

Fact Sheet on NPDES Approved Household Sewage Treatment Technology

Examining all of the current sewage system choices and treatment components for meeting the criteria of your National Pollutant Discharge Elimination System (NPDES) General Permit can be overwhelming. The system you choose will likely be part of the property for many decades. It is best to analyze each system in light of life-cycle costs to you by researching the working components of each system, the failure rates for each component, annual required maintenance, and electrical consumption. Each of the approved NPDES General Permit Household Sewage Treatment Systems (HSTS) utilizes similar technologies to meet the current Ohio Environmental Protection Agency (OEPA) discharge pollutant limitations. Below is a brief description of the technologies and mechanical components that are utilized for NPDES Permit applications:

1. **Primary Aerobic Treatment:** Every unit, with the exception of the Orenco AdvanTex AX20, utilizes some form of aeration for its primary treatment of sewage wastewater. These technologies work by pumping air into the wastewater, which has two benefits: a) It supplies bacteria with air enabling them to better break down the solid waste; and b) It mixes the wastewater to ensure consistent treatment. During these processes, nutrients are reduced for potential harmful bacteria and viruses from the discharge wastewater effluent. The method to deliver the air is either from a linear air compressor or top mounted motor. Check with the individual manufacturer for information regarding the type of motor, electrical usage, and recommended maintenance schedule.
2. **Filtration:** There are several aerobic treatment units which use filters. The filters are either composed of plastic or synthetic fibers. These filters provide a media for beneficial bacteria to adhere and further consume contaminants and hold back pollutants. Contact the manufacturer for specifics on each unit's filtration and maintenance.
3. **Ultraviolet (UV) Disinfection System:** All of the systems use UV light to kill off bacteria and viruses. The NPDES Permit limit is 2,000 colonies of bacteria per 100 milliliters (mL) volume of treated wastewater. Therefore, as long as the system is being serviced according to the manufacturer's specifications, the system should produce results at, or lower than, this limit.
4. **Secondary Aerobic Treatment:** The OEPA has set a limit for the minimum amount of dissolved oxygen that can be in treated wastewater at no less than 6.0 milligrams liter (mg/L) at any time. Aquatic species rely on oxygen dissolved in the water to function and any drop in the dissolved oxygen levels in the effluent entering the receiving environment will negatively affect this natural habitat. Many of these systems use a small air compressor, which acts like an aerator similar to the ones in fish tanks, and adds oxygen to the water as it leaves the treatment system.
5. **Telemetry/Pump Lock:** Should one of the system's components fail, each system is required to have a fail-safe mechanism which prevents the discharge of untreated wastewater. Some systems use a land phone line to automatically alert a service provider to any system failure. The only other alternative to designating a phone line is to install a pump with a locking mechanism. This mechanism is electronically wired so that in case a system component fails, the pump will not operate and an alarm will be triggered, alerting you that immediate service is required. Contact each manufacturer for determining which fail-safe mechanism is used in their particular system handles this requirement.