans, drain boards, and drying racks to direct drips back into a sink or fluid holding tank for re-use. ❑ Drain all parts of fluids prior to disposal. Oil filters can be crushed and recycled. ❑ 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. ❑ Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. ❑ Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). ❑ Maintain an organized inventory of materials. ❑ Eliminate or reduce the number or amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. ❑ Clean up leaks, drips, and other spills without using large amounts of water. ❑ Prohibit the practice of hosing down an area where the practice would result in the exposure of pollutants to stormwater. ❑ Clean without using liquid cleaners whenever possible. ❑ Do all cleaning at a centralized station so the solvents stay in one area. ❑ If parts are dipped in liquid, remove them slowly to avoid spills. ❑ Do not pour liquid waste down floor drains, sinks, outdoor storm drain inlets, other storm drains, or sewer connections. Minimizing Exposure ❑ 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. ❑ If operations are uncovered, perform them on concrete pad that is impervious and contained.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Vehicle and equipment maintenance (continued)	❑ Park vehicles and equipment indoors or under a roof whenever possible where proper control of oil leaks/spills is maintained and exposure to stormwater is prevented. ❑ Watch vehicles closely for leaks and use pans to collect fluid when leaks occur. Management of Runoff ❑ Use berms, curbs, or similar means to ensure that stormwater runoff from other parts of the facility does not flow over the maintenance area. ❑ 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 surface water. Inspections and Training ❑ Inspect the maintenance area regularly for proper implementation of control measures. ❑ Train employees on proper waste control and disposal procedures.
Vehicle fueling	❑ 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. ❑ When fueling in uncovered area, use a concrete pad (not asphalt which is not chemically resistant to the fuels being handled). ❑ Use drip pans where leaks or spills of fuel can occur and where making and breaking hose connections. ❑ Use fueling hoses with check valves to prevent hose drainage after filling. ❑ Use spill and overflow protection devices. ❑ Clean up spills and leaks immediately. ❑ Minimize/eliminate run-on onto fueling areas with diversion dikes, berms, curbing, surface grading or other equivalent measures. ❑ Collect stormwater runoff and provide treatment or recycling. ❑ Use dry cleanup methods for fuel area rather than hosing the fuel area down. ❑ Perform preventive maintenance on storage tanks to detect potential leaks before they occur. ❑ Inspect the fueling area to detect problems before they occur. ❑ Train personnel on proper fueling procedures. ❑ Provide curbing or posts around fuel pumps to prevent collisions during vehicle ingress and egress. ❑ Discourage "topping off" of fuel tanks.
Outdoor vehicle parking and storage	❑ Cover vehicle and equipment storage areas. ❑ Use drip pans under all equipment and vehicles waiting maintenance. ❑ Conduct inspections of storage and parking areas for leaks and filled drip pans. ❑ Provide employee training.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Vehicle and equipment washing	❑ Designate an area for cleaning activities. ❑ Use detergent or water-based cleaning systems in place of organic solvent degreasers. ❑ Use phosphate-free biodegradable detergents. ❑ Avoid washing parts or equipment outside. ❑ Use auto shutoff valves on washing equipment. ❑ Provide vehicle wash rack with dedicated sediment trap and oil/water separator. ❑ Install curbing, berms, or dikes around cleaning areas. ❑ Inspect cleaning area regularly. ❑ Train employees on proper washing procedures. ❑ Contain steam cleaning washwaters. Discharge to sanitary sewer in compliance with POTW pre-treatment standards, dispose via licensed waste hauler, or discharge under an applicable NPDES permit.
Vehicle and equipment painting (where applicable)	❑ Conduct sanding and painting in nonexposed areas (e.g., under cover) in accordance with OSHA standards. ❑ Minimize overspraying. ❑ Clean up accumulated particulate matter. ❑ Dispose or recycle paint, solvents, and thinner properly. ❑ Keep paint and solvents away from traffic areas. ❑ Conduct periodic inspections of paint spraying areas. ❑ Provide training on control procedures for employees.
Erosion and sediment control	❑ Minimize run-on from adjacent properties using diversion dikes, berms, or equivalent. ❑ Trap sediment at down gradient locations and outlets serving unstabilized areas. This may include filter fabric fences, gravel outlet protection, sediment traps, vegetated or riprap swales, vegetated strips, diversion structures, catch-basin filters, and retention/detention basins or equivalent. ❑ Stabilize all high traffic areas, including all vehicle entrances and exit points. Conduct periodic sweeping of all traffic areas. Conduct inspections of BMPs. ❑ Perform preventative maintenance as needed on BMPs. ❑ Provide employee training on the proper installation and maintenance of erosion and sediment controls.
Waste Recycling Facilities (liquid recyclable materials)	
Individual drum/container storage	❑ Ensure container/drums are in good condition. Store waste materials in materially compatible drums. Use containers that meet National Fire Protection Association (NFPA) guidelines. ❑ Put individual containers on pallets. Limit stack height of individual containers/drums. Provide straps, plastic wrap, or equivalent around stacked containers to provided stability. ❑ Label/mark drums. Segregate hazardous and flammable wastes. Comply with NFPA guidelines for segregation of flammable wastes. ❑ Provide adequate clearance to allow material movement and access by material handling equipment.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Individual drum/container storage (continued)	❑ Provide semipermanent or permanent cover over wastes. ❑ Establish clean up procedures, including the use of dry adsorbents, in the event of spills or leaks. Prohibit washing down of material storage areas. Disconnect or seal all floor drains from storm sewer system. ❑ Provide secondary containment, dikes, berms, containment trench, sumps, or other equivalent measure, in all storage areas. Provide proper sizing of containment with sufficient capacity for precipitation. ❑ Develop SPCC procedures for all liquid container storage areas. Ensure employees are familiar with SPCC procedures. Schedule/conduct periodic employee training.
Bulk liquid storage	❑ Use welded pipe connections versus flange connections. Inspect all flange gaskets for deterioration. ❑ Apply corrosion inhibitors to exposed metal surfaces. ❑ Provide high level alarms for storage tanks. ❑ Provide redundant piping, valves, pumps, motors, as necessary, at all pumping stations. Provide manually activated shutoff valves in the event of spill. Install visible and/or audible alarms in the event of a spill. ❑ Install manually activated drainage values, or equivalent, versus flapper-type drain values. ❑ Provide adequate security against vandalism and tampering. ❑ Provide secondary containment around all bulk storage tanks, including berms, dikes, surface impoundments, and/or equivalent. Ensure surfaces of secondary containment areas are adequately sealed to prevent leaks. ❑ Provide stationary boxes around all return and fill stations to eliminate/minimize hose drainage and minor waste transfer spills.
Waste transfer areas	❑ Provide cover over liquid waste transfer areas. ❑ Provide secondary containment or equivalent measures around all liquid waste transfer facilities. ❑ Establish cleanup procedures for minor spills including the use of dry absorbents or a wet vacuum system. ❑ Train employees on proper transfer procedures and spill response.
Vehicle and equipment maintenance (if applicable)	*See BMPS under Scrap and Waste Recycling Facilities above*
Vehicle and equipment washing (if applicable)	❑ Avoid washing parts or equipment outside. ❑ Use phosphate-free biodegradable detergents. ❑ Provide vehicle wash rack with dedicated sediment trap and oil/water separator. ❑ Use auto shut-off valves on washing equipment. ❑ Use detergent or water-based cleaning systems in place of organic solvent degreasers. ❑ Designate an area for cleaning activities. ❑ Contain steam cleaning washwaters or discharge under an applicable NPDES permit. ❑ Ensure that washwaters drain well. ❑ Inspect cleaning area regularly. ❑ Install curbing, berms, or dikes around cleaning areas. ❑ Train employees on proper washing procedures.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Recycling Facilities	
Inbound recyclable materials control	❑ Provide public education brochures to inform suppliers of recyclable materials which are acceptable and which are not. ❑ Educate curbside pick-up drivers on acceptable materials. Reject unacceptable materials at the source. ❑ Clearly marking public drop-off containers regarding which materials can be accepted. ❑ Develop procedures for handling and disposal of non-recyclable material. ❑ Implement employee training. ❑ Provide totally-enclosed drop-off containers for public.
Storage	❑ Conduct processing operations indoors. Clean up residual fluids. ❑ Schedule routine preventive maintenance on all processing equipment. ❑ Store equivalent of the average daily volume of recyclable materials indoors. ❑ Direct tipping floor washwaters to sanitary sewer system if permitted by local sanitary authority. ❑ Provide good housekeeping. ❑ Disconnect all floor drains from storm sewer system. ❑ Prohibit illicit discharges and illegal dumping to floor drains that are connected to the storm sewer.
Outdoor material storage	❑ Provide totally enclosed drop-off containers for the public. ❑ Store only processed materials (i.e., baled plastic, aluminum, and glass cullet). ❑ Provide covers over containment bins, dumpsters, and roll-off boxes. ❑ Use tarpaulins or covers over bales of wastepaper. ❑ Provide dikes and curbs around bales of recyclable wastepaper. ❑ Divert surface water runoff away from outside material storage areas. ❑ Conduct regularly scheduled sweeping of storage areas to minimize particulate buildup. ❑ Provide containment pits with sumps pumps that discharge to sanitary sewer system. Prevent discharge of residual fluids to storm sewer.
Residual non-recyclable materials	❑ Store residual non-recyclable materials in covered containers for transport to a proper disposal facility. ❑ Bale residual non-recyclable materials and cover with tarpaulin or equivalent.
Vehicle fueling	❑ Conduct fueling operations (including the transfer of gas/diesel fuel from tank trucks) on an impervious, contained pad, or under a roof or canopy where possible. Covering should extend beyond spill containment pad to prevent rain from entering. ❑ When fueling in uncovered area, use concrete pad (not asphalt which is not chemically resistant to the fuels being handled). ❑ Use drip pans where leaks or spills of gas/diesel fuel can occur and where making and breaking hose connections. ❑ Use fueling hoses with check valves to prevent hose drainage after filling. ❑ Clean up spills and leaks immediately. ❑ Minimize/eliminate run-on onto fueling areas with diversion dikes, berms, curbing, surface grading or other equivalent measures.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Vehicle fueling (continued)	❑ Collect stormwater runoff and provide treatment or recycling. ❑ Use dry cleanup methods for fuel area rather than hosing the fuel area down. ❑ Perform preventive maintenance on storage tanks to detect potential leaks before they occur. ❑ Inspect the fueling area to detect problems before they occur. ❑ Train personnel on proper fueling procedures. ❑ Provide curbing or posts around fuel pumps to prevent collisions during vehicle ingress and egress. ❑ Discourage "topping off" of gas/diesel fuel tanks.
Illicit connection to storm sewer	❑ Plug all floor drains if it is unknown whether the connection is to storm sewer or sanitary sewer systems. Alternatively, install a sump that is pumped regularly. ❑ Perform dye testing to determine if interconnections exist between sanitary water system and storm sewer system. ❑ Update facility schematics to accurately reflect all plumbing connections. ❑ Install a safeguard against vehicle washwaters and parts cleaning waters entering the storm sewer unless permitted. ❑ Maintain and inspect the integrity of all underground storage tanks, replace when necessary. ❑ Train employees on proper disposal practices for all materials. ❑ Install a safeguard against vehicle washwaters and parts cleaning waters entering the storm sewer unless permitted. ❑ Maintain and inspect the integrity of all underground storage tanks, replace when necessary. ❑ Train employees on proper disposal practices for all materials.
Equipment/vehicle maintenance	Good Housekeeping ❑ Plug floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. ❑ Use drip pans, drain boards, and drying racks to direct drips back into a sink or fluid holding tank for re-use. ❑ Drain all parts of fluids prior to disposal. Oil filters can be crushed and recycled. ❑ 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. ❑ Dispose of greasy rags, oil filters, air filters, batteries, spent coolant, and degreasers properly. ❑ Label and track the recycling of waste material (e.g., used oil, spent solvents, batteries). ❑ Maintain an organized inventory of materials. ❑ Eliminate or reduce the number and amount of hazardous materials and waste by substituting nonhazardous or less hazardous materials. ❑ Clean up leaks, drips, and other spills without using large amounts of water. Use absorbents for dry cleanup whenever possible. ❑ Prohibit the practice of hosing down an area where the practice would result in the discharge of pollutants to the stormwater collection system. ❑ Clean without using liquid cleaners whenever possible. ❑ Do all cleaning at a centralized station so the solvents stay in one area.

Table 2. BMPs for Potential Pollutant Sources at Scrap Recycling and Waste Recycling Facilities (continued)

Activity	BMPs
Equipment/vehicle maintenance (continued)	❑ If parts are dipped in liquid, remove them slowly to avoid spills. ❑ Do not pour liquid waste into floor drains, sinks, outdoor storm drain inlets, other storm drains, or sewer connections. Minimizing Exposure ❑ 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. ❑ If operations are uncovered, perform them on concrete pad that is impervious and contained. ❑ Park vehicles and equipment indoors or under a roof whenever possible and maintain proper control of oil leaks/spills. ❑ Check vehicles closely for leaks and use pans to collect fluid when leaks occur. Management of Runoff ❑ Use berms, curbs, or similar means to ensure that stormwater runoff from other parts of the facility does not flow over the maintenance area. ❑ Collect the stormwater runoff from the cleaning area and provide 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 recycle on-site. DO NOT discharge washwater to a storm drain or surface water. Inspections and Training ❑ Inspect the maintenance area regularly for proper implementation of control measures. ❑ Train employees on proper waste control and disposal procedures.
Outdoor Vehicle and Equipment Storage	❑ Inspect area for leaking engines, chipping/corroding bumpers, chipping paint, galvanized metal

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:

- King County, Natural Resources and Parks, Water and Land Resources Division. 2004. King County Stormwater Pollution Prevention Manual. **http://dnr.metrokc.gov/wlr/dss/sppm.htm**
- 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**
- U.S. EPA. The National Vehicle Mercury Switch Recovery Program. **www.epa.gov/mercury/switch.htm**
- Wisconsin Department of Natural Resources. "General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System, Recycling of Scrap and Waste Materials." **http://dnr.wi.gov/org/caer/cea/assistance/scrap/stormwater/scrap/permit.pdf**