wellcare® information for

Sanitarians

Wells & Septic Systems

More than 25 million homeowners rely on private septic systems to dispose of wastewater, while more than 15 million homes depend on private well systems for drinking water. Homeowners with both wells and septic systems must take care to maintain these systems in order to ensure the purity of their drinking water.

Usually, a state or local sanitarian is the source of information for homeowners and home buyers regarding wells and septic systems. Most health departments are responsible for:

- Permitting the siting and installation of new septic systems and the repair of existing systems.
- Providing soil evaluations and perc tests before septic systems are installed.
- Responding to requests for assistance and/or complaints about septic systems.
- Conducting real estate certifications for wells and septic systems for mortgage lenders prior to closing the sale of a property.

This **wellcare®** information sheet offers sanitarians basic guidance to give homeowners about managing their septic system and protecting their drinking water. Further information on wells, water testing and water treatment can be found in other WSC **wellcare®** publications.

How Septic Systems Work

A septic system is a highly efficient, self-contained, underground wastewater treatment system. The National Small Flows Clearing House (NSFC), part of the National Environmental Services Center at West Virginia University, offers the following description of how septic systems work:

A septic system consists of two main parts – a ***septic tank*** and a ***drainfield.*** The septic tank is a watertight box, usually made of concrete or fiberglass, with an inlet and outlet pipe. Wastewater flows from your home to the septic tank through the sewer pipe.

The septic tank treats the wastewater naturally by holding it in the tank long enough for solids and liquids to separate. The wastewater forms three layers inside the tank. Solids lighter than water (such as greases and oils) float to the top, forming a layer of scum. Solids heavier than water settle at the bottom of the tank, forming a layer of sludge. This leaves a middle layer of partially clarified wastewater.

The layers of sludge and scum remain in the septic tank where bacteria found naturally in the wastewater work to break down the solids. The sludge and scum that cannot be broken down are retained in the tank until the tank is pumped. The layer of clarified liquid

flows from the septic tank to the drainfield or to a distribution device that helps to uniformly distribute the wastewater in the drainfield.

A standard drainfield (also known as a leachfield, disposal field or a soil absorption system) is a series of trenches or a bed lined with gravel or course sand and buried one- to three-feet below the ground surface. Perforated pipes or drain tiles run through the trenches to distribute the wastewater. The drainfield treats the wastewater by allowing it to slowly trickle from the pipes out into the gravel and down through the soil. The gravel and soil act as biological filters.

Installing a Septic System

A septic system must be installed a minimum distance away from drinking water wells, streams, lakes and houses, in order to protect water quality from wastewater working through the system. Distances are established both horizontally, which applies across the surrounding landscape and protects surface water, and vertically, which applies to distances underground and protects ground water.

State health departments set the minimum distance standards, which may range from 25- to 200-feet separation between the well and the septic tank and 50- to 400-feet separation between the well and the septic drainfield. In most cases, the state or local sanitarian must approve the site for a septic system and inspect the system once it is installed.

Homeowners who buy a property on which the septic system does not meet minimum separation standards should consider moving either the well or the septic system. Or, at minimum, they should test the drinking water for bacteria at least twice each year.

Managing the Septic System

A properly maintained septic system is no threat to the ground water that supplies a household well. However, wastewater from a failing septic system can carry contaminates such as nitrates, harmful bacteria and viruses into ground water and, potentially, the well.

A septic system, just like a drinking water well system, needs a regularly scheduled maintenance program. Homeowners should create a septic maintenance log and keep it with their well maintenance log.

The NSFC recommends having a septic system inspected every two years and having the septic tank pumped out every three to seven years, depending on the demand placed on it. Demand is based upon the number of people in the household relative to the design capacity of the system.

Most communities require a certain size septic system based on the number of bedrooms in the house. But many large families live in relatively small houses with small septic capacity. They will want to pump out the system much more often than will the residents of a large house with large capacity and little relative demand.

Most health departments say proper maintenance of a septic system makes system additives unnecessary. But, everyone in the household must be careful about what they flush into the septic system. Never dispose of green leafy vegetables or hazardous materials in sinks or toilets, because these can clog the system or pass through it and contaminate ground water. Don't flush chemicals, grease, disposable diapers, paper towels, kitty litter, cigarette butts, coffee grounds, dental floss, hair, paint, pesticides, varnish, thinners or waste oil. Avoid excessive use of bleach and drain cleaners.

The septic system's drainfield also must be protected. The NSFC and sanitarians recommend the following strategies to prolong the drainfield's functional life:

- Do not drive over the drainfield with cars, trucks or heavy equipment.
- Do not plant trees or shrubbery in the drainfield area, because the roots can get into the lines and plug them.
- Do not cover the drainfield with hard surfaces, such as concrete or asphalt. Grass is the best cover, as it helps prevent erosion and remove excess water.
- Do not regrade the surface over the drainfield.
- Do not install fences over the drainfield.
- *Do* divert surface runoff water from roofs, patios, driveway and other areas away from the drainfield.

Protect the Wellhead

Finally, it is important to protect the wellhead, the structure built over a well, even if it is located a good distance from the septic drainfield. The wellhead should be inspected regularly to ensure it provides a tight-fitting seal against contaminants. This is particularly important if the wellhead may be affected by flooding.

Take care when working or mowing around the wellhead, because it is easy to damage it with heavy equipment. Don't pile snow, leaves or other materials around the well, as these may carry pollutants into the system.

For more information on septic systems

The National Small Flows Clearing House of the National Environmental Services Center at West Virginia University offers three brochures in print and online on septic system operation and maintenance. Call 800-624-8301 or 304-293-4191 or go to http://www.nesc.wvu.edu/nsfc/nsfc_septicnews.htm

For more information on your drinking water

The following sites provide up-to-date information on efforts to protect drinking water supplies and steps you can take as a private well owner:

Water Quality Association	**www.wqa.org**
NSF International	**www.nsf.org**

For more information about wells and other wellcare® publications

wellcare® is a program of the **Water Systems Council (WSC). WSC** is a national nonprofit organization dedicated to promoting the wider use of wells as modern and affordable safe drinking water systems and to protecting ground water resources nationwide. Well owners and others with questions about wells or well water can now call the wellcare® **hotline** at **888-395-1033** or visit **www.watersystemscouncil.org**

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