

What does the current research show and what are the recommendations?

- Commercial wastewater has significantly higher amounts of BOD, TSS, and FOG compared to domestic systems.
- Restaurant wastewaters treated with Aerobic Treatment Units (ATU) have been shown to produce lower concentrations of BOD, TSS and FOG similar to domestic systems.
- Hydraulic loading refers to the water used in a system. Hydraulic loading alone does not cause a system to fail.
- There is a threshold at which drainfields will fail due to mass loading. Mass loading is the amount of sewage strength and is also dependent upon the type of soil.
- The strength of the wastewater and hydraulic loading together can cause clogging by forming too much biomat. The biomat is the active biological treatment layer between the bottom of the drainfield and soil surface.
- It is recommended that the drainfield size for commercial wastewater systems be determined by:
 - The kind of soil in an area,
 - The hydraulic loading rate, and
 - Mass loading rates should not exceed .0015 lb/ft²/day for soils tested.

Bureau of Onsite Sewage Programs

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<http://www.doh.state.fl.us/environment/ostds/index.html>

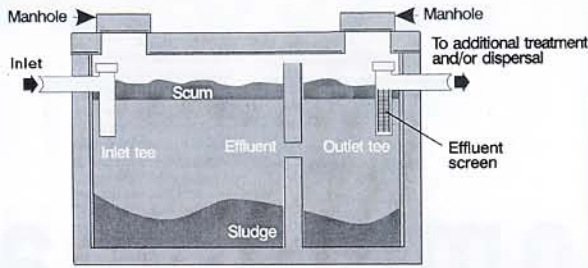


Commercial Wastewater Onsite Systems

Bureau of Onsite Sewage Programs



The Commercial Wastewater Onsite Sewage Treatment and Disposal System



Cross section of a Septic tank

What is an onsite sewage treatment and disposal system?

An onsite sewage treatment and disposal system includes a watertight septic tank, which takes in wastewater from a plumbing system. The tank is followed by an underground drainfield made up of a distribution network of pipes or chambers with holes in it. The drainfield receives partially treated wastewater from the septic tank and distributes it into the soil for final treatment and disposal.

How does commercial wastewater differ from residential domestic wastewater?

Commercial wastewater has a higher strength than domestic wastewater but does not contain toxic or hazardous waste. Biochemical oxygen demand (BOD), total suspended solids (TSS), total nitrogen (TN), total phosphorus (TP), and fats, oils and greases (FOG) are measured to determine the strength of wastewater.

The BOD measures how much oxygen it takes to break down waste in a system. The TSS measures the amount of solids in the wastewater. TN measures the nitrogen in the wastewater. Too much nitrogen in drinking water may cause health problems in infants. It might also reduce oxygen in surface waters. TP measures how much phosphorus is in wastewater. Like too much nitrogen, excessive amounts of phosphorus might reduce oxygen in surface waters. The amount of FOG in commercial wastewater are also much greater than in domestic wastewater.

Because of the strength of commercial wastewater the onsite sewage system has to work harder. It also takes longer to break down the waste than in other systems. This process requires special designs. Not all commercial establishments generate commercial wastewater. Some that do include food service establishments, restaurants, laundromats, and animal holding facilities.

Residential vs. Commercial Wastewater Effluent Strength*

	Residential	Commercial (Restaurant)
BOD 5	140	245-880
TSS	75	65-372
TN	40	30-82
TP	15	14-28

*Typical septic tank effluent in mg/l characteristic of restaurant effluent, 3/93 Ayres and Associates

How does a commercial wastewater system differ from a domestic wastewater system?

While the systems basically function and work in the same way, a commercial sewage wastewater system is often much larger. It also usually requires some form of pre-treatment. These types of systems generally need pumps to provide low pressure dosing to distribute the wastewater throughout the drainfield. Usually, a licensed professional engineer must design this type of system. Because of the higher volume and waste strength, these types of systems require more frequent pumping and servicing.

Operation and Maintenance of a Commercial Wastewater System

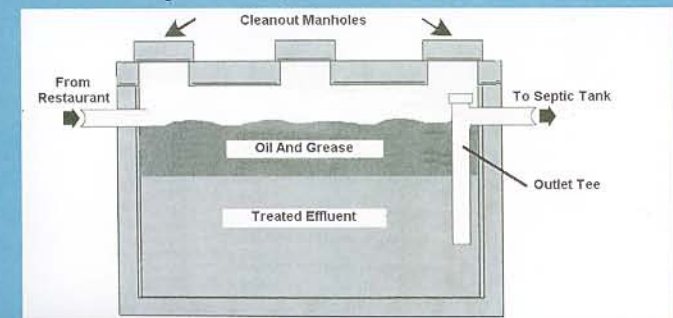
The design of the system will determine the type of operation and how the system is maintained. These systems require an operating permit from the county health department each year. Permit holders must complete a business survey about business practices, such as the type of food service and any chemicals used or generated. Systems designed with aerobic treatment units with air pumps and filters have special maintenance requirements. Additional maintenance is also needed if a system includes dosing pumps, grease traps or filters.

What about a grease interceptor?

A grease interceptor is needed at restaurants and institutional facilities, if wastewaters contain high levels of (FOG). It removes grease from the wastewater before it enters the septic tank. In the grease interceptor, the flow of wastewater

is slowed and the fats, oils and greases are allowed to cool. Time is allowed for the FOG to float to the surface. The FOG is then retained in the grease interceptor by baffles, which extend below the level of the oil and grease. If grease products are not removed in the grease interceptor, they could enter and clog the drainfield. To keep the grease interceptor working well, the grease interceptor should be checked and

pumped regularly by a licensed septage disposal service. The size of a grease interceptor depends on the size of the facility and the type of food served. Sizing details can be found in Chapter 64E-6, Florida Administrative Code.



Cross section of a grease interceptor