Sewage Treatment Systems

Frequently Asked Questions

What is a septic tank?

The septic tank is a solid watertight tank and is the first step of the sewage treatment process. The tanks are most commonly constructed of concrete, but they can also be manufactured from plastic or fiberglass. Most installations of septic tanks use either two tanks in a row or one 2-compartment tank, which allows for the passive separation of the incoming solids from the wastewater.

The septic tank is the mechanism by which household sewage is separated into three layers:

(1) The Floating Scum Layer (soaps, greases, toilet paper, etc.) on top;
(2) The Effluent Layer (water, liquid, and suspended solids) in the middle; and,
(3) The Sludge Layer (heavy organic and inorganic materials) on the bottom.

Solids separate by gravity with lightweight materials floating to the top and heavy materials sinking to the bottom. At this point, naturally occurring bacteria in the sewage begin to break down the organic materials. This is referred to as primary treatment of the sewage. The liquid layer in the middle is what is referred to as "effluent" and that is what is supposed to leave the septic tank and enter the soil absorption area.

How often should I have my septic tank cleaned?

While the bacteria in the tank will slowly digest some of the organics in the sludge layer, most of this material must be eventually pumped out and taken to a sewage treatment plant by a septic tank cleaner. You should plan to have your septic tank pumped out by a septic tank cleaner every 3-5 years to avoid problems with your soil absorption field.

What is the soil absorption area?

The soil absorption field is a soil treatment system for the sewage effluent. The soil absorption field can be a leaching trench system, an elevated mound system, or a shallow drip-tubing system. The soil absorption field is the means by which the liquid effluent from the septic tank is treated and absorbed into the soil. The effluent leaves the septic tank and is distributed in the soil via the soil absorption field. During this process disease-causing pathogens are destroyed while small, fine organic solids in solution will be filtered out in the soil. Bacteria in the soil utilize the nutrients in these solids as a food source. Depending upon the weather conditions some of the water in the soil absorption field will evaporate into the air, while some will be utilized by grass and trees as both water and nutrients. Other water will percolate down through the soil as it continues to be treated by soil bacteria.

What is the difference between leaching lines, mound systems, or other alternative technology sewage treatment systems?

Soil conditions and topography are usually the two determining factors that dictate what type of soil absorption field you will need to utilize. Whenever possible, leaching trenches are the preferred soil treatment system because they are less expensive to install and require the least amount of maintenance. They can be used when you do not have a seasonally high perched water table at a depth of greater than 12 inches and when you do not have any limiting layers within 4 feet of the bottom of the leaching trench. Examples of limiting layers are bedrock, a true water table, or glacial till. Without at least 4 feet of soil treatment before encountering these limiting layers, it is possible that the sewage effluent will be a source of pollution.

What will a soil and site evaluation tell me about my lot?

The soil and topography of your lot will be evaluated for soil type, soil permeability, and soil limitation based upon where the house, driveway, and accessory structures are located on the property. Based on these conditions, the public health environmentalist will recommend the type of sewage treatment system for the residence in addition to any other requirements in accordance with the Warren County Sewage Treatment Regulations. Upon receipt of the sewage treatment system requirements, a homeowner will be advised to contact a sewage treatment system designer if soil conditions require an alternative technology system. You will also be advised of the primary sewage treatment system location for the property, as well as a required replacement area should the system fail over time.

What do I do after I have my lot reviewed for sewage treatment system suitability?

Once you have obtained your approval from the Warren County Combined Health District (WCCHD) for the type, size and location of your sewage treatment system you will need to provide the information given to you to a registered sewage treatment system installer. You will find the most up to date list of registered sewage installers at www.wcchd.com. The sewage treatment system installer will be able to provide you with a bid for the installation of the sewage treatment system.

Once you have selected your sewage treatment system installer, he will contact this office about securing the sewage treatment system Permit to Install. Once the installer has been issued the installation permit and the soil is suitably dry for the installation to occur, the installer will install the sewage treatment system either per his approved design or the design approved from the sewage treatment system designer. Once the system is installed and prior to anything being backfilled, an inspection of the sewage treatment system installation is conducted by the WCCHD staff. Upon satisfactory inspection and approval, the system can be covered.

Why does the soil have to be dry to install the soil absorption field?

If a soil absorption field is installed when soil conditions are too wet, the soil will be compacted by the heavy equipment used to install the system and the trench sidewalls could become smeared or glazed over. Soil absorption sewage treatment systems depend upon the space between the soil particles for the movement of wastewater through the soil. Smeared sidewalls can severely limit the ability of effluent to drain by gravity and could result in the premature failure of the leaching lines.

How far should my private water system be away from my sewage treatment system?

The Ohio Private Water System Rules require that a private water system such as a well, hauled water storage tank, or cistern be at least 50 feet from the sewage treatment system and upslope from the sewage treatment system, if possible. However, the actual water line to the house can be within 10 feet of the system but may not cross the sewage treatment system.

How close can I come to the sewage system with a geothermal system, downspout drains, or a lawn irrigation (sprinkler) system?

No construction should occur within 10 feet of the sewage treatment system. Under no circumstances should a geothermal system, downspout drains or a lawn irrigation system cross any part of a sewage treatment system. Also, the water from downspout drains should not run onto the surface of the soil absorption field.

Why are soil absorption fields utilizing leaching lines installed so shallow?

Most leaching tile fields are installed at a relatively shallow depth because shallower soils generally have high permeability. The deeper you go in depth in Warren County, the higher the clay content of the soil. Higher clay content means lower permeability. Leaching lines are usually installed between 20-24 inches in depth to take advantage of the more permeable soils at this depth. This means they typically only have 8-12 inches of earthen cover over the leaching gravel.

What is a curtain drain and how does it serve the sewage treatment system area?

The term "curtain drain" refers to a ground water drain that is installed 10 to 15 feet from the soil absorption field to assist the soil absorption field to function during wet seasons. If the curtain drain is installed upslope of the soil absorption field it is referred to as an "interceptor drain" and its function is to intercept ground water moving through the soil by routing surface and ground water around the soil absorption field. This keeps the soil absorption field area dry and allows the sewage treatment system to function more efficiently during wet weather conditions. If the curtain drain is installed completely around the soil absorption field it is referred to as a "perimeter drain" and it reduces the seasonally high perched water table so that the soil absorption field can function efficiently.

What if I do not have a gravity outlet for my curtain drain?

While it is preferred that the curtain drain groundwater discharge occur by gravity, it is not always possible to obtain a gravity outlet. If a gravity outlet is not available, you can outlet it to a sump well and pump the water to the road ditch or to a swale on the property. You cannot discharge the water within 10 feet of a property line.

Why do I smell sewer odors in my house?

Normally "rotten egg" or "sewer gas" odors inside the home are the result of a plumbing vent or trap problem. If the vent pipes on your plumbing waste system become clogged or blocked, sewer gas from the septic tank can vent into the home rather than through the roof where the gas is supposed to vent to. It is also possible that if a trap has dried out under a sink, a laundry drain, or a floor drain, the sewer gas can vent inside the home causing the odor. There is also the possibility that if the mechanical ventilation is strong enough and the door to a bathroom fits tightly enough, the ventilation can pull sewer gas through the sink or toilet trap.

Why do I occasionally smell sewer odors in my yard?

There are several reasons why you could smell sewer odors in the yard. If your system is failing and sewage is surfacing to the ground you may detect that "rotten egg" (hydrogen sulfide) odor. It is also possible for some sewer gasses to escape from the overlapping lid on the septic tank if you are close to the tank when you detect the odor.

Will my sewage treatment system freeze during the winter months?

If the sewage treatment system is operating properly, there is very little possibility that the system will freeze. As long as there is no wastewater standing in the main waste line from the house to the septic tank, this line will not freeze. The biggest concern with freezing on a sewage treatment system is when there is a small-diameter pump line pumping effluent to the soil absorption field which would be uphill from the septic tank. This small-diameter pump line is usually buried at least 3 feet deep or insulated because this can be a recognized problem.

If there are any further questions, please contact the Environmental Health Division, Warren County Combined Health District either at www.wcchd.com or at 513-695-1220.

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