

Private on-site wastewater treatment systems – “septic systems” - account for a large proportion of wastewater treatment in the Illinois River Basin. They are used by virtually all rural homes and many in small towns.

In Oklahoma, the **Department of Environmental Quality (DEQ)** regulates treatment of sewage to protect health and prevent pollution. This includes both municipal treatment plants and on-site systems. However, in practice, rural homeowners are responsible for assuring that their own septic systems are maintained properly.

Wastewater treatment is necessary to prevent the spread of disease and to keep pollutants out of water resources. They control:

- ✗ Pathogens (bacteria, viruses, parasites, etc.) that make water unsafe.
- ✗ Nutrients (phosphorus and nitrogen) that stimulate algae and other plant growth, leading to degraded habitat and fish kills.

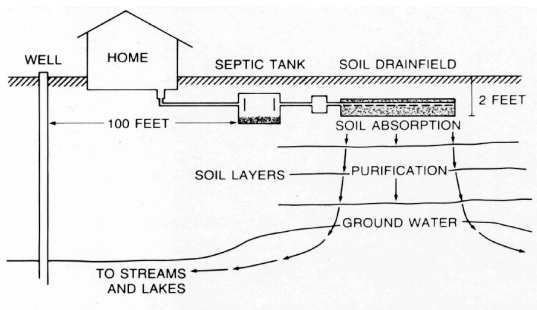


Figure 1. Diagram of septic tank-drained treatment system.

- ✗ Other pollutants, including toxics, oxygen-consuming organic matter, detergents and hazardous household chemicals.

Septic systems that are not installed and maintained properly release all these pollutants to our waterways and groundwater.

Types of Septic Systems

Most rural homes have conventional septic tank/soil absorption systems. These systems use gravity to collect wastewater in a tank and distribute it to a subsoil absorption field (drainfield) for further treatment (Fig.1).

Conventional septic systems are recommended for most sites because they are the least expensive and most easily maintained. However, there are alternative systems better suited to unfavorable sites, such as very shallow soils (over bedrock), heavy clay soils, or in soils with a high water table.

How the Conventional Septic System Works

A conventional septic system has two main components.

- ✓ **Septic tank (Fig.2):** Separates the solids to prevent them from entering the soil absorption field. Heavy solids

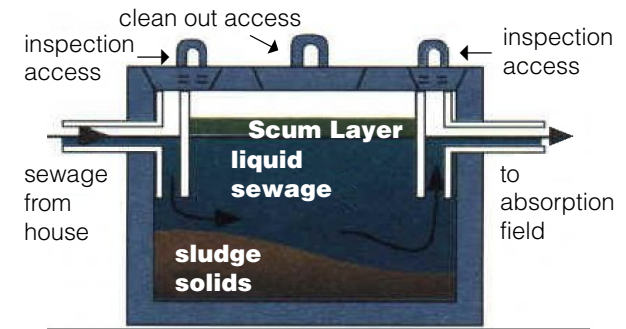


Figure 2. Septic tank chamber separates solids from liquids. (Courtesy Watershed Committee of the Ozarks)

settle out to a sludge layer at the bottom. Lighter solids, fats and oils form a floating scum layer. Some pollutants in the wastewater are digested by bacteria, converting them to a gas that escapes or to a liquid that is passed to the absorption field.

- ✓ **Absorption field:** A pipe carries the liquid effluent from the tank to a distribution system consisting of a **distribution box** and **laterals**. The laterals distribute effluent to the soil, where liquid and remaining solids are stabilized by soil microorganisms, and pathogens are destroyed.

Excess solids entering the drainfield can interfere with its function, clogging the system and causing sewage to back up. Regular pumping of the tank is essential—every 2-4 years for average families, more often if there is a garbage disposal.