Did You Know...

...almost 25% of the US population treats its domestic wastewater on-site in septic systems? Though a simple technology, the processes that treat the wastewater are quite complex and require periodic inspections and proper care. Well-maintained septic systems provide effective protection for human health and the environment from the potentially negative effects of wastewater.

Homeowners are responsible for maintaining their on-site or septic systems. This pamphlet explains how a typical septic system works and offers pointers on how to prolong its life. As with any home maintenance requirements, preventative care is less expensive than repair. Properly maintained septic systems can provide a lifetime of effective wastewater treatment.

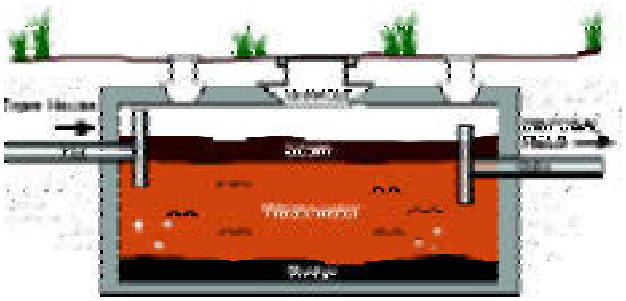
What Is a Septic System?

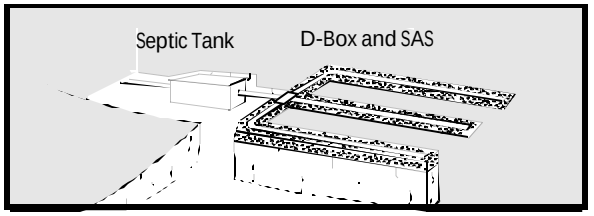
A conventional septic system consists of a septic tank, a distribution box (D-box), and a soil absorption system (SAS).

Primary Treatment

When you flush your toilet or run a washing machine the wastewater flows out of the house and into the septic tank. This wastewater remains in the tank temporarily so that the heavy solids and lighter scum have time to separate from the liquid. This separation process is called *primary treatment*.

The solids that fall to the bottom of the tank are called sludge and are decomposed by naturally occurring anaerobic bacteria. Grease and floatable materials that rise to the surface of the wastewater are called scum. Some septic tanks are equipped with an outlet filter to reduce suspended solids discharge to the disposal field. The sludge along with the floating scum should be removed from the tank periodically by a professional septic tank pumper.



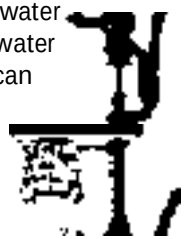


Secondary Treatment

The remaining liquid, called effluent, may contain disease-causing microorganisms or pollutants that must be treated. The effluent flows from the septic tank into the distribution box or **D-box**, where it is evenly distributed into several conveyance pipes. Drainage holes at the bottom of each pipe allow the effluent to drain into the Soil Absorption System (**SAS**).

In the SAS the effluent trickles slowly into the subsurface soil where a slimy mass accumulates known as a biomat. This biological layer along with the unsaturated soil further treats and purifies the effluent through infiltration, filtration, adsorption, and aerobic bacterial digestion. This process is called *secondary treatment*.

Even after secondary treatment wastewater still contains nutrients, such as nitrates and phosphates, that can pollute nearby waterways and groundwater supplies. Excessive nutrients in drinking water can be harmful to human health and can contribute to weed growth and algae blooms in lakes and streams. Therefore the final level of protection requires setbacks from streams and potable water sources, which assures you that both drinking water and surface water are adequately protected.



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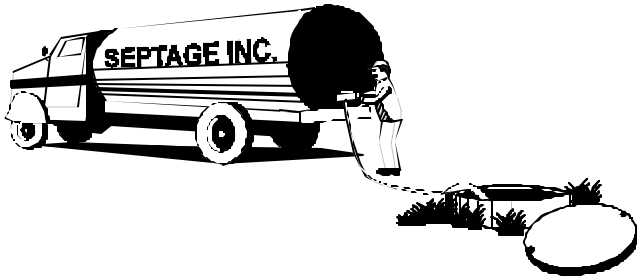
How Often Should I Have My Septic Tank Pumped?

There are no easy formulas for determining how often a tank should be pumped. The frequency depends on the size of the tank, the daily flow and concentration of wastewater into the tank, the number of persons served, and if a garbage disposal or grinder is used. Arrange a professional inspection of your septic tank at least once every two years to determine if it is time to pump the tank. On average, a tank needs to be pumped every 3 to 5 years.



What About Alternatives to the Conventional System?

Normally, a conventional system effectively protects human health from the effects of wastewater, but certain soil conditions, groundwater, or site restrictions may make alternative technologies more appropriate. Alternative technologies generally employ a conventional septic system with additional components that are designed to reduce wastewater contaminants such as nutrients or pathogens. These components may require individual periodic maintenance attention and should be installed and inspected according to the manufacturers' specifications. Alternative technologies provide homeowners with cost-effective solutions for site restriction problems. For a listing of alternative technologies approved by your state, contact your state agency or your local board of health.

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How Do I Maintain My Septic System?

- Keep maintenance records.
- Know where it is and how your system is designed.
- If you have a pumping mechanism know how it works, what it does to warn you of potential problems, and who to call in an emergency.
- Know the warning signs for failure: pooling on the SAS, foul odors, patches of bright green grass, etc.

Protect the Soil Absorption System

- Know the size and location of the entire SAS.
- Avoid planting shrubs or trees on the SAS. Plant grass.
- Keep heavy equipment (cars, boats, trailers) off the SAS to avoid damaging the pipes and compressing the soil.
- Direct runoff from guttering, sump pump, or driveway away from the SAS to avoid oversaturating the soil.
- Consider installing an outlet filter in your septic tank to protect the SAS from stray particles.

Protect the Organisms That Make It Work

- Never dispose of paint, thinners, photographic solution, or other chemicals in your drains. They can kill the organisms in your system and interfere with treatment.
- Conserve water to avoid overloading your system. Fix leaking taps.
- Do not use caustic drain cleansers. Open clogs with a drain snake and boiling water.
- Septic system additives and commercial cleansers are unnecessary and can harm your system.
- Purchase environmentally friendly household cleaners.
- Grease and fats should go in the trash, not the drain.
- Solid trash like diapers, cigarettes, sanitary products, cat litter, plastics, or paper towels can seriously reduce the efficiency of a septic system. Put litter in its place.
- Avoid automatic disinfecting toilet bowl cleaners that continuously release chemicals.

Most importantly, make sure that everyone in the family knows how to protect the septic system from the inside out. Teach children and visitors about what they can and cannot put down your drains and you will protect your system for a long life of service.

How Can I Learn More About My Septic System?

More information about septic systems is available from the EPA National Small Flows Clearinghouse (NSFC) through other brochures and a videotape entitled *Your Septic System: A Guide for Homeowners*. Call 800/624-8301 or visit *http://www.nsfc.wvu.edu*. Contact your local health department for specific information concerning your system location and details.

On-site Advice by State

Connecticut (Environmental Engineering)
860/509-7296
www.dph.state.ct.us

Maine (Wastewater and Plumbing Control Program)
207/287-5689
www.state.me.us/dhs/eng/plumb/index.html

Massachusetts (Title 5 Hotline)
800/266-1122
www.state.ma.us/dep/brp/wwm/t5pubs.htm

New Hampshire (NHDES)
603/271-3503
www.des.state.nh.us/ssb/

New York
NY DEC 518/457-2553
Dept. of Health 518/402-7600
www.dec.state.ny.us/

Rhode Island (RIDEM)
401/222-4700
www.state.ri.us/dem/

Vermont (VTDEC)
802/241-3822
www.anr.state.vt.us/

We thank the following for providing information for this publication:

U.S. Census Bureau, 2000
National Small Flows Clearinghouse
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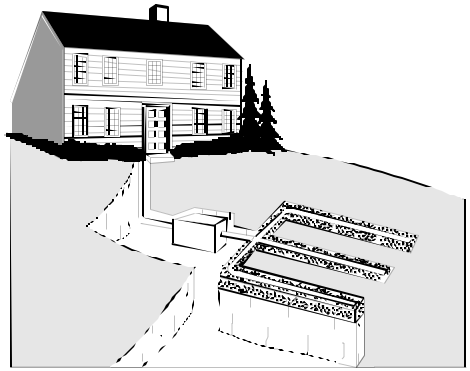
New York

What Do You Know About...

Septic Systems: Your On-site Wastewater Treatment



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