May / June, 2002

Frequently Asked Questions About Septic Systems

Dr. Ted Loudon

A bit of hallway conversation the other day brought up several questions that are commonly asked by homeowners who own septic systems. You may be somewhat tired of seeing lists of FAQ's but the following may be useful in answering septic system questions that come to you.

1. Should I use commercially available additives in my septic system?

There are numerous additives on the market that claim to improve the biological activity in the septic system and some suggest that if you use a particular additive you may not have to pump your septic tank. Research has shown that there is little if any benefit to be gained by using additives in a septic system that is regularly used and where the solids that accumulate in the septic tank are removed every few years. Additives that advertise reduction in septic tank pumping may actually result in solids that are intended to be removed and kept in the septic tank, washing out into the drainfield. We do not recommend the use of any additives in septic systems.

2. How often should I pump my septic tank?

The normal recommendation for frequency of septic tank pumping is to have the tank pumped every 3-5 years. Some service companies and some health departments may recommend every 1-3 years. However, this is one of those questions where we must say the answer depends upon several factors. It depends upon the size of the tank and the way the tank is used. The number of occupants contributing wastewater, the amount of solids that are washed down the drain and into the system, the temperature of the water in the tank and the size of the tank all factor into determining how frequently the tank needs to be pumped. If there are 5 occupants in a home served by a 1,000 gallon septic tank, that tank will need to be pumped at least every 4 years. Thus the 3-5 year recommendation is a good one. However, if two conservative water users have a 1,000 gallon tank, the tank might go 20 years before it absolutely needs to be pumped. This long interval would not be our recommendation but stories of "my grandparents had a septic tank that they never pumped and they didn't have any problems" may be true for a conservative couple. However, unless people are willing to check their tank every couple years and determine its need for pumping, the recommendation of 3-5 years is a good recommendation for most people.

3. What is the environmental impact of septic systems?

The environmental impact of a septic system depends upon the environment in which it functions. A septic system in very sandy soils with a shallow water table and no clay soil between the bottom of the septic system soil absorption trenches and the water table will contribute nitrate to the groundwater. If there is a clay layer protecting the groundwater, it is likely that very little nitrate will reach the groundwater. Also, septic systems in very permeable soils can result in pathogenic bacteria and viruses reaching the groundwater. However, after a system has been in use for a while and a "biomat" or soil-clogging layer is formed in the soil absorption system, the removal of bacteria and viruses in the soil is very efficient. This is because the biomat slows the rate of water entry into the natural soil and produces slow, unsaturated flow through the natural soil. This greatly enhances the ability of the soil to remove pathogens.

Failing systems that result in water coming to the surface are a public health hazard and can cause surface water contamination by nutrients and pathogens. If a system is functioning

hydraulically (i.e. accepting the water) in a slowly permeable soil there will be very little environmental impact.

4. How long do septic systems typically last before they fail?

Again, the answer to this question is dependent upon how the system is used and how it was originally designed and installed. A system that is used conservatively and maintained regularly by pumping the septic tank can last a very long time if it was originally installed correctly. The best systems are shallow systems which allow air to enter the soil and penetrate to the vicinity of wastewater absorption. Studies that just look at averages without regard to quality of construction or how the system is utilized show that the average life of a septic system is 20 years or more. This is the time period until the system becomes sufficiently clogged with organic material that it either results in effluent coming to the soil surface or backing up in the plumbing and reducing the efficiency of flow from the home. Well constructed, well maintained systems will last longer.

5. What can be done to extend the life of a septic system?

The owner is usually not in a position to have influence on the design and construction of the system but can impact its useful life by how the system is used. Minimizing the quantity of water discharged to the system on a regular basis will extend the life of a system. Regular pumping of the septic tank to assure that solids are removed from the tank before they have an opportunity to build up to the level where they wash out into the drainfield is also a key factor in extending the life of a system. The other issue in determining system life is the quantity and quality of solids that are discharged to the septic tank with the sewage. One simple rule is that if you didn't eat it, wash something in it or pull it off the toilet paper roll, don't put it in the septic tank. This would exclude discharging grease, toxic substances, material from a garbage grinder, and other solids. Taking care to be sure that leaking fixtures are not tolerated and there is no surface water, sump pump discharge or water softener discharge going into the system will all extend the life. Minimizing peak flows is also important. People with septic systems should not do all the laundry on one day nor should they discharge large quantities of water from hot tubs, etc. to the system. Garbage disposal use should be minimized. It does not need to be eliminated but the more the garbage disposal is used, the more often the tank will need to be pumped.

It is important to build an awareness among septic system users that their system has a finite capacity for both flow and solids that must be respected. If the limitations of the system are understood and taken into account as people develop their living habits, septic systems can provide reliable service for a very long time.