SEPTIC TANK MAINTENANCE BOOKLET

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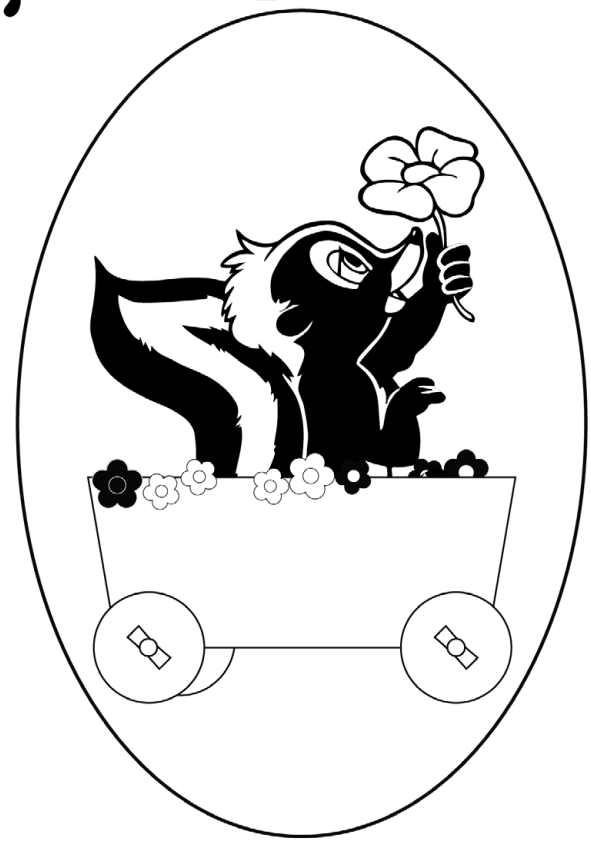

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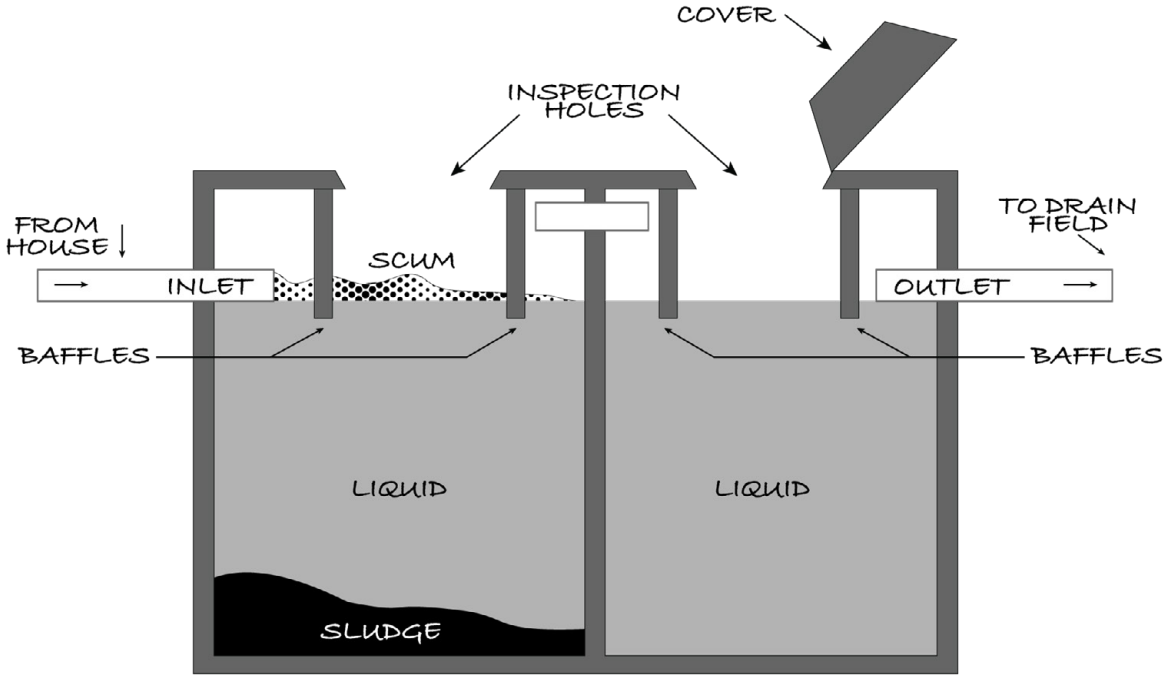
The Trouble-Free Septic Tank

What is a septic tank? It is a large box, usually made of concrete with two compartments. The first compartment is a cultivating chamber, and the other a discharge chamber, with an intake pipe attached at one end and an outlet pipe leading to a drain field at the other. Baffles keep the new, incoming sewage from disturbing the old and protect the outlet from solid particles (see diagram below).



A cross section diagram of a septic tank showing scum and sludge build-up.

The millions of bacteria that live in the septic tank breaks down the raw sewage. The bacteria enters with the incoming sewage and multiplies rapidly. It takes three to six weeks for a new tank to reach maximum microbial activity. In cold weather it may take even longer. Once the bacteria starts working, they create enough heat through digestion to keep the tank “working”.

The inlet pipe brings in everything you flush down the drains. Bacteria of many species change the organic solids in your drain wastes into both soluble and gaseous products. Before long, three layers have formed in your tank: scum, liquid, and sludge.

Fats and other floating solids rise to the surface to form the thick, leathery, scum mat. This helps to maintain anaerobic conditions, for septic tank bacteria to operate in the absence of air. A small amount of methane gas also bubbles to the top of the tank.

The soluble products dissolve in the water and are carried through the outlet pipe to the drain field. Because of the activity that occurs here, the drain field is sometimes referred to as the “absorption field” or “leach field”. The liquid effluent disperses over a large area through drain tile or perforated pipe. The soil absorbs and filters the liquid as it slowly percolates (leaches) downwards.

Insoluble items sink to the bottom of the septic tank to form the third layer: sludge. Several factors influence the rate at which the sludge and scum layers build up. The capacity of the tank is important. Large tanks work better than small ones. A minimum tank capacity of 1000 gallons is recommended for a three-bedroom house. More people per house means more raw sewage entering the system and consequently more sludge and scum accumulation.

Another set of bacteria (aerobic – those that operate in the presence of air) takes over to break down the liquid sewage further. Because those bacteria live in the upper layers of the soil, drain-pipe is laid only one to two feet below the surface of the soil.

The surrounding soil must be able to absorb and filter the liquid effluent to prevent it from contaminating the ground water or reaching the surface of the soil.

Because the liquid that leaves the septic tank may contain infectious disease organisms such as typhoid fever, pools of sewage on the surface are considered a health hazard.

Care of Your Tank

The kinds of materials you flush down the drain affect the depth of the sludge layer. Excessive hair, dirt (from washing root vegetables in the sink); and, most especially, wastes from a garbage disposal hasten the accumulation of solids. Doubly-ply coloured toilet paper builds up faster than single-ply white toilet paper. Anything bulkier than toilet paper doesn’t belong in the septic tank at all. This includes paper towels, newspapers, candy bar wrappers, sanitary napkins, tampons, and the so-called “disposable” diapers.

Ordinary household cleaners such as soaps, detergents, bleach, and drain cleaners do not have a noticeable effect on the bacteria because they are diluted in the large quantity of water flushed down the drain. But they still are poisons and should be used in moderation. More potent poisons WILL kill enough bacteria to interrupt the normal sewage breakdown process. The result: a quickly clogged tank. Also fatal are strong antiseptics used to sterilize equipment in the milking barn or elsewhere, and leftover pesticides.

The salt-laden water from home water softeners has no apparent ill effects on bacteria in the septic tank, but it can shorten the life of a drain field installed in a structured clay-type soil. The salts clog the air spaces in the soil.

What about additives sold especially for septic tanks? Some 1,200 products have appeared on the market for use in septic tanks and cesspools. They range from the possibly helpful to the downright dangerous. Most destructive are the chemical cleaners that contain sodium hydroxide or potassium hydroxide. They kill the bacteria and interfere with the digestive process. The result can severely damage the soil structure of your drain field.

Other products contain yeast, enzymes, or bacteria. They are not going to do any harm, but whether they do any good is debatable. Hundreds of thousands of septic tank owners use them, but they have not been proved to be of any advantage in properly controlled tests. Yeast digests only carbohydrates, which make up less than five percent of the solids in a septic tank. Enzymes do break down substances, but don't re-produce and are soon diluted.

Bacteria do reproduce. Conceivably, there is value in replacing bacteria killed by poisons you've flushed down the drain. But even a septic tank operating at maximum efficiency will accumulate solid materials. A bottle of bacteria can postpone but cannot prevent the day when the owner must remove the scum and sludge build-up. Every two to four years, depending on the tank condition, the tank must be cleaned out.

Inspection Time

Knowing just when to pump out the tank can save you both money and

trouble. If left too long, solids spill into the drain field and clog the vsurrounding gravel and soil, the whole drainage system might the have to be replaced. Unfortunately, the only way to know when to pump the tank is to inspect it annually.

Dig down and open the inspection manhole. Since you should do this at least every two years, consider adding a concrete extension pipe to the manhole in order to raise the opening to ground level. These extensions are available in the same diameters as the septic tank manhole and fit over the opening without alteration. Use a flashlight if you need light. No matches, please: Methane gas produced in the tank is explosive.

The depth of scum and sludge should be measured near the outlet baffle to the second compartment whenever possible. A tank needs to be cleaned if either (1) the bottom of the scum mat is within three inches of the bottom of the baffle;or (2) if the sludge is within 12 inches of the bottom of the baffle.

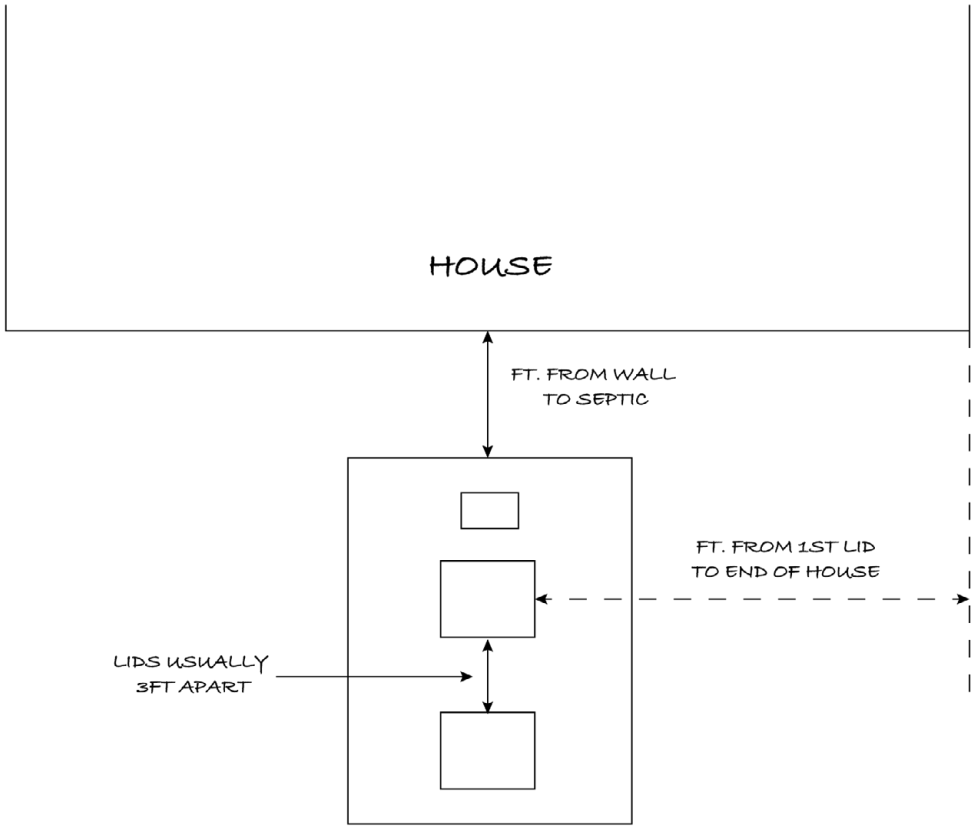
Personal inspection is the only way to tell for sure when the tank should be cleaned.

Cleaning Time

Be sure whoever cleans out your tank does not wash and disinfect it. Leave a little sludge on the bottom for “seed”. This will get your new colony of bacteria off to a good start. A good preventative maintenance program adds years to your septic system.

Notes

(Draw a diagram showing location of the septic tank with measurements from the side of house to lids of the tank). This makes it easier to find the tank if trouble should occur and you have to open the tank for service.



Notes

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Care & Maintenance of Your Septic System

Your tank and tile bed should, with proper care and maintenance provide many years of service. The homeowner should, however, be aware of the following to help the system to function properly:

1. Do not allow roof drains or surface waters to drain towards the area of the septic tank or leaching bed.

2. Water usage in the home should be kept to a minimum. If automatic washers or dishwashers are used, make sure FULL LOADS are washed each time. Excessive use of water from numerous washings in one day could flush solids from the tank to the leaching bed.

3. Moderate use of household drain solvents, cleaners, disinfectants, etc., should not interfere with the operation of the system, however, indiscriminate use may cause problems.

4. There is no need for “starters”, “bacterial feeds” or “cleaners”.

5. If roots penetrate and plug the tile, two or three pounds of copper sulphate crystals flushed down the toilet once a year should kill the roots it contacts. However, the use of comer sulphate should be carefully supervised since it may corrode chrome, iron and brass. Cast iron is not significantly affected. The crystals, when used in the above manner, should not disrupt the operation of the septic tank.

6. The tank should be pumped every three or four years. Failure to pump-out a septic tank when required may result in sludge being carried over to the leaching bed resulting in soil clogging and complete failure of the system.

7. Vehicular traffic (including snowmobiles) should NOT be allowed over the leaching bed.

8. The area over a leaching bed should have a good cover of grass but shrubs or trees should not be planted over the area. Good ventilation and adequate sunlight should be maintained in the area of the leaching bed.