



## Common household wastewater systems

Household wastewater can contain various pollutants and disease-causing agents that need to be treated before being discharged to the environment. Household wastewater systems are designed to collect, treat, and dispose of household wastewater safely and effectively.

There are different types of household wastewater systems depending on the source and destination of the wastewater. Some of the most common types are:

**Septic system.** A septic system is a decentralized wastewater treatment system that consists of a septic tank and a drainfield. A septic tank is a buried, watertight tank that receives and partially treats raw household wastewater. Heavy solids settle to the bottom of the tank while greases and lighter solids float to the top. The solids stay in the tank while the liquid effluent flows out to the drainfield for further treatment and dispersal. A drainfield is a shallow underground trench or bed filled with gravel or other porous material that allows the effluent to percolate through the soil. The soil acts as a natural filter and removes most of the remaining pollutants and pathogens from the effluent before it reaches the groundwater or surface water.

- Pros: A septic system is a simple, low-cost, and low-maintenance option for household wastewater treatment in rural or suburban areas where municipal sewer systems are not available or feasible. A septic system can last for many years if properly designed, installed, and maintained. A septic system can also reduce water consumption by allowing graywater reuse for irrigation or toilet flushing.

- Cons: A septic system can fail or malfunction if it is overloaded, undersized, poorly constructed, or neglected. A failing septic system can cause unpleasant odors, backups, leaks, or surface ponding of wastewater. A failing septic system can also contaminate groundwater or surface water with pollutants and pathogens, posing health and environmental risks.

**Cesspool.** A cesspool is an underground pit or chamber that receives raw household wastewater without any treatment. A cesspool relies on natural drainage and evaporation to dispose of the wastewater. A cesspool may have perforated walls or a porous lining to allow some of the liquid to seep into the surrounding soil.

- Pros: A cesspool is a simple and inexpensive option for household wastewater disposal in areas where soil conditions are suitable and groundwater or surface water sources are not nearby or vulnerable. A cesspool requires little maintenance except for periodic pumping or cleaning.

- Cons: A cesspool is an outdated and unsafe option for household wastewater disposal in most areas. A cesspool does not provide any treatment for the wastewater and can easily overflow or clog with solids. A cesspool can also pollute groundwater or surface water with pollutants and pathogens, posing health and environmental risks.

**Sewer system.** A sewer system is a centralized wastewater collection and treatment system that serves multiple households or buildings. A sewer system consists of a network of pipes that convey household wastewater to a treatment plant where it undergoes physical, chemical, and biological processes to remove pollutants and pathogens. The treated wastewater is then discharged to a water body or reused for irrigation or other purposes.

- Pros: A sewer system is a reliable and efficient option for household wastewater treatment in urban or densely populated areas where municipal services are available and affordable. A sewer system can provide high-quality treatment for the wastewater and protect public health and environmental quality. A sewer system can also facilitate water conservation by allowing treated wastewater reuse for various purposes.

- Cons: A sewer system is a complex and costly option for household wastewater treatment that requires extensive infrastructure, operation, and maintenance. A sewer system can also be vulnerable to leaks, breaks, overflows, or backups due to aging pipes, extreme weather events, power outages, or human errors. A sewer system can also generate sludge or biosolids that need further treatment and disposal.