



# How well does your Septic System work?

Nearly 24% of all homes in the United States are served by septic systems. You might wonder how environmentally acceptable septic systems really are. Years of experience have proved that properly designed, installed and maintained septic systems have little adverse effect on the environment.

Government regulations ensure that septic systems conform to certain standards, and a reputable contractor can make sure your system will be installed properly. As a homeowner, you have a major influence on how well your septic system works.

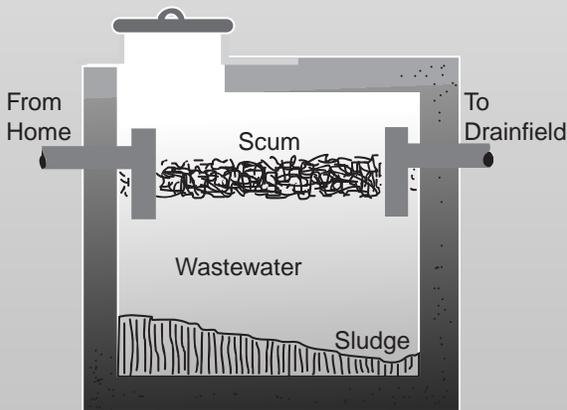
## How Septic Systems Function

Septic systems have two key components – a septic tank and a soil absorption system. The septic tank is a container, usually prefabricated from concrete according to a relatively standardized design. It receives wastewater from your bathroom, kitchen and laundry room, allowing the heavy solid particles to settle and light materials to float to the surface of the tank. These materials become sludge and scum. Bacteria in the wastewater feed on the sludge and liquify the waste products.

This process requires time. To permit enough time for settling and flotation, regulations require that septic tanks be sized according to the expected daily flow of wastewater from your home.

The soil absorption system (drainfield) consists of a distribution box, perforated distribution lines made of tile or plastic and an area of soil. The soil absorption system receives wastewater from the septic tank and removes harmful, disease-causing microorganisms, organics and nutrients. For this part of the system to function properly, it must be constructed carefully on suitable soil.

The soil also needs time to filter out these harmful materials from the wastewater. Suitable soils do not include sand (which permits wastewater to pass through too fast) or clay (which accepts only small amounts of wastewater). State and local regulations that determine what constitutes suitable soil have been developed after carefully considering many factors that affect a soil's ability to treat domestic wastewater adequately.



## System Failures

Design, construction or maintenance problems are usually responsible for septic systems that are not working well. The principal signs of design problems are easy to detect: effluent rising to the ground or drains and toilets that operate sluggishly or not at all. These problems occur because the drainfield is either too small or is located on the wrong kind of soil.

Before a septic system is built, most health agencies require a “perk” (percolation) test to determine how fast the soil absorbs water. Soil examination by a professional soil scientist can provide an even more reliable assessment of the capacity of soil to accept wastewater. When designing a system, your builder should check the water table level to be sure it is at least four feet below the septic drainfield.

Construction problems and failures include drainfields laid on improper grades, incorrect joints and alignments between system components, and pipes broken or crushed during the building process.

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## What You Can Do

**Maintenance is the single most important consideration in making sure a septic system will work well over a long period of time.** Too often homeowners forget that whatever goes down the drain or toilet ultimately either finds its way into the soil or remains in the septic tank until it is pumped out. Use common sense, and you should have few problems with your septic system.

These maintenance practices will keep your septic system running smoothly:

- Know the location of all components of your septic system; keep heavy vehicles away from the system.
- Don't plant trees or shrubs near drain tiles since their roots can clog drain lines.
- Dispose of household chemicals properly. Do not pour them down the toilet or drain; they can destroy the bacteria in the septic tank.
- Distribute your laundry chores throughout the week to avoid overloading the system on any given day.
- Don't use garbage disposals. They contribute unnecessary solids and grease to your septic system.
- Conserve water whenever and wherever possible.
- Don't use toilets as trash cans.

Monitor your septic tank yearly, and have a reputable contractor remove sludge and scum every three to five years. (This helps ensure there is enough space in the tank for wastewater, and it prevents solids from escaping into the absorption system.)

## Why Worry?

The threat of disease is a key problem with treating human wastewater. The epidemics that killed millions of people in the Middle Ages were caused by mixing of human waste with drinking water supplies. Domestic wastewater contains bacteria and viruses that cause dysentery, hepatitis and typhoid fever. To protect your health, it's important to exclude these organisms from both surface and groundwater. That is why sewage treatment plants use chlorine and other biocides (substances destructive to many organisms). Fortunately, soil and soil bacteria can effectively remove pathogenic (disease-causing) microorganisms from wastewater treated in a properly functioning septic system.

Nutrients such as nitrogen and phosphorous, contained in domestic wastewater, can cause both health and nuisance problems if allowed to reach surface or groundwater supplies. Nitrogen in its nitrate form poses the most significant threat to our health. When ingested by infants, nitrate can interfere with the blood's ability to carry oxygen, causing “blue baby” syndrome. Nitrogen carried in septic tank wastewater is usually in the form of ammonia. This ammonia is readily transformed into nitrate, which can easily become part of ground and surface water supplies.

Nutrients also fuel the growth of algae and are responsible for the subsequent loss of oxygen, causing serious problems for any body of water.