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## On-Site Sewage Treatment Maintaining A Septic System

**A**s more people move to rural and suburban areas not served by municipal or community sanitary sewers, homeowners must turn to on-site sewage disposal for the treatment and disposal of household waste. Proper operation and maintenance of an on-site sewage disposal system will increase the system's longevity and protect surface water and groundwater quality.

As a homeowner, you can have a significant impact on how well your septic system works by the way you maintain it. Both the septic tank and the soil absorption system must be properly maintained. Many septic system failures can be traced to improper operation and maintenance on the part of the homeowner.

Failure often appears as a clogged absorption system. The soil pores through which wastewater must pass are relatively small and are easily blocked by solids and by heavy bacterial growths. Failures can result in pollution of wells, lakes, and streams.

A failing system has several noticeable symptoms: Damp mushy ground or standing water above the absorption field. Dark green and slimy or oily film on the surface near or above the absorption field. Noticeable odor, fly, or mosquito problems around the absorption field. Household plumbing fixtures that back up or do not drain properly.

Septic system failures can be avoided by following these maintenance tips:

- Avoid overloading the system.
- Pump the system regularly.
- Keep records of maintenance.
- Prevent physical damage to the system.
- Take proper corrective action when needed.

### Avoid Overloading The System

Because the system only has a certain capacity for volume and for time and speed of decomposition, it can be overloaded in a number of ways. It can be overloaded with water, with solids, with materials that degrade slowly, with materials that do not settle,

and with chemicals. Since your family will determine which materials enter the system, you should establish rules for water use and waste disposal.

### Tips For Water Use

Conserve water going into the system. Each gallon of water that flows into the drain must be treated and disposed of by the soil absorption system. Typical water use is about 50 to 70 gallons per day for each person in the family. A number of water-saving devices and just plain water conservation techniques may double the life of your system.

- Reducing toilet wastes is the single most effective way to reduce sewage flows. The flush toilet accounts for about 40 percent of sewage wastes from an average home. Many flush toilets use 4 to 6 gallons of water per flush. Flush toilets that use less than 3 gallons per flush are available.
- Routinely check the toilet float valve to be sure it is not sticking, making the water run continuously.
- Determine how much water your automatic washer uses per cycle. Front-loading washers and suds-savers typically use less water than top-loading machines. If your sewage system is approaching its maximum capacity, try to spread the washing out during the week to avoid overloading the sewage system on a single day.
- Baths and showers can use large amounts of water. Showerheads that limit the flow rate to 2 gallons of water per minute are available. Filling the tub not quite so full and limiting the length of showers could result in appreciable water savings.
- Repair all leaky plumbing fixtures.
- Keep a container of drinking water in the refrigerator so you won't have to run the faucet for cold drinking water.

### Tips For Waste Disposal

- Restrict the use of your garbage disposal if you have a septic tank system. Garbage disposers can overload the system with solids which may spill over

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into the absorption lines and clog the soil. If you want to install a disposer, the size of the septic tank must be increased one and one-half to two times the normal tank volume. That way, the tank will be better able to handle the increased level of solids.

If you already have a disposer, make sure to grind waste into fine particles and have your system inspected and pumped more frequently, every year or even more often. It is better to compost, incinerate, or throw out garbage with the trash.

- Do not deposit coffee grounds, wet-strength towels, disposable diapers, facial tissues, feminine hygiene products, cigarette butts, and similar nondecomposable materials into the house sewer. None of these materials will decompose, and they will cause a rapid accumulation of solids in the septic tank. These things should be disposed of with your solid waste household garbage.

- Use a good quality toilet tissue that breaks up easily when wet. To determine suitable quality toilet tissue, place a portion in a glass jar half full of water. Shake the jar. If the tissue breaks up easily, the product is suitable. High wet-strength toilet tissues are less desirable. The color of the toilet tissue has no effect on the septic system.

- Avoid pouring liquid fats, grease, or oils down the kitchen sink drain. Fats and greases solidify and can block parts of the system. Keep a separate container for waste grease and throw it out with the trash.

- Be especially careful with chemicals that you put down your drain. They can kill the bacteria that help break down the solids in the septic tank and may also enter groundwater. Most septic tanks can handle normal amounts of detergent, but some drain cleaners, bleaches, organic solvents, oven cleaners, paints, paint thinners, pesticides, and a variety of other petroleum products may be harmful. These chemicals should be disposed of in other ways. Use only those drain cleaners that are labeled as safe for septic tanks.

- Some detergents can cause problems with septic systems. Be wary of inexpensive washing products. They may contain excessive fillers, some of which can harm the septic system. The best solution is to use liquid laundry detergents. They are less likely to have fillers that are harmful to the system.

- Do not use septic tank additives since they are of no benefit and some can do harm. Additives such as hydrogen peroxide, acids, and solvents are sometimes put into the distribution system to unclog a failing absorption system. In many instances, however, they have been shown to have little or no benefit and can result in groundwater contamination.

- A “starter” is not needed for bacterial action to begin in a septic tank. Many bacteria are present in

the materials deposited into the tank and will thrive under the growth conditions present.

- Too much sodium in water softener recharge wastewater may harm septic tank action, and the additional water must be treated and disposed of by the soil absorption system. If the softener wastewater creates an overload to the septic system, the wastewater can be discharged to the ground surface since it contains no pathogens. The wastewater should be discharged in a location where it does not cause a nuisance or damage valuable vegetation.

### **Pump The System Regularly**

If a septic tank is not pumped out regularly, solids build up until they are carried along with the wastewater into the absorption field where they clog soil pores. When this happens, the system fails and a new absorption field must be built.

### **When To Pump**

With ordinary use and care, a septic tank usually requires pumping out every 3 to 5 years. Table 1 suggests average pumping frequencies given the size of the tank and the number of persons living in the household. These figures were calculated assuming there was no garbage disposal unit hooked up to the system. The use of a garbage disposal will increase the amount of solids in the holding tank by as much as 50 percent.

**Table 1. Estimated Septic Tank Pumping Frequencies In Years.**

Tank Size (Gallons)	People Using The System				
	1	2	4	6	8
	Years				
900	11	5	2	1	1
1,000	12	6	3	2	1
1,250	16	8	3	2	1
1,500	19	9	4	3	2

Source: Hoover 1990.

You can ask a local septic tank pumper to measure the solids level and the scum layer and to pump out the septic tank when it is needed. The local health department can supply you with a list of approved septic tank pumpers.

You can measure these levels yourself by following the procedure explained below.

**Measuring Sludge Depth.** Measure both sludge and scum depths at the outlet side of the tank at least once a year starting with the third or fourth year after a cleaning. In a two-compartment tank, measure at the outlet of the first compartment to the second compartment if possible.



## Prevent Physical Damage To The System

To prevent physical damage to the system, observe the following precautions.

- Keep surface waters away from the septic tank and absorption field. Precipitation draining from roofs, driveways, and roads onto the soil absorption field area can also put an extra load on the system. If the soil is saturated with water, even seasonally, it cannot accept any more water. The untreated wastewater will either surface or backup.

- Keep automobiles and heavy equipment off the system. Do not plan any building additions, pools, driveways, or other construction work near the septic system or the repair area.

- Driving, paving, or building on top of a septic system can damage the soil absorption field. Pipes can shift or be crushed and the soil can be compacted. Damage of this sort makes it difficult to locate the septic tank and prevents access for regular pumping.

- Maintain adequate vegetative cover over the absorption field. Tree roots can clog the soil absorption field. Plant grass, not trees or shrubs, in the area.

## Take Proper Corrective Action When Needed

If you have problems with your septic system, inspect the absorption field and downslope areas for seepage or surface flow. Wet spots, unpleasant odor, or lush growth of water-loving vegetation indicate a system failure.

Quick fixes do not work for failing septic systems. Never place more soil over a surfacing soil absorption field. This does not fix the system, and wet areas will soon appear again. Do not just pipe the sewage to a road ditch, storm sewer, stream, or a farm drain tile; this pollutes surface water and creates a health hazard. Do not run the sewage into a sink hole, drainage well, or abandoned water well; this pollutes groundwater.

Any repair or new installation of a septic system requires a permit from and approval by the local health department. Your health department can help you determine which corrective measures are appropriate for your system. These may include some of the following.

**Add Drain Lines.** Install additional drain lines to increase the size and the capacity of the soil absorption system. A larger system will be able to accept more wastewater.

**Install An Alternate Soil Absorption Field.** This involves constructing a second soil absorption system and diverting all wastewater to it for at least 1 year to rest the original field. The fields can then be alternated. Resting allows drying and digestion of the scum layer which clogs the soil pores.

**Repair Physical Damage.** Leveling the distribution box or repairing crushed or broken drain lines may be necessary to restore the system. Tree roots may be interfering with the operation of the soil absorption field and must be removed.

**Improve Surface And Subsurface Drainage.** Divert all surface water and groundwater away from the soil absorption field. The soil must absorb all the wastewater from the house; surface water and groundwater will only add to the load.

## Conclusion

You are a key factor in how well your septic system functions. The old adage “out of sight, out of mind” is not applicable to these treatment systems. Any time and money you spend to properly maintain your system will be returned in the long run as you avoid the headaches and expenses associated with trying to remedy a failing system.

When on-site sewage disposal systems are properly designed, constructed, operated, and maintained, they provide a safe, cost-effective alternative to municipal and community sanitary sewage treatment.

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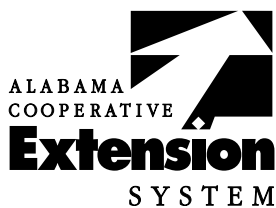
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