

INDUSTRIAL STORMWATER

FACT SHEET SERIES

Sector X: Printing and Publishing 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 printing and publishing facilities including allied industries facilities described in Standard Industrial Classification (SIC) Major Group 27. Facilities and products in this group fall under the following categories, all of which require coverage under an industrial stormwater permit:

- ◆ Newspapers: publishing, or publishing and printing (SIC 2711)
- ◆ Periodicals: publishing, or publishing and printing (SIC 2721)
- ◆ Books: publishing, or publishing and printing (SIC 2731)
- ◆ Book printing (SIC 2732)
- ◆ Miscellaneous publishing (SIC 2741)
- ◆ Commercial printing, lithographic (SIC 2752)
- ◆ Commercial printing, gravure (SIC 2754)
- ◆ Commercial printing, not elsewhere classified (SIC 2759)
- ◆ Manifold business forms (SIC 2761)
- ◆ Greeting cards (SIC 2771)
- ◆ Blank books, looseleaf binders and devices (SIC 2782)
- ◆ Bookbinding and related work (SIC 2789)
- ◆ Typesetting (SIC 2791)
- ◆ Platemaking and related services (SIC 2796)

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 printing and publishing 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

The activities, pollutant sources, and pollutants detailed in Table 1 are commonly found at printing and publishing facilities.

Table 1. Common Activities, Pollutant Sources, and Associated Pollutants at Printing and Publishing Facilities

Activity	Pollutant Source	Pollutant
Plate preparation	Ink (lithography, letterpress, screen printing, flexography), etch baths, and/or applying lacquer	Solvent, heavy metal, toxic waste, ink with solvents chromium, and/or lead
Printing	Ink (lithography, letterpress, screen printing, flexography), gravure	Heavy metals (dust and sludge),
Clean up	Used plates: type, die, press blankets, and rollers	Ink - toxic wastes, heavy metals, solvents
Stencil preparation for screen printing	Lacquer stencil film, photoemulsion, blockout (screen filler)	Solvents, photographic processing wastes
Material handling: transfer, storage, disposal	Spills and leaks from material handling equipment	Fuel, oil, heavy metals
	Spills and leaks from above ground tanks	Fuel, oil, heavy metals, material being stored
	Solvents; trash; petroleum products	Heavy metals, spent solvents, oil
Photo processing	Developing negatives and prints	Heavy metals, spent solvents
Fueling areas	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, oil, lubricants, heavy metals

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

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

A variety of BMP options may be applicable to eliminate or minimize the presence of pollutants in stormwater discharges from printing and publishing 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. All printing and publishing facilities are required to implement BMPs in the following areas of the site:

- ◆ Material storage areas
- ◆ Material handling operations and areas (e.g., blanket wash, mixing solvents, loading/unloading materials)
- ◆ Fueling areas
- ◆ Above ground storage tank areas, including associated piping and valves

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.

Specific good housekeeping practices for printing and publishing facilities include:

- ◆ Regular cleanup of above ground storage tank areas
- ◆ Using dry cleanup methods in above ground storage tank areas and fueling areas
- ◆ An inventory control plan to prevent excessive purchasing of potentially hazardous substances

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.

Specific exposure minimization practices for printing and publishing facilities include:

- ◆ Plainly labeling and storing all containerized materials (e.g., skids, pallets, solvents, bulk inks, hazardous waste, empty drums, portable/mobile containers of plant debris, wood crates, steel racks, fuel oil, etc.) in a protected area away from drains
- ◆ Constructing containment areas or enclosures for those materials stored outdoors
- ◆ Where applicable, replacing or repairing leaking connections, valves, transfer lines and pipes that may carry chemicals or wastewater
- ◆ Covering fueling areas
- ◆ Covering/enclosing areas where the transfer of materials may occur
- ◆ Using spill and overflow protection in fueling areas and material handling operations and areas (e.g., blanket wash, mixing solvents, and loading/unloading materials)
- ◆ Permanently sealing drains within critical above ground storage tank areas that may discharge to a storm drain
- ◆ Restricting access to above ground storage tank areas

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.

Specific runoff management practices for printing and publishing facilities include:

- ◆ Minimizing runoff of stormwater to fueling areas and above ground tank storage areas
- ◆ Insertion of filters in catch basins adjacent to above ground tank storage areas
- ◆ Treating and/or recycling stormwater runoff collected from fueling areas

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 printing and publishing 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 printing and publishing 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 Printing and Publishing Facilities

Pollutant Source	BMPs
Plate preparation	<ul style="list-style-type: none"> <input type="checkbox"/> Use aqueous-developed lithographic plates or wipe-on plates.
Printing	<ul style="list-style-type: none"> <input type="checkbox"/> Use press wipes as long as possible before discarding or laundering; dirty ones for the first pass, clean ones for the second pass. <input type="checkbox"/> Remove solvent from dirty rags by squeeze or centrifuge prior to laundering. <input type="checkbox"/> Set up an in-house dirty rag cleaning operation if warranted or send to approved industrial laundries, if available. <input type="checkbox"/> Use a dedicated press for inks with hazardous pigments/solvents. <input type="checkbox"/> Segregate used oil from solvents or other materials. <input type="checkbox"/> Use water-based inks in gravure and flexographic printing process. <input type="checkbox"/> Fill ink fountains with only enough ink for a run or shift; return un-emulsified inks to their containers. <input type="checkbox"/> Substitute less toxic solvents for highly aromatic solvents; use detergent solutions. <input type="checkbox"/> Monitor baths and accurately replenish chemicals. <input type="checkbox"/> Use a solvent pump can instead of pouring solvent from a jug to minimize solvent use and exposure.
Cleanup	<ul style="list-style-type: none"> <input type="checkbox"/> Centralize liquid solvent cleaning in one location. <input type="checkbox"/> Designate special areas for draining or replacing fluids. <input type="checkbox"/> Label sinks as to proper disposal of liquids. <input type="checkbox"/> Use doctor blades and squeegees to remove as much ink as possible prior to cleaning with solvent and rags. <input type="checkbox"/> Dry solvent-coated screens before washing them in water. <input type="checkbox"/> Do not clean screens over a sink or drain. <input type="checkbox"/> Minimize solvent use during equipment cleaning. <input type="checkbox"/> Substitute nontoxic or less toxic cleaning solvents. <input type="checkbox"/> Recover waste solvents on-site with batch distillation or utilize professional solvent recyclers. <input type="checkbox"/> Use counter-current washing instead of parallel rinse systems. <input type="checkbox"/> Use a closed-washing system. <input type="checkbox"/> Use equipment wash down water for making up subsequent batches. <input type="checkbox"/> Eliminate once-through cooling water for compressors. <input type="checkbox"/> Inspect the area regularly to ensure BMPs are implemented. <input type="checkbox"/> Train employees on waste control and disposal procedures.

Table 2. BMPs for Potential Pollutant Sources at Printing and Publishing Facilities (continued)

Pollutant Source	BMPs
Stencil preparation for screen printing	<ul style="list-style-type: none"> <input type="checkbox"/> Capture excess ink from silkscreen process before washing the screen to decrease amount of ink used and cleaning emulsion used.
Photo processing	<ul style="list-style-type: none"> <input type="checkbox"/> Collect and properly manage fixing bath, developer, used film, photographic paper, and blackened ends of photostetting paper.
Material handling and storage	<ul style="list-style-type: none"> <input type="checkbox"/> Cover and/or enclose chemical storage areas (including temporary cover such as a tarp that prevents contact with precipitation). <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"/> Use double-walled tanks. <input type="checkbox"/> Locate storage areas away from high traffic areas and surface waters. <input type="checkbox"/> Inspect storage tanks and piping systems (pipes, pumps, flanges, couplings, hoses, and valves) for failures or leaks and perform preventive maintenance. <input type="checkbox"/> Plainly label all containers. <input type="checkbox"/> Handle solvents in designated areas, preferably indoors or under a shed, away from drains, ditches, and surface waters. <input type="checkbox"/> Identify potentially hazardous materials, their characteristics, and use. <input type="checkbox"/> Control excessive purchasing, storage, and handling of potentially hazardous materials. <input type="checkbox"/> Maintain an inventory to identify quantity, receipt date, service life, users, and disposal routes. <input type="checkbox"/> Return toxic material packaging to the supplier for re-use. <input type="checkbox"/> Keep spill kits readily available. <input type="checkbox"/> If spills occur: stop the source of the spill immediately; contain the liquid until cleanup is complete; cover the spill with absorbent material; keep the area well ventilated; dispose of cleanup materials properly; do not use emulsifier or dispersant. <input type="checkbox"/> Store containerized materials (fuels, paints, inks, solvents, etc.) in a protected, secure location and away from drains. <input type="checkbox"/> Store reactive, ignitable, or flammable liquids in compliance with the local fire code. <input type="checkbox"/> Keep waste chemicals segregated to allow for reuse and recycling. <input type="checkbox"/> Secure and carefully monitor hazardous materials to prevent theft, vandalism, and misuse of materials. <input type="checkbox"/> Provide drip pads/pans where chemicals are transferred from one container to another to allow for recycling of spills and leaks. <input type="checkbox"/> Use spigots or funnels to reduce spills. <input type="checkbox"/> Use spill troughs for drums with taps. <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. <input type="checkbox"/> Train employees on proper filling and transfer procedures. <input type="checkbox"/> Train employees in spill prevention and control and proper materials management including storage, cleanup, and disposal.

Table 2. BMPs for Potential Pollutant Sources at Printing and Publishing Facilities (continued)

Pollutant Source	BMPs
Aboveground 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>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 with overflow protection. <input type="checkbox"/> Keep liquid transfer nozzles/hoses in secondary containment area. <p>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"/> Install overflow protection devices on tank systems to warn operator or to automatically shut down transfer pumps when tanks reach full capacity.
Vehicle and equipment 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 cover extend beyond spill containment pad to prevent rain from entering. <input type="checkbox"/> When fueling in uncovered area, use concrete pad (not asphalt). <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"/> Keep spill cleanup materials readily available. <input type="checkbox"/> Clean up spills and leaks immediately. <input type="checkbox"/> Minimize/eliminate run-on onto fueling areas with diversion dikes, berms, curbing, surface grading or other equivalent measures. <input type="checkbox"/> Collect stormwater runoff and provide treatment or recycling. <input type="checkbox"/> 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. <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 in receiving equipment. <input type="checkbox"/> Train personnel on vehicle fueling BMPs.

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:

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