# The use and care of Septic Systems

**Many homes utilize individual waste disposal systems or Septic/Sewage Disposal Systems.**

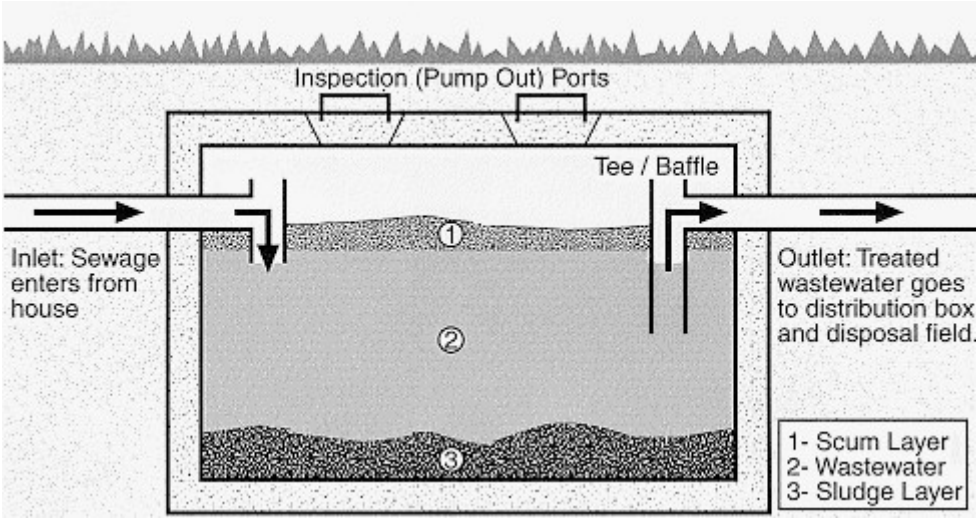
**Maintenance of these systems is often forgotten because they are underground ("out of sight and out of mind").**

**Septic systems are an effective method of collecting, treating, and disposing of homeowner wastewater, provided they are properly sited, installed, and maintained. A properly maintained septic system can last a very long time, but a well-sited, properly sized and installed system will fail if not properly maintained. A failed septic system creates problems such as noxious odors, lowered property values, surface water contamination, and groundwater pollution and may be a health hazard. Repair and replacement costs are considerable.**

## How the septic system works

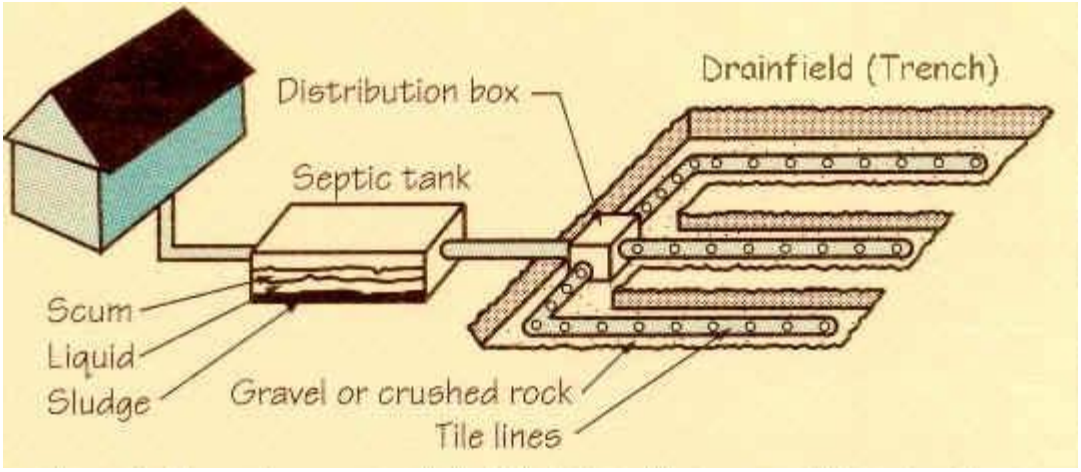
**Waste material from the house enters the septic tank and**

> **Heavier solids settle to the bottom and form a sludge layer.**
> **Lighter wastes such as oil and grease rise to the top and form a scum layer.**
> **Between these two layers is liquid wastewater.**




**When waste enters the tank, bacteria begin to break down the solid materials. This break down reduces solids, but also leaves a residue**

**behind in the tank. As time passes, this residue builds up, and must be removed to prevent it from entering the drain field and clogging the system. The center liquid layer flows slowly from the tank into the drain field. Perforated pipes allow the liquid to be equally distributed in a gravel-filled disposal field. Once the liquid reaches the disposal field, it soaks into the soil. The soil then acts as the final filter for treatment of waste received from the septic system.**




## Dos and Don'ts if you are on a septic system

### Dos

**Connect laundry and kitchen water to septic tank.**
**Have your septic tank pumped out by a licensed operator every 2-3 years (more often if you are using a garbage disposal).**
**Have the operator check to be sure there is a tee or baffle on the outlet of the septic tank. The baffle stops the scum from floating into the disposal field.**
**Check with the health department if you are having problems. They can assist with operation, maintenance and design questions.**
**Learn the location of your septic tank, drain field and well. Keep a sketch of it handy with your maintenance record for service visits.**
**Obtain a copy of your septic permit and map inspection, if possible.**
**Divert other sources of water, like roof drains, house footing drains, and sump pumps to lawn areas away from the septic system. Excessive water floods the system, keeping the soil in the drain field saturated and unable to adequately treat the wastewater.**
**Take leftover hazardous household chemicals to your approved hazardous waste collection center for disposal. Use bleach**

**disinfectants, and toilet bowl cleaners sparingly and in accordance with product labels.**

## *Limit water entering your tank:*

**Use water-saving faucets, showers, and toilets.**
**Prevent basement sump pump connection to tank.**
**Drain appliances one at a time.**
**Spread clothes-washing over the entire week and avoid half-loads.**
**Prevent roof, foundation, driveway, basement drainage and water softener discharge from entering the tank or disposal field area.**
**Minimize amount of water used for bathing and dish washing.**
**Fix all faucet and toilet float valve leaks.**
**Check toilets for leaks at least once a year by putting a few drops of food coloring into the tank. Without flushing, see if the coloring enters the bowl. This indicates a leak.**

### Don'ts

**Don't ever go down into a septic tank. Toxic gases are produced by the natural treatment processes in septic tanks and can kill humans in minutes. Extreme care should be taken when inspecting a septic tank, even when just looking in the lid opening.**
**Don't allow heavy vehicles to drive over or park on the drain field (leach field).**
**Don't plant trees or shrubs on the drain field (leach field). The roots from the plants could damage the system.**
**Don't cover the drain field with a hard surface such as concrete, asphalt above ground pools or decks. The area should have only a grass cover.**
**Don't repair your septic system without checking with the health department to see if you need a permit.**
**Don't overuse a kitchen garbage disposal unit. Heavy use adds large quantities of solids and shortens the time between septic tank pumping.**
**Don't use commercial septic tank additives. These products usually do not help and some may hurt your system in the long run.**
**Don't use your toilet like a trash can or poison your septic system and the groundwater by pouring harmful chemicals and cleansers down the drain. Harsh chemicals can kill the beneficial bacteria that treat your wastewater.**

## Do Not Flush Or Wash Down The Drain!

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|---|---|---|
| **coffee** | **grinds** | **dental floss** |
| **fat or grease** | **kitty litter** | **disposable diapers** |
| **grease or oil** | **paper towels** | **cigarette butts** |
| **condoms** | **sanitary napkins** | **tampons** |

**or hazardous chemicals, such as:**

| | | |
|---|---|---|
| **paints** | **varnishes** | **paint thinners** |
| **pesticides** | **waste** | **photographic solutions** |
| **oils** | **old gasoline** | **other chemicals** |

***The above items can overtax or destroy the biological action taking place within your system, or clog your drain field (leach bed).***

## *A cautionary Note about Water Filtration Systems:*

**Do you have a water softener? These devices can put several hundred gallons of water down the drain every week that is not contaminated and does not need to go through the treatment process. If your filtration system is older, up-grade your softener with a newer efficient model that uses less water. You could also install a mini-septic system or dry well dedicated for your softener.**

**If your system is water filtration and your well water is high in iron content, back flushing the iron or other metals into your septic system can cause damage to the leach bed or drain field.**

## *A cautionary note about Garbage Disposals:*

***We*** **do not recommend the use of a garbage disposal when your waste disposal system is an individual septic system. This type of waste can be disposed of by discarding it in your rubbish, or placing it in a compost pile**

**(with the exception of spoiled food and meat). *Households with garbage disposal units produce about double the solids as those without such units.* If you must keep your garbage disposal, it is very important to pump your septic system more often.**

# Signs that your system is failing

**Sewage backup in drains or toilets.**
**Slow flushing toilets, sinks or drains.**
**Visible liquid on the surface of the ground near the septic system. It may or may not have an odor associated with it.**
**Lush green grass over the drain field, even during dry weather. Often, this indicates that an excessive amount of liquid from the system is moving up through the soil, instead of downward, as it should. While some upward movement of liquid from the drain field is good, too much could indicate major problems.**
**Build-up of aquatic weeds or algae in lakes or ponds adjacent to your home. This may indicate that nutrient-rich septic system waste is leaching into the surface water.**
**Unpleasant odors around your house.**

# What to do if your system is failing

**If your system exhibits one or more of the failure indicators, contact your county health official for assistance in assessing the situation. Some times the system may be able to be repaired without complete replacement. Sewage contains harmful bacteria, so keep pets and children away from the failure. Limit water use until repairs can be made. If a new system or repairs are needed, a permit is often required from your local health department.**

# General Maintenance Tips

**Sound operation and maintenance practices include water conservation, keeping harmful substances out of the system, and having the system inspected and pumped on a regular basis. Good operation and maintenance practices start with everyone in the household knowing what damages the septic system. Having a diagram of the complete system indicating distances and locations of the tank and drain field helps avoid practices that can harm the drain field and assists in regular maintenance activities.**

# Maintaining the Septic Tank

**Pumping the septic tank regularly is probably the single most important practice that can protect the system. The solids that settle out in the tank should be removed every three to six years depending on water usage and the amount of inorganic materials entering the system. A guide to follow with a 1,000-gal tank is to pump every three years for a household of four or more people and pump every six years for one with two people (increase times by one-half for 1,500-gal tanks).**

**You also can determine when pumping is needed by opening the top of the tank and making some measurements and observations. (*CAUTION: NEVER INSPECT A TANK ALONE, AND NEVER GO DOWN INTO A TANK.* Toxic gases are produced by the natural treatment processes in the tank and can kill quickly.) Pump the tank when the sludge layer at the bottom of the tank is 18 inches deep or the scum layer thickens to within three inches of the outlet baffle or sanitary tee outlet.**

**Solids should be removed by a certified tank pumper and disposed of in an approved manner and location. Be sure that the pumper removes all of the material in the tank. It is not necessary to leave some sludge to "restart" the biological processes; nor is it necessary to scrub or disinfect the tank.**

**When not removed in a timely manner, overflowing solids from the tank accumulate in the drain field clogging the soil and backing up the system. This damages the drain field and may require constructing a new drain field in a different location on the property. When the drain field is clogged with solids, pumping the tank does not rejuvenate the drain field. It provides only a few days of relief until the tank fills again and delivers wastewater to the drain field. Some clogging of soil pores occurs quite slowly even in a properly maintained system, but this should not cause system failure for 20 years or longer.**

# Maintaining the Drain field

**The drain field is the most important component of a conventional septic system. It provides final treatment of wastewater. The more water used in the household, the greater the possibility of having problems with the drain field. Careful and regular maintenance of the tank extends drain field life.**

**Water conservation reduces the amount of wastewater delivered to the drain field. Keeping faucets and toilets from leaking with periodic checks and repairs certainly reduces wastewater. Do not allow foundation drains, roof gutters, and other surface waters to enter the septic system. Divert surface waters from flowing across the drain field and reduce surface water ponding above the drain field trenches by keeping soil levels at or slightly above the surrounding soil areas. Allowing heavy equipment to compact**

**the soil above the trenches results in squeezing the soil pores which reduces water flow, increases clogging of pores, and reduces oxygen movement to the "active microbial zone" around the drain field lines. Oxygen is necessary for the microbes to properly convert pollutants to harmless gases that diffuse upward to the atmosphere. Without this conversion, the wastewater is not fully purified and the pollutants remaining can enter the groundwater.**

# Practices that reduce system function

**Be aware of products or household systems that can damage or reduce the effectiveness of the septic system. Reducing garbage disposal use reduces the amount of solids going to the septic tank.**

**The scum layer on top of the wastewater in the septic tank is primarily made up of oils, fats, and grease from the kitchen. When cooking oils or other types of oils enter the tank, they become part of the scum layer. Grease and fats (lard, beef tallow, butter, cheese, and cream) enter the tank and harden on the liquid surface. They can accumulate until they clog the tank inlet or outlet. When homeowners use hot water to flush grease or fat down the drain, it may pass on through the tank directly into the drain field lines where it can rapidly clog soil pores in the drain lines. Even though these products are organic in nature, they are decomposed so slowly by microbes that further wastewater loading from the tank only speeds up clogging.**

**Placing even small quantities of pesticides, paint thinners, solvents, drain cleaners, poisons, and other harsh household chemicals into the septic system can kill the microbes in the tank and drain field that decompose solids and purify the wastewater. Unfortunately, some organic solutions are not treated in the septic tank and can flow directly into the drain field where they are not effectively treated by the soil before reaching the groundwater.**

# Septic Tank Aids

**These products are sold in many forms, but they do not reduce the need to regularly remove solids from the septic tank by pumping. Many of these products include bacteria, yeasts, enzymes, mild acids, mild bases, or biodegradable organic solvents that are not harmful to the septic system, but some will damage the tank or drain field or contaminate the groundwater.**

# Why do Septic Systems fail?

## Using Too Much Water

Using more water than the soil can absorb is the most common reason for failure. The sewage is forced to the surface or backs up into the house. This problem is often the result of one of two problems. Either the system is improperly designed or the result of a change in water use habits such as an increase in the size of the family or the addition of a water-using appliance.

Surface water draining from roofs, driveways, and roads onto the soil absorption field area can put an extra load on the system. If the soil is saturated with clean water, even seasonally, it cannot accept any more wastewater. The untreated wastewater will either rise to the surface or back up.

## Physical Damage

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

Tree roots can also clog the soil absorption field. Plant the area in grass, not trees or shrubs.

## Improper Design and Construction

Improperly designed and/or constructed septic systems are doomed from the start. These systems usually fail in a few months because they are inadequately sized, installed in impermeable soils, or not properly constructed. In Oregon, several inches of unsaturated soil must be present beneath the soil absorption system to a limiting layer. Temporary or permanent water tables, bedrock, or impervious soil are all considered limiting layers.

The soil is the most important part of the septic system and must be properly evaluated and protected. If the soil layer is too thin, the wastewater will not be treated before it enters the groundwater.

If the soil is too tight, it will not absorb all the wastewater, forcing it to the surface. The soil profile should be evaluated by a local health

department sanitarian or a registered soil scientist to ensure that it is appropriate for wastewater treatment and disposal.

When constructing a septic system, it is essential that all components of the soil absorption field be level. If a line lies at too steep a grade or if the distribution system is not level, the wastewater will not be evenly distributed to all portions of the soil absorption field. This may overload one part of the field.

The heavy equipment used in home construction can compact the soil. During construction of the house, the area designated for the soil absorption system as well as the required replacement area and the area directly downhill should be fenced off to keep out heavy vehicles. Also, constructing and excavating a system during periods of high soil moisture can result in excessive soil smearing and compaction.

## Lack of Maintenance

The septic tank should be pumped about every 2 to 3 years to remove the sludge and scum retained in the tank and prevent clogging of the soil absorption field. More frequent pumping is needed if a garbage disposal is used in the home. Biological and chemical septic tank additives are not necessary and do not eliminate the need for pumping.

A septic tank is equipped with baffles at both the inlet and outlet. The inlet baffle prevents short-circuiting of the sewage and the outlet baffle prevents the floatable scum from moving out into the soil absorption field. In time, these baffles can deteriorate and drop off into the tank. The condition of the baffles should be checked when the tank is being pumped. Replace those in poor condition with sanitary tees.