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EPA Enforcement: Preventing Backup of Municipal Sewage into Basements

Backups and Other Sewage Overflows: What Are They and Why Do They Occur?

Overflows from aging municipal sewer systems expose citizens to bacteria, viruses and other microorganisms that can cause serious illness. Raw or partially treated sewage may flow out of manholes onto streets, sidewalks and yards; it can also back up through pipes into businesses and homes. Tackling this environmental and human health risk is a top EPA enforcement priority.

There are two types of sewer systems. Either of them may overflow onto your property. *Sanitary sewer systems* transport sewage and industrial wastewater to sewage treatment plants. *Combined sewer systems* transport storm water in addition to sewage and industrial wastewater. Both sanitary sewer overflows and combined sewer overflows can be routine in some municipal systems, reflecting chronic problems.

Sewer systems can deteriorate with age, resulting in pipe or equipment failures, blockages and breaks in sewer mains. Pipes or water treatment plant capacity may be overwhelmed in severe weather or where there is inadequate planning for population growth. Overflows may also result from poor sewer system maintenance practices.

Nationwide, EPA is protecting public health through settlements that require municipalities to stop sewage overflows, overhaul their sewage systems and clean up contamination.

"Building backup" overflows can occur in either type of sewer system. Although the overflows usually emerge through toilets and drains in basements in private residences, they can happen in any type of facility, including businesses, schools, restaurants, nursing homes, retail stores and other buildings. Yards may also be contaminated by backups.

Sewage backups can be a regular occurrence in some communities, causing a range of problems for residents. One municipal sewer authority received hundreds of reports of sewer overflows and backups each year. Residents described repeated incidents of backups of black, thick, smelly water, containing cigarette butts, toilet paper and human waste through basement toilets, shower drains, floor drains and laundry sinks. In many homes, the water rose to more than 12 inches and destroyed furniture, wallboard, carpets, antiques, electronic equipment and

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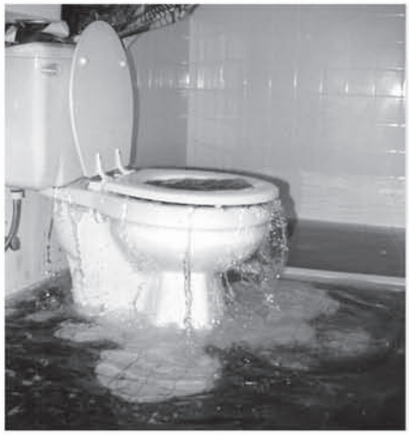
Sewage overflows often occur in public areas where citizens may come into contact with raw sewage. (Source: docupic.com)

many other valuables. Cleanups were expensive and often required the removal of floors, wallboard and carpeting, as well as disinfection to remove mold, mildew and bacteria present in the saturated portions of the buildings.

Poor operation and maintenance of the sewer system in another city caused repeated incidents of basement and building backups of raw sewage over a ten-year period. Raw sewage typically entered the affected homes through overflowing toilets and floor drains in shower stalls, in some cases filling basements with dead rats, toilet paper and human waste.

When backups are the result of conditions in the municipal sewer system, the municipality is responsible for cleaning up and preventing future backups. However, if sewage backs up as a result of problems in the pipeline extending from a private residence or other building to the municipal system, it is usually the property owner, not the municipality, who is responsible for cleaning up and fixing the problem that caused the backup. The municipality can help determine the cause of a basement backup. If a homeowner suspects that a backup may be the result of conditions in the sewer system, the homeowner should contact the municipality to investigate the backup.

In addition to creating a health threat, sewage backups can have significant financial consequences from property destruction and interference with business operations. Many homeowner and renter insurance policies do not cover sewage backups. Special coverage may be needed, typically as a rider to a basic property owner or renter policy.



Sewage backing up into a toilet in a house. (Source: U.S. EPA photo)

Health Effects of Sewage Backups

Sewage backups into homes and neighborhoods are of special concern to EPA due to the increased chance of human exposure. Raw sewage often contains a variety of microorganisms, viruses, bacteria and intestinal parasites that can cause serious illnesses, including cholera, dysentery, hepatitis, cryptosporidiosis and giardiasis. Sensitive populations -- children, the elderly and those with weakened immune systems -- can be at a higher risk of illness from exposure to sewage.

The most common effects of sewage-related illness are gastroenteritis, which is an infection of the gastrointestinal tract, skin rashes and infection of open cuts. Gastroenteritis affects the gastrointestinal tract, including the stomach and small and large intestines. Symptoms typically include abdominal cramps, watery diarrhea and vomiting, which can last from one to ten days, depending on the severity of the illness. Infected cuts and rashes can become swollen and red, with localized pain at the site of the rash or cut. Although symptoms can be treated, no curative medical treatment is available for some sewage-related illnesses.

Exposure to disease may persist for months after a sewage backup affects a building. Walls, floors and furniture can remain saturated, creating an environment for non-sewage-related organisms to grow, including *Clostridium tetani* (tetanus). Toxic fungi and molds can also thrive in moist environments. In many cases, removal of damaged material such as rugs, furniture and drywall is the only viable option, and in some cases, a building may become uninhabitable.

EPA's Enforcement Strategy to Address Sewage Overflows

Preventing sewer overflows is a national enforcement priority for EPA. As shown by recent settlements, EPA seeks comprehensive solutions to reduce the risks of exposure to raw sewage. The Agency has required municipalities to report sewer overflows to authorities and the public and to take action to avoid future occurrences. It has also required municipalities to clean up buildings contaminated by sewage backups.

Recent Settlements Addressing Sewage Backups

Washington (D.C.) Suburban Sanitary Commission

EPA, the State of Maryland, and five citizen groups took action to address sewer overflows and backups in Montgomery County and Prince George's County. The result was a settlement agreement with the Washington Suburban Sanitary Commission (WSSC) entered in federal court

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Resident walking through sewer overflow on a neighborhood street. Risks posed by exposure may not be obvious. (Source: U.S. EPA photo)

in December 2005. Under the settlement, WSSC has agreed to implement substantial corrective activities to ensure the proper management, operation and maintenance of its sewer system. WSSC will undertake activities valued at over $300 million to eliminate sanitary sewer overflows, including any sewage backups onto public or private property and into homes. The actions under this settlement will reduce raw sewage discharges from the WSSC system by more than 26 million gallons per year and eliminate basement backups caused by inadequate capacity or poor operation and maintenance.

WSSC will also implement emergency response and cleanup programs to address all overflows, including sewage backups. WSSC's "Emergency Response Plan" will contain methods for reporting backups, timeframes for responses, measures that will be taken to clean up backups and to repair conditions causing backups, and a follow-up process to ensure the adequacy of cleanups.

Knoxville (Tenn.) Utilities Board

The sewer system operated by the Knoxville Utilities Board (KUB) was the subject of an action brought by EPA, the State of Tennessee, and the Tennessee Clean Water Network (a local citizens group). The parties reached a settlement in February 2005 with KUB that requires KUB to ensure the proper management, operation and maintenance of its sewer system. The settlement is expected to eliminate approximately 3.5 million gallons of sewage overflows annually. KUB has agreed to undertake measures costing about $530 million to carry out the settlement. KUB will report its sewer overflows (including building backups) to EPA, the State of Tennessee and the City of Knoxville, and provide public notice of such overflows at the Knoxville library and on the KUB website.

Washing machine floating in backup from municipal sewers. (Source: Sierra Club)

The KUB settlement incorporated significant human health protections. KUB will take specific measures -- such as increasing sewer capacity, improving operation and maintenance, and installing backflow prevention devices -- to prevent the release of sewage into buildings, yards, and other areas where people may come into contact with it. When releases do occur, KUB will clean up thoroughly and disinfect the affected property. Cleanup of sewage backups will include activities such as wet vacuuming, wiping floors and walls with cleaning solution and disinfectant, flushing out and disinfecting plumbing fixtures, carpet cleaning or replacement, and disinfection or removal of items potentially contaminated by a backup.

Hamilton County, Ohio

In a 2004 settlement with EPA, Hamilton County, Ohio, agreed to undertake comprehensive action, estimated to cost at least $1.5 billion, on a court-enforceable schedule. The required activities include construction of major capital improvements that will control sanitary sewer overflows and eliminate over 6 billion gallons of raw sewage annually from the county's separate sanitary and combined systems. The county will install backflow-prevention devices and pumping systems and, in some cases, purchase contaminated property.

EPA guaranteed additional human health protections in the settlement by fashioning a "Water in Basement" (WIB) program specifically to address sewage backups. Under the WIB program, Hamilton County will staff a call-center 24 hours a day, seven days a week, to respond to sewage backup claims and to clean up the immediate effects of backups. The program also establishes proce-

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dures for residents to file a claim with Hamilton County for damage to real and personal property caused by sewage backups. To date, Hamilton County has received over 1,000 claims filed under the WIB program.

For more information, contact Kevin Bell, Office of Civil Enforcement, Water Enforcement Division, at (202) 564-4027; Email: bell.kevin@epa.gov.

Sewage Backups: What to Do

- **If you observe an area that you suspect is affected by a sewage backup, avoid coming into contact with the area. Keep family members and pets away from it.**
- **If it is necessary to approach an area contaminated by sewage, first turn off the electricity. Wear protective clothing such as rubber boots and gloves when entering the affected area. Be alert for hazards such as broken gas lines, flooded electrical circuits, and submerged furnaces or electrical appliances.**
- **Take pictures inside your basement and other areas affected by a sewage backup for damage and insurance claims.**
- **Many cities have a 24-hour sewer maintenance or customer hotline to report water in basements and backups from drains and plumbing fixtures located below ground.**
- **Other contacts in case of a sewage backup include your state environmental authority and the U.S. EPA Regional office for your state.**
- **EPA maintains a webpage where citizens may report environmental violations, including sewage overflows: http://www.epa.gov/compliance/complaints/index.html**

Enforcement Alert

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