Illicit Discharge Detection and Elimination Minimum Control Measure

Photo by U.S. EPA

This fact sheet profiles the Illicit Discharge Detection and Elimination (IDDE) minimum control measure, one of six program areas an operator of a Phase II-regulated small municipal separate storm sewer system (MS4) is required to address as part of its National Pollutant Discharge Elimination System (NPDES) stormwater permit. This fact sheet offers some general considerations on strategies used by MS4s to implement IDDE programs. It is important to keep in mind that the regulated small MS4 operator typically has flexibility in choosing exactly how to satisfy the IDDE requirements in its NPDES permit.

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What Is an "Illicit Discharge"?

Federal regulations define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of stormwater..." with some exceptions. These exceptions include discharges from NPDES-permitted industrial and construction sources and discharges from fire-fighting activities. In practice, illicit discharges are identified as measurable flow within the storm sewer system that occurs during dry weather consisting of pollutants and/or pathogens. Illicit discharges (see Table 1) are considered "illicit" because MS4s are not designed to accept, process, or discharge such non-stormwater wastes.

Table 1. Pollutants Associated with Illicit Discharges

TSS (Total Suspended Solids)
VSS (Volatile Suspended Solids)
TOC (Total Organic Carbon)
COD (Chemical Oxygen Demand)
NO_3/NO_2 (Nitrate + Nitrite)
TKN (Total Kjeldahl Nitrogen)
Phosphorus as PO_4
Cu (Total Copper)
Pb (Total Lead)
Zn (Total Zinc)

Why Are Illicit Discharge Detection and Elimination Efforts Necessary?

Discharges from MS4s often include wastes and wastewater from non-stormwater sources. A National Research Council's report on urban stormwater indicates that according to field experience in conducting outfall surveys, illicit discharges may occur at 2-5% of all outfalls at any given time and may amplify pollutants effect on water quality and biological diversity (2009).

Illicit discharges enter the system through either direct connection (e.g., wastewater piping either mistakenly or deliberately connected to the storm drains) or indirect connections (e.g., infiltration into the MS4 from cracked sanitary systems, spills collected by drain outlets, and paint or used oil dumped directly into a drain). The result is the release of untreated wastewater and pollutants into the storm sewer system that contributes to high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients, viruses, and bacteria to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to significantly degrade receiving water quality and threaten aquatic species, wildlife, and human health.

What Is Required?

Recognizing the adverse effects illicit discharges can have on receiving waters, the Phase II regulations require permitted small MS4s to develop, implement, and enforce an IDDE program. Permits will also require, at a minimum, that the MS4:

- Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls.
- Effectively prohibit through an ordinance, or other regulatory mechanism (to the extent allowable under state, tribal, or local law) non-stormwater discharges into the MS4 and implement appropriate enforcement procedures and actions.

- Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, into the MS4.
- Inform public employees, businesses, and the general public about the hazards associated with illegal discharges and improper disposal of waste.

Are All Non-Stormwater Discharges Prohibited as Illicit Discharges?

No. The IDDE program does not need to address the following categories of non-stormwater discharges or flows unless the operator of the regulated small MS4 identifies them as significant contributors of pollutants to its MS4:

- Water line flushing.
- Landscape irrigation.
- Diverted stream flows.
- Rising ground waters.
- Uncontaminated ground water infiltration.
- Uncontaminated pumped ground water.
- Discharges from potable water sources.
- Foundation drains.
- Air conditioning condensation.
- Irrigation water.
- Springs.
- Water from crawl space pumps.
- Footing drains.
- Lawn watering.
- Individual residential car washing.
- Flows from riparian habitats and wetlands.
- Dechlorinated swimming pool discharges.
- Street wash water.

Illicit Discharge Permit Requirements

Each permit specifies the minimum elements that must be included in each IDDE program. These elements will differ from state to state although all permits will share the bottom-line requirement that the MS4 must implement an IDDE program that detects and removes illicit discharges.

EPA has compiled several examples from federal and state MS4 permits that address the IDDE minimum control measure. These examples are included in a series of permit compendia available on the EPA's stormwater website. See particularly Section C (Illicit Discharge Detection and Elimination) in the EPA's *Compendium of MS4 Permitting Approaches – Part 1: Six Minimum Control Measures*.

Considerations in Implementing IDDE Programs

The objective of the IDDE program is to find, fix, and prevent illicit discharges. The regulated small MS4 operator does this by gaining a thorough awareness of their storm sewer system and service area. This awareness allows them to determine the types and sources of illicit discharges entering their system; and establish the legal, technical, and educational means

needed to eliminate these discharges. Permittees will meet their illicit discharge requirements in a variety of ways depending on their individual needs and abilities. Some of the general considerations that should be accounted for are discussed below.

The Map

The storm sewer system map is meant to demonstrate a basic awareness of the intake and discharge areas of the system. The map is needed to help determine the extent of discharged dry weather flows, the possible sources of the dry weather flows, and the waterbodies these flows may be affecting. An existing map, such as a topographical map, on which the location of major pipes and outfalls can be clearly presented will assist the MS4 in developing such an awareness.

EPA recommends collecting all existing information on outfall locations (e.g., review city records, drainage maps, storm drain maps), and then conducting field surveys to verify these locations. It probably will be necessary to walk the streambanks and shorelines for visual observation (e.g., wade through small receiving waters or use a boat for larger waters). More than one trip may be needed to locate all outfalls.

Legal Prohibition and Enforcement

EPA recognizes that some permittees may have limited authority under state, tribal, or local law to establish and enforce an ordinance or other regulatory mechanism prohibiting illicit discharges. In such a case, the permittee is encouraged to obtain the necessary authority, if possible, or to utilize other authorities or mechanisms it does possess. See Fact Sheet 2.10 for further discussion of how operators should implement programs when they lack specific legal authority.

The Plan

The plan to detect and address illicit discharges is the central component of the MS4's program. The plan is dependent upon several factors, including the permittee's available resources, size of staff, degree and character of its illicit discharges, and the relevant NPDES permit requirements. Four recommended steps for developing and implementing a plan are outlined below:

Locate Problem Areas

EPA recommends that priority areas be identified for detailed screening of the system based on the likelihood of illicit connections (e.g., areas with older sanitary sewer lines). Methods that can be effective in pinpointing problem areas include: visual screening; water sampling from manholes and outfalls during dry weather; the use of infrared and thermal photography; cross-training field staff to detect illicit discharges; and public complaints.

Find the Source

Once a problem area or discharge is found, additional efforts usually are necessary to determine the source of the problem. Methods that can be helpful in locating the source of the illicit discharge include: dye-testing buildings in problem areas; dye- or smoke-testing buildings at the time of sale; tracing the discharge upstream in the storm sewer; employing a certification program that shows that buildings have been checked for illicit connections; implementing an inspection program of existing septic systems; and using video to inspect the storm sewers.

Remove/Correct Illicit Connections

Once the source is identified, the offending discharger should be notified and directed to correct the problem. Education efforts and working with the discharger can be effective in resolving the problem before taking legal action.

Document Actions Taken

As a final step, all actions taken under the plan should be documented. This helps the MS4 track its efforts to implement its illicit discharge program and the progress being made to eliminate illicit connections and discharges. Documented actions should be included in annual reports and include information such as: the number of outfalls screened; any complaints received and corrected; the number of discharges and quantities of flow eliminated; and the number of dye or smoke tests conducted.

Educational Outreach

The Center for Watershed Protection and Robert Pitt (2004) researched the most cost-effective and efficient techniques that can be employed to identify and correct inappropriate discharges. Data from Montgomery County, Maryland, was analyzed and it was determined that staff identify and correct about six inappropriate discharges per year as a result of regular screening. By contrast, over 185 inappropriate discharges are corrected each year in Montgomery County as a direct result of citizen complaints and calls to a storm water compliant hotline. Public education and labeling of outfalls and other storm drain infrastructure are important elements of establishing a successful citizen hotline. Outreach to public employees, businesses, property owners, the general public, and elected officials regarding ways to detect and eliminate illicit discharges is an integral part of this minimum measure.

Suggested educational outreach efforts include:

- Developing ***informative brochures and guidance*** for specific audiences (e.g., carpet cleaning businesses) and school curricula.
- Designing a program to ***publicize and facilitate public reporting*** of illicit discharges.
- ***Coordinating volunteers*** for locating, and visually inspecting, outfalls or to stencil storm drains.

- Initiating ***recycling programs*** for commonly dumped wastes, such as motor oil, antifreeze, and pesticides.

For Additional Information

Contacts

A list of contacts for the U.S. EPA's Office of Wastewater Management (Headquarters), each EPA regional office, and state office is located at: https://www.epa.gov/npdes/contact-us-stormwater

Your NPDES Permitting Authority

Most states and territories are authorized to administer the NPDES Program, except the following, for which EPA is the permitting authority:

- American Samoa
- District of Columbia
- Guam
- Johnston Atoll
- Massachusetts
- Midway and Wake Islands
- New Hampshire
- New Mexico
- Northern Mariana Islands
- Puerto Rico
- Most Indian country lands

Reference Documents

- EPA's Stormwater Website
- Stormwater Phase II Final Rule (64 FR 68722)
- Final MS4 General Permit Remand Rule (81 FR 89320)
- Final Small MS4 Urbanized Area Clarification (88 FR 37994)
- Stormwater Phase II Rule Fact Sheet Series
- National Menu of Best Management Practices for Stormwater Phase II
- MS4 Permits – Compendium of Clear, Specific, and Measurable Permitting Examples
- Illicit Discharge Detection and Elimination (IDDE) Resources on EPA's MS4 Website
- Center for Watershed Protection and R. Pitt. (2004). Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments.

Disclaimer: This information is guidance only and does not establish or affect legal rights or obligations. Agency decisions in any particular case will be made by applying the law and regulations to the specific facts of the case.