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21-030

February 2022

Industrial Storm Water Guidance

What is the NPDES storm water permitting program for industrial activity?

Material handling and storage, equipment maintenance and cleaning, and other activities at industrial facilities are often exposed to the weather. Runoff from rainfall or snowmelt that comes in contact with these activities can pick up pollutants, and transport them directly to a nearby river, lake, or coastal water or indirectly via a storm sewer and degrade water quality.

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

Federal regulations at 40 CFR 122.26(b)(14)(i)-(xi) require storm water discharges associated with 11 specific categories of industrial activity to be covered under NPDES permits. The NDEE authorizes these discharges under a general permit. The 11 categories of regulated industrial activities are:

- Category One (i): Facilities subject to federal storm water effluent discharge standards at 40 CFR Parts 405-471
- Category Two (ii): Heavy manufacturing (e.g., paper mills, chemical plants, petroleum refineries, steel mills and foundries)
- Category Three (iii): Coal and mineral mining and oil and gas exploration and processing
- Category Four (iv): Hazardous waste treatment, storage, and disposal facilities
- Category Five (v): Landfills, land application sites, and open dumps with industrial wastes
- Category Six (vi): Metal scrapyards, salvage yards, automobile junkyards, and battery reclaimers
- Category Seven (vii): Steam electric power generating plants
- Category Eight (viii): Transportation facilities that have vehicle maintenance, equipment cleaning, or airport deicing operations
- Category Nine (ix): Treatment works treating domestic sewage with a design flow of 1 million gallons a day or more
- Category Ten (x): Construction sites that disturb 5 acres or more (permitted separately)
- Category Eleven (xi): Light manufacturing (e.g., food processing, printing, and publishing, electronic and other electrical equipment manufacturing, public warehousing, and storage)

What does an industrial storm water permit require?

Common requirements for coverage under an industrial storm water permit include development of a written storm water pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent (NOI). The SWPPP is a written assessment of potential sources of pollutants in storm water 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 storm water permit also requires collection of visual, analytical, and/or compliance monitoring data to determine the effectiveness of implemented BMPs. Depending on the facility type and its location, you may be required to collect samples for indicator monitoring, benchmark monitoring, effluent limitations guidelines monitoring, impaired waters monitoring, or other monitoring as required by the NDEE. Corrective actions and/or additional implementation measures (AIM) may be required for benchmark or limitation exceedances. See the general permit and additional guidance for more information.

What pollutants are associated with my facilities activities?

Pollutants conveyed in storm water discharges from facilities involved with the manufacturing of chemical and allied 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 industrial and manufacturing facilities.

Table 1. Common activities and pollutants sources

Activity	Pollutant Source	Pollutant
Manufacturing Process Components	Thermal oxidation Cooling towers Steam boilers Hot oil system for cooling/heat exchange Use of machinery to process materials	Pollutant dependent upon those at particular facility
Material Handling and Storage	Equipment storage Storage of materials in tanks, either below or above ground Storage of cylinders used to contain industrial gases Storage of empty or full drums Material handling and warehousing Loading/unloading Bagging of materials/products Blending and mixing of chemicals Packaging of chemicals Crushing, milling, shredding, granulation, and grinding of materials Distribution of products	Pollutant dependent upon those at particular facility
Vehicle Fueling and Maintenance	Fuel pumps and storage, shops, floor drains	TSS, TDS, oil, and grease, gasoline, diesel, acid,

		coolant
Waste Treatment, Disposal, and Cleanup	Washing of drums Waste dumpster or compactor Hazardous waste temporary storage or operation of RCRA treatment, storage, or disposal facility Landfills or temporary refuse site	Pollutant dependent upon those at particular facility
Miscellaneous Activities	Plant yard and areas of past industrial activity TSS Access roads and rail tracks	TSS

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

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in storm water discharges from chemical and allied product manufacturing facilities. You will likely need to implement a combination or suite of BMPs to address storm water runoff at your facility. Your first consideration should be for pollution prevention BMPs, which are designed to prevent or minimize pollutants from entering storm water runoff and/or reduce the volume of storm water 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 storm water runoff and/or mitigate the effects of increased storm water 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 storm water. 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 storm water 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 storm water runoff. It can also prevent debris from being picked up by storm water 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 storm water management practices that divert, infiltrate, reuse, or otherwise manage storm water runoff to reduce the discharge of pollutants. Appropriate measures are highly site-specific, but may include, among others, vegetative swales, collection and reuse of storm water, 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 storm water management for minimizing the offsite discharge of pollutants via storm water 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 chemical and allied products manufacturing facilities, to minimize and prevent the discharge of pollutants in storm water. 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 industrial and manufacturing facilities; however, this is not a complete list and you are recommended to consult with NDEE or a storm water engineer/consultant to identify appropriate BMPs for your facility.

Table 2. BMPs for Potential Pollutant Sources

Pollutant Source	BMPs
Material handling and storage	<ul style="list-style-type: none"> - Cover handling and storage areas with roofs, covers, or other appropriate forms of protection. - Confine storage to designated and labeled areas outside of drainage pathways and away from surface waters. - Divert storm water around storage areas with vegetated swales, and/or berms. - Store materials on concrete pads to allow for cleanup of spills or leaks. θ Provide secondary containment for storage tanks and drum storage. - 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 storm water in containment areas prior to discharge.

	<ul style="list-style-type: none"> - Use double-walled tanks. - Locate storage areas away from high traffic areas and surface waters. - Inspect storage tanks and piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks and perform preventive maintenance. - Maintain an inventory of fluids to identify leakage. - Provide fluid level indicators. - Properly dispose of chemicals that are no longer in use. - Store and handle reactive, ignitable, or flammable liquids in compliance with applicable local fire codes, local zoning codes, and the National Electric Code. - Provide drip pads/pans where chemicals are transferred from one container to another to allow for recycling of spills and leaks. - Develop and implement spill plans or spill prevention, containment, and countermeasure (SPCC) plans, if required for your facility. - Portable containers/drums. - Develop and implement spill plans or spill prevention, containment, and countermeasure (SPCC) plans, if required for your facility. - Store drums indoors when possible. - 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). - 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). - Clearly label drum with its contents. - Provide transfer of PFAS containing materials and their proper collection and disposal methods in the event of a release from their container. - Train employees in spill prevention and control and proper materials management. - Empty containment units with manually operated pumps or ejectors. - If facility drainage is not engineered as listed above, equip the final discharge point of all facility sewers to prevent discharge in the event of an uncontrolled spill.
<p>Loading/unloading areas</p>	<ul style="list-style-type: none"> - Confine loading/unloading activities to designated areas outside drainage pathways and away from surface waters. - Inspect containers for leaks or damage prior to loading/unloading. - Avoid loading/unloading materials in the rain or provide cover or other protection for loading docks. - Provide diversion berms, dikes, or grassed swales around the perimeter of the area to limit run-on. - Cover loading and unloading areas and perform these activities on an impervious pad to enable easy collection of spilled materials. - Slope the impervious concrete floor or pad to collect spills and leaks and convey them to proper containment and treatment. - Provide overhangs or door skirts to enclose trailer ends at truck loading/unloading docks. - For rail transfer, a drip pan shall be installed within the rails to collect spillage from the tank. - Where liquid or powdered materials are transferred in bulk from truck or rail cars, use hose connection points at storage containers to be inside containment areas and drip pans used in areas which are not in containment area where spillage may occur. - Enclose material handling systems. - Cover materials entering and leaving areas.

	<ul style="list-style-type: none"> - Regularly sweep area to minimize debris on the ground. - Provide dust control if necessary. When controlling dust, sweep and/or apply water or materials that will not impact surface or ground water. - Develop and implement spill prevention, containment, and countermeasure (SPCC) plans. - Train employees in spill prevention, control, cleanup, and proper materials management techniques.
<p>Manufacturing Process Components</p>	<ul style="list-style-type: none"> - Use curbing, dikes, and gutters to contain and collect spills. - Keep spill cleanup materials readily available. - Clean up spills and leaks immediately. - Use dry cleanup methods where appropriate. Sweep up absorbents as soon as spilled substances have been absorbed. - Develop and implement spill prevention, containment, and countermeasure (SPCC) plans. - Train employees in spill prevention, control, and cleanup.
<p>Vehicle maintenance</p>	<ul style="list-style-type: none"> - Eliminate floor drains that are connected to the storm or sanitary sewer; if necessary, install a sump that is pumped regularly. Collected wastes should be properly treated or disposed of by a licensed waste hauler. - Use drip pans, drain boards, and drying racks to direct drips back into a fluid holding tank for reuse. - 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 in compliance with RCRA regulations. - Store batteries and other significant materials inside. - 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 a storm water system. - 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 into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections. - 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. - Use berms, curbs, grassed swales, or other diversion measures to ensure that storm water runoff from other parts of the facility does not flow over the maintenance area. - Collect the storm water runoff from the cleaning area and provide treatment or recycling. Discharge vehicle wash or rinse water to the sanitary sewer (if allowed)

	<p>by sewer authority), wastewater treatment, a land application site, or recycle on-site. DO NOT discharge wash water to a storm drain or to surface water.</p> <ul style="list-style-type: none"> - Inspect the maintenance area regularly to ensure BMPs are implemented and maintained. - Train employees on waste control disposal procedures.
<p>Vehicle and equipment fueling</p>	<ul style="list-style-type: none"> - Conduct fueling operations (including the transfer of fuel from tank trucks) on an impervious or contained pad and under a roof or canopy where possible. Covering should extend beyond spill containment pad to prevent rain from entering. - When fueling in an uncovered area, conduct fueling operations on a concrete pad (asphalt 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. - Keep spill cleanup materials readily available. - Clean up spills and leaks immediately. - Use dry cleanup methods for fuel area rather than hosing down the fuel area. Sweep up absorbents as soon as spilled substances have been absorbed. - Do not "top off" fuel tanks. - Minimize/eliminate run-on into fueling areas with diversion dikes, berms, curbing, surface grading or other equivalent measures. - Collect storm water runoff and provide treatment or recycling. - Provide curbing or posts around fuel pumps to prevent collisions from vehicles. - Regularly inspect and perform preventive maintenance on fuel storage tanks to detect potential leaks before they occur. - Inspect the fueling area for leaks and spills. - Train personnel on vehicle fueling BMPs

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

The industrial storm water 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.

Where do I get more information?

Information is available on the NDEE website at <http://dee.ne.gov>, calling (402) 471-2186, or emailing ndee.moreinfo@nebraska.gov.