

Wastewater releases/bypasses – what you should know

Nearly all cities in the United States use centralized sewer and wastewater treatment systems. Modern wastewater systems do a great job of protecting our streams, rivers, lakes, and drinking water. Most wastewater treatment systems consist of a collection system and a treatment plant.

Almost all wastewater systems depend heavily on water to both collect and move sewage and to provide a treatment medium. The collection system, commonly called the “sewer system,” is designed for the normal volume of sewage generated in the community and is not normally designed to handle large volumes of inflow and infiltration (I&I) of water from storms, floods, or groundwater. Collection systems convey wastewater (sewage) from homes and businesses through pipes to the treatment plant where wastewater is treated to remove or neutralize its potentially harmful components. The treated wastewater is then discharged to local waterways or used for agricultural irrigation.

Nonetheless, sometimes things go wrong. When that happens, it may become necessary to release untreated or partially treated wastewater to the environment. This type of discharge is known as an unauthorized release or bypass of wastewater.

What is a wastewater release or bypass?

A **release** is any overflow or spill of wastewater or materials to the environment. A release is an unauthorized discharge and is prohibited. Examples include sanitary sewer overflows from a plugged collection system or pumping untreated wastewater out of a manhole to a nearby ditch. Unauthorized releases, such as sanitary sewer overflows, are the most common type of event when wastewater systems are inundated with rain/snow melt or from pump or electrical failures.

A **bypass** is the intentional diversion of a waste stream from any portion of your treatment facility. Examples of a bypass include diverting the flow of wastewater around a clarifier or dechlorination system. Bypass wastewater must enter waters of the state from outfalls specifically authorized by the facility’s permit and cannot, by law, cause an effluent limit exceedance.

Effluent limitations - means a restriction established by rule or permit condition on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources into waters of the state.

What causes releases or bypasses?

Releases or bypasses can be caused by accidents, such as pumps failing or pipes bursting. Sometimes wastewater operators may be forced to release or bypass if they have to shut down equipment for emergency repairs and there’s no feasible way to reroute or contain the wastewater. Heavy rains, rapid snow melt, or flooding can also cause a release or bypass when more water gets into the sewer system than it has the capacity to move (system overload).

When a part of the system breaks down or gets overwhelmed by I&I, the wastewater can’t just stop; it has to go somewhere. Usually, it either overflows from the collection system, the system operators have to release untreated wastewater to the nearest stream, river, lake, or drainage way, or bypass a portion of the treatment facility. While it is sometimes possible to contain relatively small amounts of untreated wastewater and haul it to another treatment facility, the large volumes involved in wet-weather releases are often too large to contain and it then becomes necessary to discharge untreated wastewater to the environment.

A release or bypass in this case sometimes is used as a “last resort” to keep sewage from causing severe property damage and to prevent damage to the wastewater treatment facility that may cause it to become inoperable.

How are releases/bypasses prevented?

In an ideal world, there would never be any releases or bypasses, but wastewater treatment systems are complex, and the weather is not under our control. Because things do go wrong, a certain number of releases or bypasses are inevitable. However, wastewater operators can take precautions to reduce the need for releases or bypasses and, when they do occur, to minimize their impact. An asset management program (e.g., Capacity, Management, Operation and Maintenance Program) is an essential element to reducing releases and bypasses. Treatment works, including sewage collection systems, pumping, power and other equipment, and their appurtenances are complex and will eventually fail to perform without regular maintenance and repairs.

All wastewater treatment systems that discharge to waters of the state, or discharge to soil-based systems and are designed to handle at least 10,000 gallons per day, must have a permit from the MPCA. Among other things, the permit requires the system operators to exercise reasonable care to prevent releases and bypasses. Operators can do this by controlling the inputs to their facilities and keeping their systems in good operating order. If a wastewater treatment system is routinely having releases or bypasses the MPCA will work with them to solve the problem and, if necessary, take enforcement action to reduce and/or eliminate releases or bypasses.

Wastewater treatment operators are required to report all releases/bypasses immediately to the Minnesota State Duty Officer. The Duty Officer then notifies the MPCA.

Do releases/bypasses harm the environment?

Some releases or bypasses, such as those caused when water overloads a sewer system, can be fairly “weak” compared with normal sewage (although even dilute wastewater is likely to contain disease causing microorganisms which can be harmful to human health). Other releases/bypasses may be “high strength,” such as when a treatment plant shuts down because of an emergency or equipment failure and has to release completely untreated sewage.

Untreated sewage can contain high levels of disease-causing organisms and sometimes harmful chemicals. Releases or bypasses definitely are to be prevented if possible. When they do occur, they must be managed to minimize potential impacts.

The degree of environmental harm posed by a release/bypass also depends on a number of factors, including:

- The volume of the release/bypass (how much was discharged, how fast, and for how long).
- The “strength” of the release/bypass.
- The volume, flow rate, and “sensitivity” of the receiving water (the river or lake to which the release/bypass is discharged).

For example, a high strength discharge to a small river that is at low summer flow may be very harmful. A more diluted discharge to a large river in high flow conditions will have less effect. Releasing or bypassing during conditions of flooding may have little measurable impact on water quality.

To minimize human health and environmental impacts during a release or bypass, permitted facilities are required to perform specific actions such as provide notification to the Minnesota Duty Officer or MPCA, discontinue the bypass/release as soon as possible, recover any substances and materials as thoroughly as possible, and collect representative sample(s) of the bypass/release. The following are actions that any facility experiencing a release should review and implement.

Who's required to be notified?

Minnesota Statute requires facilities experiencing a bypass or release to provide notice to any downstream areas regarding the incident.

- Notice must be given promptly to potentially impacted public areas such as, but not limited to, beaches, tubing areas, fishing locations, campgrounds, boat landings, and parks.
- Any drinking water facility.
- Any location within 25 miles downstream of the release which the public could encounter the receiving water affected by the spill/release.

The notice given shall be with the most efficient means of communication system by the facility owner. Such as, in person, telephone call, social media, radio, web page, or another expedited form.

See public notification of wastewater release guidance at <https://www.pca.state.mn.us/sites/default/files/wq-wwprm1-43.pdf>.

Public notice requirement:

It is required signage be posted where the release, force main line break, etc. occurred. Signage may also be placed in the areas that have been determined as high potential for risk to public safety. Such as areas along the walk/bike path, beaches, boat launches, parks, etc. and the area(s) where the release is occurring from the wastewater collection system. Notice should be sufficient to communicate about the recent release and the risks of contact with the water. Public notification shall occur promptly using the most effective and efficient communications available in the community (i.e. news media, social media, signage and/or direct contact to downstream users).

To help ensure protection of human health for releases that are ongoing and/or are a high potential risk for public health, work with local government units, including public health departments, it is required to notify downstream users in the event of a spill, release or discharge that exceeds an effluent limitation or water quality standard which could endanger human health, public drinking water supplies, recreation or the environment.

Provide fencing (e.g. snow fencing) around wastewater impacted soil/grass areas determined as high potential for risk to public safety, as reasonably possible, to prevent access by persons or animals to soils impacted by the release of wastewater. The fence shall remain in place for 20 days OR until 24 hours after liming has been completed.

In areas with a high potential for human contact apply lime to areas (of soil or grass) impacted by the release of wastewater, and till or spade the lime well into the soil. Alternately, apply hydrated lime to these areas and water according to manufacturer's instructions (Note - hydrated lime is a caustic material and can be dangerous to handle and apply. Lime should only be used or applied by people experienced in using this material).

In the event of a spill, release, or discharge the MPCA recommends avoiding contact with the impacted water if possible. If you come in contact with the affected waters or other potentially contaminated water sources, take responsible precautions, you should bathe with soap and water and wash clothes thoroughly as soon as possible.

Additional notification to the Minnesota Department of Health (MDH), Minnesota Department of Natural Resources, Watershed District and local units of government (i.e. County Health Departments for public beaches) may be necessary based on the event occurring.

Can homeowners help prevent releases/bypasses?

Homeowners can help reduce the need for a release or bypass by making sure they're not putting excess "clear water" into the sanitary sewer system. For example, many Minnesota homes use sump pumps and foundation drains to keep groundwater from flooding basements. Unfortunately, these are often connected to the sanitary sewer system and can be the major source of clear water in the system. Clear water "wastes" the system's capacity, because it doesn't need treatment but goes through the treatment system anyway. Generally, the greater the number of clear water inputs to a system, the more likely a release/bypass will occur during wet weather.

Most cities and wastewater treatment system owners are now taking action to prohibit such discharges to the sanitary sewer. If you believe that your home may be contributing to such a problem, contact your city office or wastewater treatment system owner to find out what local ordinances require and how you can help.

What about releasing/bypassing in floods?

During recent flooding events in Minnesota, some wastewater treatment facilities were completely flooded and stopped treating sewage altogether. While this is obviously an undesirable and, in some cases, unavoidable situation, the impact of this kind of failure is lessened because of the large dilution factors available when rivers are flooded.

Flood waters also contain many other wastes besides sewage, such as manure, industrial effluent, and debris. The MDH recommends that people regard all flood waters as potentially contaminated and avoid contact with them if possible. Most waterborne diseases are not transmitted just by touching the water and outbreaks of such disease are rare in Minnesota. Nonetheless, if you must contact flood waters or other potentially contaminated water sources, take reasonable precautions, including avoiding getting the water in your mouth and washing with soap and water after contact.

For additional information on wastewater in floods see <https://www.pca.state.mn.us/sites/default/files/wq-wwtp7-01.pdf>