Ask the
INSPECTOR...
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Septic Systems

I am thinking of buying a home that has a septic system. How do these systems work?

In a home that has a septic system, the indoor plumbing is virtually identical to the plumbing on a home connected to a city sewer system. The big difference is what happens to the waste water once it leaves the house. There are two main steps in the on-site waste water treatment process, the septic tank and the leaching field. The water and solid waste generated in the home enter an underground septic tank located at the exterior of the home (newer tanks usually have two compartments while older tanks will have one.), usually made of concrete, polyethylene, or fiberglass. These tanks have an inlet opening (from the house) on the front side and an outlet opening (to the leaching field) on the rear side and one or two hatches on the top to provide access for inspection and cleaning. When water enters the tank, the solids begin to settle to the bottom, grease or oil floats to the top, and the same volume of water that entered the tank, exits the tank. A baffle or T-connection is installed in front of the outlet opening to prevent solids or grease from exiting the septic tank and blocking the outlet pipe or the weeping tile in the leaching field. The leaching field consists of a series of horizontal plastic pipes (weeping tile) installed below grade that distribute the "clarified" waste water from the septic tank over a large area. Gravel and sandy soils are placed below the weeping tile to promote downward drainage and to aid in further 'cleaning' the water by filtration as it travels through the soil.

A properly designed, installed and maintained septic system should typically last 20 to 25 years under normal operating conditions. Septic tanks should be pumped every 3-4 years, depending on the size of the tank and the number of people living in the home, to remove the solids from the bottom of the tank. If the solids are allowed to accumulate in the tank for a long period of time, they may eventually block the tank inlet, outlet or weeping tiles, preventing the home's waste water from leaving the home. In this case, the weeping tile would have to be cleaned or even replaced which can be very costly.

In some cases where the waste water effluent must be thoroughly cleaned (due to the proximity of a drinking water supply), the space is not available, or the soil is inappropriate, an alternative to a conventional septic system can be installed. These systems include aerobic treatment units and biofilters. With aerobic treatment units, air (including oxygen) is mechanically pumped into the waste water in the tank, providing an environment suitable for aerobic (or oxygen-using) bacteria to process the solid wastes. The extra oxygen also reduces the amount of time it takes for organic materials to break down, and allows for a smaller leaching field because the water leaving the tank has fewer impurities. The second type of alternate treatment system is a biofilter, which is a large fiberglass shell containing either peat moss or synthetic materials, which the waste water is filtered through to remove solids and other organisms. Bacteria thrive on the filters >>>

and eat the waste that collects on the filter media. Biofilters also allow a smaller leaching field since most of the materials that would be filtered out in a conventional leaching field have already been removed. In the case of either system, regular annual or semi annual servicing is required and eventually, in the case of biofilters, the filter media will require replacement.

Is there anything else I should know about living in a house with a septic system?

It is important to remember that everything that goes down the drain or the toilet ends up in the septic tank. Introducing large amounts of tissues, toilet paper, etc will quickly increase the amount of solids in the tank. As the sludge level in the tank rises more quickly, more frequent pumping is required. Therefore, the amount of tissue, toilet paper, etc. flushed should be kept at a minimum and ideally food waste disposers are not installed since they add unnecessary solids to the tank. As well, harsh chemicals and bleach that are used in the home will kill the bacteria that are working to decrease the amount of sludge, again resulting in a more frequent pumping schedule. For the same reason, the backwash water from water softeners should not be discharged into a septic system.

Large trees planted in close proximity may clog and damage the piping with its roots, especially trees with shallow root systems. The weight of large vehicles driven over the leaching field can partially or completely crush the weeping tile, reducing the effectiveness of the crushed pipes and potentially causing the waste water to back-up into the home.

Some companies offer to perform a dye test which involves flushing a dye pellet down the toilet with significant amounts of water and examining the area above the weeping tile bed after an hour or two. If the dye is visible in the soil above the leaching field, it indicates that there are problems with the system. However, even if there is not dye visible, there may be other problems that cannot be determined by this simple test. In addition, the introduction of excess amounts of water into the system over a short period of time can actually disturb the solids and sludge in the septic tank and cause them to unnecessarily enter the leach field.

The only way to more conclusively assess the condition of a septic system would be to inspect the condition of the tank components and dig test pits throughout the leach field and have a qualified professional assess the conditions of the weeping tile and surrounding soil properties. This exercise would typically be cost prohibitive and is rarely done.

For further information please contact:

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