SEPTIC MAINTENANCE AND UNDERSTANDING

On-Site Waste Water systems or septic systems as they are more commonly referred to as are designed to readily accept all black and grey water discharge from a home or cottage.

These systems are generally surrounded by a series of myths and old wives tales, of which I will try to dispel.

The traditional septic system or first generation of septic systems was installed with very little understanding as to the potential negative impact that they could have on our environment not to mention the aquifers that we cannot see. For this reason we now have a number of derelict systems that are still in use and are quietly infecting our most important of natural resources, GROUND WATER.

Previous to 1974 On-Site Waste Water fell under the Ministry of Environment guild lines. Since then the requirements have certainly tightened up. Tank sizes, the configuration of septic tanks, and even the composition of the tanks have all had improvements made to better ensure the proper treatment of house hold black and grey water discharge from residential and seasonal dwellings.

Part 8 of the Ontario Building Code segregates On-Site Waste Water treatment into five separate classes. Each of the five systems requires Health Unit approval to construct.

Class 1

A chemical toilet, an incinerating toilet, a re-circulating toilet, a self-contained portable toilet, and all forms of privy (out-house) including a portable privy, and earth privy, a pail privy, a vault privy and a composting toilet system, all of which can receive only human body waste.

Class 2

A grey water system

Typically this style of system is a simple pit with varying layers of filtering stone. A class 2 can receive only grey water waste (grey water contains no solids).

Class 3 A cesspool

This system can receive waste only from a Class 1 system (human body waste)

Class 4 A leaching bed system.

A class 4 septic system can accept both human body waste and grey water waste.

Class 5 A sanitary sewage system with an on-site holding tank for sanitary sewage produced on-site, prior to removal by a haulage service provider.

The most common of the above 5 classes of septic systems that we see being used is the Class 4 system and the class 5 system. Environmentally speaking, the class 4 system, or leaching bed system is the most effective form of treatment and certainly the most economical to operate. The class 5 systems or holding tank is basically a point of storage with minimal treatment of the waste taking place.

Principles of a class 4 system

This system is today, composed of a two-compartment tank in which the sanitary sewage is collected and digested, and a leaching bed from which the tank effluent percolates into the ground.

The first generation of concrete septic tanks were smaller and had no *partition* to divide the tank into *primary* and *secondary chambers.* Systems constructed in this manner would allow suspended solids to pass into the *tile bed* there by prematurely aging the bed.

Today the minimum size of septic tank that can be approved is 3600 litres (800 gal.) whereas the older systems would have been not more than 600 gal.

The composition of septic tanks has also changed with time. Pre 1970, the most common tanks were metal (steel) tanks with even less capacity than the early factory built concrete tanks. This type of material has a limited life expectancy generally about 18 years. It is common for home owners to believe that a metal tank is sound. At the time of pumping, for all intense purposes they look good.

The surrounding earth actually acts like a support form that helps the tank retain its form. On a closer inspection, visually or gentle probing it will become obvious that the physical integrity of the tank has been long since compromised, This type of tank is allowing the slow percolation of raw sewage in the ground water or lakes.(where is your drinking water coming from ?) Soil composition and use habits (water softeners) will also accelerate the demise of metal septic tanks.

Metal tanks that are upgraded (a process that is allowed under the Ontario Building Code) will often required additional plumbing upgrades as well. *Soil Pipes* that lead from the home / cottage out to the tank are typically a cast iron or copper material. A plumber will want this type of piping to be changed to ABS (plastic) piping. Another common plumbing repair that should accompany a septic tank upgrade would be the termination of *Grey well systems* that were excepting discharge from sinks and showers.

When a septic tank is upgraded from a metal or single chamber concrete tank to a modern tank, weather it is plastic or concrete, it is not always necessary to replace the entire system. The filter bed may be saved with some minor remedial work. When this is the case it is strongly advised to have an *effluent filter* installed on the discharge pipe in the second chamber of the septic tank. This type of filter system can be viewed as a small insurance policy to ensure that no solids are migrating out to an absorption bed.

Solids that are able to pass into the bed will cause plugging of the tiles and eventually failure of the entire system.

A septic tank is a watertight vault with at least two compartments in which sanitary sewage accumulates. The main purpose of the septic tank is to collect sanitary sewage and to separate solid material from liquid. This permits subsequent digestion of the sanitary sewage. As sanitary sewage enters the tank, the heavier solids materials begin to settle to the bottom, and the lighter oils and greases rise to the top.

Bacteria in the tank decompose or liquefy the solid matter and allow it to pass from the tank, through the leaching bed, and into the surrounding soil.

This bacterium comes naturally from the waste we discharge into the system. NO COMERCIAL ADDITIVES ARE REQUIRED. EQUALLY NO ACCELARATORS SUCH AS BAKERS YEAST OR RAW MEAT ARE NEEDED TO BE DEPOSITED INTO THE SYSTEM.

The soil system is the most important component of the septic system. It is the primary means by which the sanitary sewage is treated, and helps to minimize contamination of the water table. Once the effluent passes into the soil, the remaining nutrients are removed by bacterial action, and any solids and microorganisms are filtered through a combination of physical, chemical, and biological reactions within the soil mass.

For example, some of the nutrients may be used by vegetation, such as grasses; some may become fixed to soil particles; and other nutrients, percolating down towards the water table, are gradually diluted to acceptable levels. For this reason it is imperative that the ground retains a sufficiently thick layer of unsaturated soil above the high groundwater table (typically 90 cm).

Careful consideration should be given to any landscaping plans that are in the area of the septic system. Earth coverage over the entire septic tank is required to ensure that septic ouders do not migrate out through the inspection lids of the tank. The septic tile field, on the other hand should have little to no landscaping over the bed footprint. The type of waste degradation that takes place in the septic tank is considered to be anaerobic (that being without air), while the bacterial action that occurs within the weeping tiles is considered aerobic. That being said, anything that would cause compression to the soil over the tiles will greatly restrict the infiltration of air into the soil. The most common mistakes that occur over top of a septic field are structures such as swimming pools (above ground of course) tennis courts, fire wood storage, buildings, driveways and most common gardens. Weeping tiles can be as close as 10 inches to the ground surface so any digging in this area can have disastrous results.

Ok finally, here is THE LIST, “to do’s” and “never, nevers”.

1. Pumping of a septic tank every 3 to 5 years regardless of how little use the system gets.

2. Trees should be planted (and gardens) not closer than 3 meters to bed or tank
3. Septic tank should not be closer than 1.5 meters to structure. (yes decks are considered structure)
4. Septic tanks (and outhouse's) and beds should be 15 meters (50ft.) from lakes, rivers, ponds, springs, and drilled wells.
5. Septic tanks and beds should be 30 meters (100ft) from dug wells
6. Things that should not go into the system. For most part you can assume that if it did not come out of you, it should not be going into the system. The most common of the "don't do" list are femmine hygiene (tampons), latex (condoms) paper towels, Kleenex, baby wipes, cigarette butts, kitty litter, dental floss, powder detergents, solvents (paints and thinners) bleaches, CLR, bacon grease and that pretty blue stuff you put in the toilet.
7. Holding tanks and Pumping chambers should have an alarm system (audio and visual) to warn of systems that are full or mechanical equipment (pumps, floats) that have malfunctioned.
8. Water saving fixtures such as shower heads and low flow toilets can be detrimental to a septic system. An equal balance of solids and liquids is important for sufficient degradation of solids.
9. Water softeners are best to be pumped to a sump pit or out to the ground surface. Ministry of Environment states that this is in no way harmful.
10. Last one, and this might be just more of a pet peeve. The little waste paper container beside the toilet is just nasty. This is not for toilet paper use! The septic can, and is designed to handle toilet paper. The "enviro-nuts" (as I lovingly refer to them as) would suggest that only single ply paper must be used, thank you very much, I would like a little comfort. Live life on the edge, go 2 ply. Any further information

on the use of septic systems can be obtained by contacting HomePro Inspections Central Ontario at;

800-832-0519 or by email at homepromike@gmail.com .

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