

# Septic Tank Maintenance

ONE OF THE MAJOR ISSUES ASSOCIATED WITH THE ONGOING DEBATE ON ONE-OFF RURAL HOUSING IS EFFLUENT TREATMENT AND, IN PARTICULAR, SEPTIC TANKS.

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It is estimated that there are 400,000 septic tanks in Ireland. These treat the effluent from 1.2m people and deal with 230m litres per day. While septic tanks can work quite effectively the key aspect of wastewater treatment performance is maintenance. The septic tank will only provide partial treatment of domestic effluent. It is necessary to have a percolation area or soakaway to complete the treatment process. In situations where the water table is high or soils have poor drainage a septic tank should not be used.

The septic tank is most commonly a concrete tank with one or two chambers. The incoming domestic effluent enters below the surface so as to cause minimal disruption. The solids settle to the bottom and a scum layer forms on the surface. The solids are broken down anaerobically by bacteria and the outflow is discharged from beneath the surface to the percolation area. The treatment process is completed by bacteria which attach themselves to the stones and treat the effluent as it trickles through the percolation area. The septic tank requires emptying when either the scum layer or the solids at the bottom approach the outlet level. The solids or scum would cause blockages of the percolation area, prevent the septic tank discharging and lead to poor final effluent treatment.

**There are two aspects of the installation of septic tanks which are critical in terms of protection of the environment:-**

**Groundwater protection** - dealt with by a joint publication from EPA, Geological Survey of Ireland and Department of Environment, Heritage and Local Government (DEHLG) in 1999.

**Design and operation** – dealt with by 'Treatment systems for single houses' from EPA in 2000. (This is being revised and will be referred to in the building codes as the guidance to be followed for single house wastewater treatment systems).

On the basis that guidance on groundwater protection and single house wastewater treatment systems is



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followed the EPA is satisfied that septic tanks with their associated percolation areas will provide adequate protection to groundwater (State of the Environment 2004, EPA). The revised guidance on single house systems will address the maintenance of these systems.

Since the process within the septic tank is biological in nature many different chemicals in everyday use can prove inhibitory to the bacteria involved. In particular many cleaning chemicals such as bleaches, detergents, disinfectants, and so on all have a detrimental effect on septic tanks. The rate of growth of the anaerobic bacteria in the septic tank is very slow so any upset can take a long time to recover.

Currently the only maintenance on septic tanks relates to regular pumpouts. These are normally conducted every 1 – 2 years and the waste is taken to the local municipal wastewater treatment plant for treatment. However when we consider that the breakdown process is biological in nature it is surely logical to maintain that biological process. In light of the stresses on the biological process caused by chemicals in everyday use it is advisable to add natural bacteria which can help the degradation process and to restore performance. The benefits of a well

operated septic tank are that smells are reduced, effluent quality is maintained, percolation areas remain unblocked and desludging can be reduced in frequency. Regular monthly addition of bacterial products to the septic tank can maintain efficiency and improve performance.

In many areas which are unsuitable for septic tanks package treatment systems are used. These can provide a very high quality effluent treatment. These systems are mechanical in nature so maintenance is important. However in this case also the breakdown of the wastewater is biological in nature – in this case aerobic. It is important that the bacteria are treating the wastewater as efficiently as possible. The most effective way to ensure the performance required is to provide a regular dose of specially selected, natural bacteria to maintain the bacterial activity.

This whole area of biological maintenance has been largely ignored but when it is considered that it is the bacteria which are doing all the work in terms of treating domestic wastewater does it not make sense to ensure the bacteria are as efficient and healthy as possible? ▲

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