



PAPER

# BEST PRACTICES TO PREVENT STORMWATER RUNOFF POLLUTION





Since 1972, businesses have been required to work with the Environmental Protection Agency (EPA) to improve and maintain waterways near their facilities under the Clean Water Act (CWA). One challenge facilities face is managing pollution in stormwater runoff.

A solution that covers every potential contaminant is impossible due to differences in processes and storage methods. Best Management Practices (BMPs) help facilities comply with the EPA's Stormwater Regulations.

This Pig Paper will explain what stormwater runoff pollution is and how you can control it at your facility. Not only will this limit your exposure to sanctions from state and federal governments, but will also help preserve our nation's waters for future generations to enjoy.

## What Is Stormwater Runoff?

Stormwater runoff is any liquid from rainfall or snowmelt that makes its way to a body of water rather than being absorbed into the ground. Unlike water that enters a sewer system through drains, stormwater runoff is not treated. This allows any contaminants, like oil and debris, to enter waterways.

Whether this runoff from industrial processes is channeled through a gutter or flows freely from a parking lot, it must be monitored and controlled in accordance with National Pollutant Discharge Elimination System (NPDES) permit tolerances to remain in compliance with EPA requirements.



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## Common Sources of Stormwater Pollution

The individual sources of stormwater pollution are innumerable and the potential for contamination exists in most industrial or manufacturing activities. However, the EPA recommends paying particular attention to these six common factors:

- 1. Unloading and Loading Areas:** From leaky equipment to damaged containers, anything that touches the floor or ground of uncovered loading and unloading areas can contribute to pollution. Spill kits and training are effective ways to reduce risk in these busy areas.
- 2. Outdoor Storage Areas:** There is a greater chance contents from leaking or spilled containers in outdoor storage areas will contaminate stormwater if drains are nearby. The risk of polluting is higher if storage areas are uncovered.
- 3. Outdoor Processes:** You risk creating stormwater runoff pollution when operating equipment outdoors. Proper maintenance and cleaning soiled surfaces are important to keep pollution levels low.
- 4. Processes Involving Dust and Particulates:** Dust and particulates are major contributors to water pollution because they easily travel through the air and are carried into drains by water and snowmelt. Proper containment is essential in reducing the chance of pollution.
- 5. Waste Management:** Rainwater will transport chemicals and other contaminants to nearby stormwater drains if waste and other materials are not properly covered and contained. On-site landfills and larger waste management solutions can also pollute stormwater and often require specialized solutions.
- 6. Non-Stormwater Discharges and Illicit Connections:** This type of pollution occurs when an industrial drain is directly connected to a municipal stormwater drain, which allows high concentrations of contaminants to mix with runoff and directly enter bodies of water without treatment.



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## The Impact of Stormwater Pollution

Stormwater pollution is deceptive. What might seem like a negligible issue now can multiply to catastrophic results when other sources of pollution are factored in. A single acre of land that receives 36 inches of rainfall annually might contribute up to one million gallons of polluted runoff to local water sources depending on the percentage of the area that is impervious and the amount of contamination present. Compound that by the number of acres in a typical industrial area and you can see just how much impact this can have in a community.

King County in Washington reports that since 1980, nearly one-third of commercial, certified areas for the growing and harvesting of shellfish in the Puget Sound inlet have closed or drastically reduced production due to stormwater runoff pollution.

### Leading issues related to stormwater pollution include:

- 1. Excessive Sediment Deposits:** Sediment levels increase when dirt and debris are flushed into a nearby body of water. While turbidity (a measure of water clarity) might seem like a purely cosmetic issue, it has deeper impact on fragile aquatic ecosystems. Aquatic plant life is especially susceptible to the light-blocking effects of turbid water.
- 2. Algae Blooms:** In 2012, the EPA found that all 50 states reported instances of nutrient pollution in approximately 15,000 bodies of water. Increasing the ambient temperature of water near discharge sites or adding nutrients through stormwater runoff pollution are leading causes of algae blooms. These unsightly plant growths threaten the ecosystems surrounding them and can wipe out entire aquatic zones. Certain types of algae blooms also pose a direct health risk to humans and larger animals.
- 3. Toxicity and Contamination:** Rain on the outdoor surfaces of your facility will pick up oils, grease, metals, coolant and other chemicals. If these liquids reach a stormwater drain, they could travel untreated to nearby water sources, harm animal and plant life and impact the quality of drinking water.



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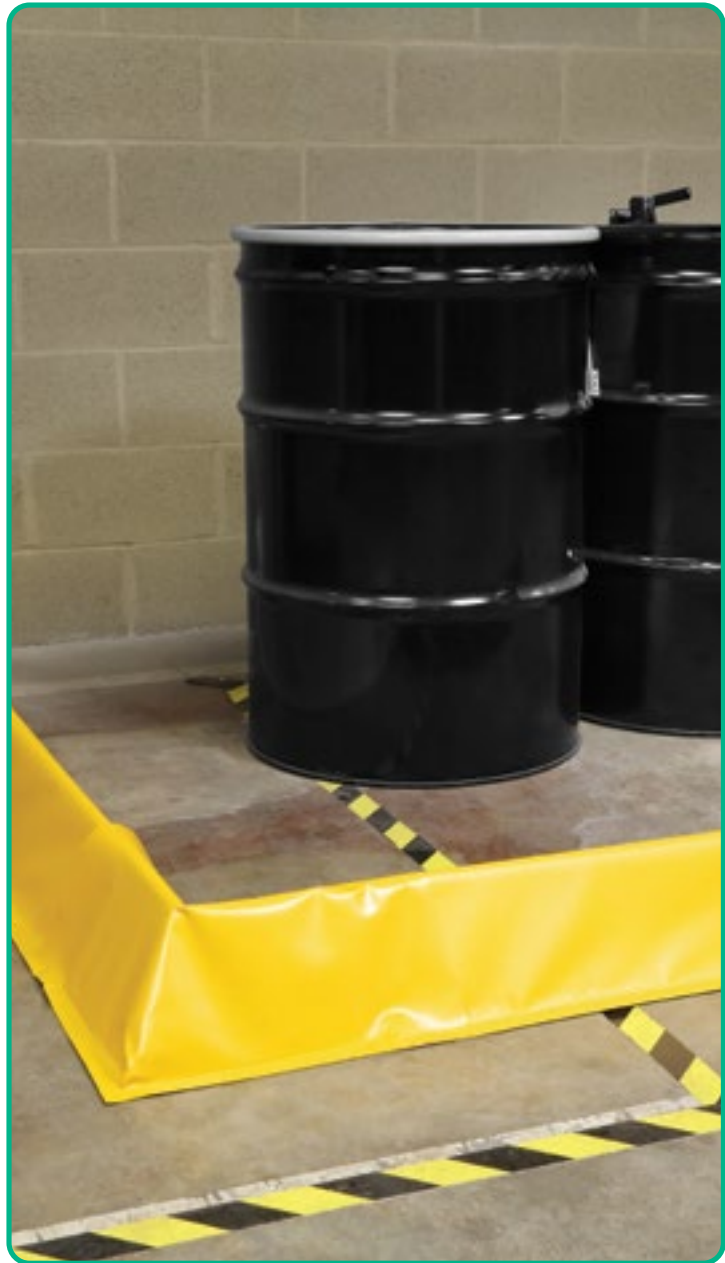
## Combat Stormwater Pollution with NPDES Permits

With the high number of potential pollution sources for each waterway, complete management and monitoring is simply not feasible at the federal level. Because of this, states manage stormwater compliance.

One way to accomplish this is through NPDES permits. These permits provide a framework for estimating pollution from a source point, establish monitoring and reporting requirements and include discharge limits for specific pollutants based on where the permit is issued.

### A couple of things to keep in mind:

- NPDES permits are required for all sites that discharge waste or stormwater from “a discrete conveyance, such as a pipe ditch or channel.” Businesses that discharge directly to municipal sanitary sewer systems do not require an NPDES permit, as these discharges are governed by other regulations.
- Permits are issued as multi-sector, industry-specific or facility-specific. Each type is increasingly specific, with regulations layered on to account for special variables unique to the facility. A multi-sector permit provides the most flexibility in managing discharge and compliance and is the most commonly issued.



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## Develop a Stormwater Pollution Prevention Plan

A facility must have a comprehensive Stormwater Pollution Prevention Plan (SWPPP) before an NPDES permit will be issued. Each SWPPP is site-specific and outlines potential sources of pollution and how the facility intends to minimize risk and discharge into surrounding waterways.

### Major components of an SWPPP include:

#### 1. Facility Information and

**Contact Information:** This section includes the precise coordinates of the facility, possible discharge locations, a list of contacts — including the operator, owner and dedicated SWPPP contact — and any information on SWPPP prevention teams within the facility. A site map is also required.

This map must include:

- Significant site features
- Stormwater drainage and discharge structures
- Drainage areas for each discharge point off-site
- Sampling locations
- Paved areas
- Buildings
- Soil erosion zones
- Surface water locations
- Vehicle maintenance zones
- Areas of potential pollutant contact
- Any surrounding land or water that might be used for discharge or drainage



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2. **Facility Assessment:** This section outlines potential sources of pollutants at the facility. This includes areas that might discharge to nearby waterways, including seasonal variations in production. The potential for spills or leaks at the facility as well as any significant past events should also be disclosed in this section.
3. **BMPs:** This section defines, in detail, how pollutants will be dealt with and potential risks. These practices are divided into five distinct subsections:

- **Operational Source Control:** These practices describe when areas that can contribute to stormwater pollution should be cleaned. Examples include preventative maintenance, spill prevention and employee training programs. Schedules, inspection observations and sampling data should also be documented here.
- **Structural Source Control:** These practices outline how a facility's exposure to rain and other potential runoff sources will be minimized as well as any measures that will be taken to divert wash water away from stormwater drains.
- **Treatment:** This practice outlines how to reduce the pollutants in contaminated stormwater. This includes separators, retention basins, filtration and other technologies.
- **Stormwater Peak Runoff and Flow Control:** These practices minimize the overall impact of flow control and keep ground permeation high in new developments to limit stormwater runoff pollution.
- **Erosion and Sediment Control:** These practices reduce soil erosion and control the amount of solids contained in stormwater runoff. Common features include retention ponds, vegetated filter strips, filter socks and sand filtration.



4. **Sampling Plan:** To help monitor the impact of stormwater runoff, facilities must have a comprehensive sampling plan. The plan must identify all points of discharge to surface water and storm sewers as well as any areas of discrete groundwater infiltration. This should also describe the surfaces near discharge areas. Other information required includes identifying the staff responsible for conducting sampling and the method in which samples should be obtained and handled.
5. **SWPPP Certification:** The last section of the SWPPP is a certification that all elements of the plan have been outlined and will be conducted in the manner described.



## Best Management Practices — Your Ticket to CWA Compliance

Use BMPs to prevent stormwater runoff pollution at your facility. From secondary containment to spill prevention and cleanup, these are some of the most effective and common BMPs that you can apply:

- 1. Secondary Containment:** One of the easiest and most affordable ways to reduce stormwater runoff pollution is secondary containment. Spill pallets can be used to store portable containers indoors and outdoors. Flexible berms provide easy access to larger containers or storage areas. Portable pools can be used for temporary outdoor storage, while storage buildings provide long-term storage.
- 2. Outdoor Waste Collection Covers:** Rainwater will not only wash pollutants away from your outdoor collection areas but can also corrode and degrade your storage containers. Small covers or collection sheds are ideal for eliminating this risk.



- 3. Containment Pads in Maintenance Areas:** Upkeep of equipment is essential to SWPPP compliance. Containment pads make cleanup after maintenance simple by containing wash water and contaminants for easy disposal or recycling.
- 4. Spill Response Plan:** From flexible dike containment and choosing the right absorbents to the location of PPE and spill kits, creating response plans ensures a faster response time and reduces the impact of larger spills.
- 5. Training:** A spill response plan and products to prevent stormwater runoff pollution are useless without employees who are trained to use them. Every employee must understand what his or her role is when it comes to spill response.

Businesses that train employees, make a plan, implement BMPs and use the right products will be more effective at controlling stormwater runoff pollution, a leading cause of water quality issues in the U.S., at their facility.



# Your tools for stormwater runoff prevention.



**PIG Roll Top Hardcover Spill Pallet**  
Roomy roll top hardcovers offer all-weather protection and liquid containment.



**PIG Poly Spill Containment Pallet**  
The strongest standard pallet you can buy. Molded-in sump helps you comply with regs.



**PIG Collapse-A-Tainer Spill Containment Berm**  
Create affordable drive-in containment anywhere you need it in just a few minutes.



**PIG Adjustable Frame Storm Drain Filter**  
This drain insert won't fall into the catch basin while it provides improved filtering of oil, sediment and debris from stormwater runoff.



**PIG DrainBlocker Drain Cover**  
Protect your drains with our patented design that seals tight and won't rip. Guaranteed.



**PIG Drive-Over DrainBlocker Drain Cover**  
The only drain cover that's tough enough to handle drive-overs from heavy tankers.



**PIG Spill Kit in 95-Gallon Overpack Salvage Drum**  
Absorbs up to 60 gallons of oils, coolants, solvents and water.



**PIG Spill Kit in 95-Gallon High-Visibility Container**  
Hi-viz container makes response to spills of oils, coolants, solvents and water even faster.



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