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Fats, Oils, and Grease
Best Management Practices

Fats, Oil and Grease (FOG) Best Management Practices (BMP)

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What is FOG?

FOG is an acronym for Fats, Oils and Grease. FOG is composed of animal and vegetable fats and oils that are generated by cooking and preparing food. FOG should be recycled for reuse in making other products or properly disposed of with other solid waste. FOG should never be poured down the drain.

Why is FOG a Problem?

FOG can harden as it cools causing backups in your sewer lines that can send sewage into your restaurant. Backups cause an unnecessary disruption in your business operation and are a serious health concern.

Warm FOG travels through the wastewater collection system and hardens as it cools causing blockages downstream. Blockages cause sewage spills, manhole overflows, or sewage backups in downstream homes and businesses. If the FOG travels to the sewage treatment plant, it attaches to the machinery causing premature wear and increased operating costs.

Where does FOG come from?

FOG can be generated from unlikely sources, not just deep fryers and cooking grease. Some indirect sources of FOG are:

- Bakeries: icings are loaded with fat.
- Dairy products such as milk, cream, and ice cream
- Poor kitchen management practices by simply washing food waste down the drain.

Frequently Asked Questions about Fats, Oil, and Grease

Large amounts of oil and grease in the wastewater cause trouble in the collection system pipes. It decreases pipe capacity and, therefore, requires that piping systems be cleaned more often and/or some piping to be replaced sooner than otherwise expected. Oil and grease also hamper effective treatment at the wastewater treatment plant.

Grease is singled out for special attention because of its poor solubility in water and its tendency to separate from the liquid solution. Grease in a warm liquid may not appear harmful. But, as the liquid cools, the grease or fat congeals and causes nauseous mats on the surface of settling tanks, digesters, the interior of pipes, your building sewer and other surfaces which may cause a shutdown of wastewater treatment units. Problems caused by wastes from restaurants and other grease-producing establishments have served as the basis for ordinances and regulations governing the discharge of grease materials to the sanitary sewer system. This type of waste has forced the requirement of the installation of primary treatment facilities, commonly known as grease traps or interceptors.

What is a grease trap and how does it work?
A trap is a small reservoir built into the wastewater piping a short distance from the grease producing area. Baffles in the reservoir retain the wastewater long enough for the grease to congeal and rise to the surface. The grease can then be removed and disposed properly.

What is a grease interceptor?
An interceptor is a vault with a minimum capacity of between 500 and 750 gallons that is located outside of the building. The vault includes a minimum of two compartments, and flow between each compartment is through a 90-degree fitting designed for grease retention. The capacity of the interceptor provides adequate residence time so the wastewater has time to cool, allowing any remaining grease not collected by the traps time to congeal and rise to the surface where it accumulates until the interceptor is cleaned.

Can you recommend a grease interceptor maintenance schedule?
All grease interceptors should be cleaned based on the advice of the commercial hauler. It is recommended that the interceptor be pumped out and cleaned when it reaches 25% of its capacity. This is dependent on the restaurant's menu and kitchen Best Management Practices (BMP's). Some establishments will find it necessary to clean their traps at least monthly. Again, this is dependent on the restaurant's menu and kitchen best management practices. If the establishment is finding it necessary to clean the trap too often, the owner should consider installing a larger trap or evaluating the staff's adherence to proper food and grease disposal practices.

Do I need a grease trap?
Peters Township Ordinance 219 as amended by Ordinance 232 requires that "All restaurants, cafeterias, gasoline service stations, and commercial or industrial garages, grocery stores and all other non-residential operations which generate grease or fats shall install...a workable grease trap in the line which conveys their waste to the Township's sewer system."

Who determines what size interceptor is needed?
The Authority will review the proposed trap, and its installation, as submitted by your plumber. We will take into account the number, size and capacity of each fixture as well as the flow rates for each. Please refer to the Authority publication "Grease Traps/Interceptors General Guidelines" for details on sizing a trap or interceptor.

The Authority's rules and regulations, as well as the International Plumbing Code, govern the installation, sizing and use of the trap.

Why can the Authority make unannounced inspections?
Unannounced inspections confirm the Restaurant is properly maintaining their traps. If appointments are made to inspect, many facilities would only clean their traps prior to an inspection. Peters Township Ordinance 219 as amended by Ordinance 232 authorizes Authority representatives to enter the premises for the purpose of inspecting the grease trap during regular business hours.

BEST MANAGEMENT PRACTICES

Fats, oil, and grease can be managed effectively in the food service industry to minimize adverse impacts on municipal wastewater systems and the environment. BMP's, when properly implemented, will minimize the adverse impacts of FOG.

Best Management Practice	Reason
Staff Training	Train kitchen staff and other employees about how they can help ensure the Best Management Practices (BMP's) are implemented. Staff is more willing to support a program if they understand the need for it and results of their actions or inactions.
Post No Grease Signs	Post these signs in restrooms, over sinks, near all floor drains, near all dishwashers and anywhere else where water may enter a drain into the sewer. Signs serve as a constant reminder to staff. These reminders will help to minimize grease discharge to the traps and interceptors and reduce the cost of cleaning and disposal.
Use the Most Appropriate Water Temperature	Use water temperature of less than 140° F in all sinks, especially the pre-rinse sink before a mechanical dishwasher. Temperatures in excess of 140° F will dissolve grease, but it will solidify in the sanitary sewer system as the water cools. FSE's will lower their energy costs by using the proper temperature water.
Use the 3-Sink System	Use the first sink to wash plates, the second sink to rinse plates and the third sink to sanitize with a 50-100 ppm bleach solution. Water temperatures in the sinks should be less than 140° F. The three-sink system uses water temperatures less than 140° F compared to a mechanical dishwasher requires a minimum temperature of 160oF.

Recycle Waste Cooking Oil	There are many companies who specialize in taking waste cooking oil from fryers and other types of equipment and making animal feed or fuels, such as biodiesel from it. Recycling reduces the amount of wastes that have to be disposed as a solid waste, and helps to prolong the life of any grease traps and interceptors. It also keeps the FOG out of the sewer system.
Dry Wipe All Pots, Pans and Plates	Wiping the FOG and food that remain in pots, pans and dishware before washing will keep the FOG out of the grease traps and interceptors. This will result in less frequent cleaning of the grease interceptors and traps, and result in lower maintenance costs.
Properly Dispose of Food Waste	Food should never be poured down a drain or into a toilet. Do not use the sewer system as a garbage dump. Solid waste disposal of food waste will reduce the frequency and cost of grease trap and interceptor cleaning.
Cover conveyance devices before moving	Lids and other devices will help to control spills during transport.
Empty FOG containers before they are full.	Full containers may spill as they are moved allowing the contents to overflow.
Witness Grease Interceptor Cleaning	Grease trap/interceptor haulers may take shortcuts. They may not completely clean the unit or only partially remove accumulation of materials. Witnessing the cleaning of the grease interceptors or traps will ensure that the food service establishment is getting full value for the cost of the cleaning.
Use "Spill Kits" (e.g., absorbent materials, kitty litter) around fryers and other drip and spill areas.	The use of absorbent materials will help keep FOG out of floor drains and improve employee safety.
Clean Under-sink Grease Traps on a regular basis	Under sink traps hold less volume than grease interceptors. By monitoring the accumulation of grease

	between cleaning by the establishment's staff, the restaurant will develop a proper cleaning schedule to ensure that the trap is operating properly. Place recovered grease in a proper disposal container. It can go in a dumpster if it is in a closed container. **Do not** pour grease down any drains or in any toilets. Keep a cleaning log to document the date, employee and comments from each cleaning.
Clean Outdoor Grease Interceptors Regurally	Grease interceptors must be cleaned routinely to ensure that grease accumulation does not interfere with proper operation. The cleaning frequency is a function of the type of establishment, the size of the interceptor, and the volume of flow discharged to the interceptor. Routine cleaning will prevent plugging of the sewer line between the restaurant and the sanitary sewer system. A backup will result in the expense of an emergency call to a plumber, closing the kitchen for cleaning and repair could pose a serious health risk to workers and patrons.
Keep a Maintenance Log and All Service Records	The log serves as a record of the frequency and volume of cleaning of the grease interceptor(s). The record helps to ensure that the food service establishment is in compliance and affords any inspector the opportunity to verify compliance. Service records from a commercial hauler verify the accuracy of the log. The log can optimize the cleaning frequency in order to reduce costs.
Routinely Clean Exhaust Hoods	If FOG escapes through the kitchen exhaust system, it can accumulate on the roof of the house or restaurant and eventually start a fire or enter the storm drain when it rains. A proper exhaust system maintenance schedule, by staff or a contracted service, is

	recommended.

Do Not

Do not…	Reason…
Discharge FOG in concentrations that will cause an obstruction in the flow of sewage or interfere with the wastewater treatment facility.	Grease can solidify and clog sewer pipes as well as attach to treatment machinery.
Do not use garbage grinders without being preceded by a solids interceptor. Dispose of food scraps in the trash.	These materials can cause blockages and add to an organic overload condition at the wastewater treatment facility. Food waste greatly reduces the capacity of the grease trap.
Do not discharge wastewater with temperatures in excess of 140° F into any grease traps. Mechanical dishwashers are not permitted to discharge into grease traps.	Temperatures in excess of 140° F will dissolve grease, but the grease can re-congeal and cause blockages further downstream in the sanitary sewer collection system as the water cools.
Do not use emulsifying agents.	Though emulsifying agents can dissolve solidified grease, the grease can re-congeal further downstream in the sanitary sewer collection system.
Do not utilize biological agents for grease remediation.	The biological agents may disrupt the biological treatment process at the wastewater treatment facility.
Do not discharge cooking oil into drainage pipes.	Cooking oil should be collected, stored and recycled.
Do not discharge waste from toilets, urinals, and other fixtures containing fecal materials into sewer lines intended for grease interceptor service.	Traps and interceptors are not designed to treat fecal matter. Introduction of these waste streams will overload the traps or interceptors.
Do not discharge any waste including FOG and solid materials removed from the grease control device to the sewer system.	Discharging FOG and waste back into the sewer is counterproductive to the function of the trap. Grease removed from grease interceptors shall be properly disposed of as part of the operation and maintenance requirements for grease interceptors.

Grease Trap and Interceptor Maintenance

The grease traps and interceptors used by food service establishments must be cleaned on a regular basis to ensure that they work properly. Regular cleaning of grease traps and interceptors can improve their efficiency and effectiveness.

Grease trap maintenance is usually performed by maintenance staff, or other employees. Outdoor grease interceptor maintenance, which is usually performed by haulers or recyclers, consists of removing the entire volume (liquids and solids) from the interceptor and properly disposing of the material in accordance with all Federal, State, and/or Local laws. When performed properly and at the appropriate frequency, trap and interceptor maintenance can greatly reduce the discharge of FOG into the wastewater collection system.

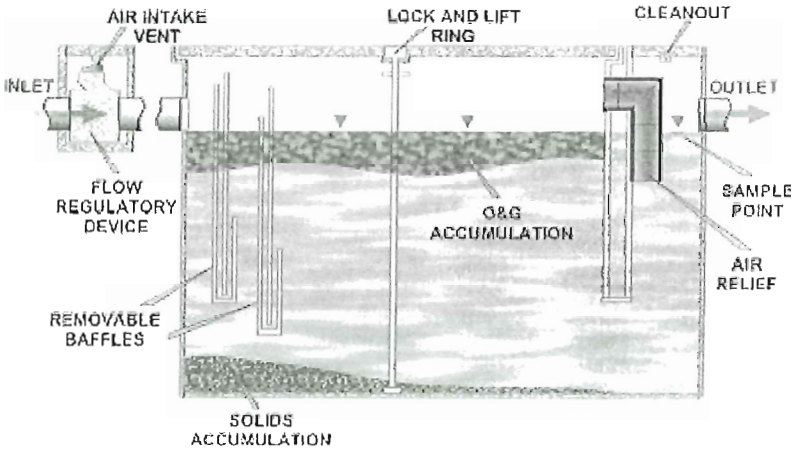
Grease Trap Maintenance

Grease trap maintenance, due to their small size, is usually performed by maintenance staff, or other employees.

Grease Trap Maintenance Procedure:

1. Skim of floatable grease from the top of the trap deposit into a watertight container.
2. Bail out any water in the trap and discharge back into trap after step #7.
3. Remove baffle(s) if possible.
4. Dip the accumulated grease out of the trap and deposit into a watertight container.
5. Scrape the sides, lid and baffle(s) with a putty knife to remove as much of the grease as possible. Deposit into a watertight container.
6. Contact a recycler for pick-up or dispose with solid waste.
7. Inspect trap for leaks or rusted parts that need repair.
8. Pour clear wastewater from step #2 back into the trap.
9. Replace the baffle(s) and lid.
10. Complete the Maintenance log.

Typical Grease Trap



Grease Interceptor Maintenance

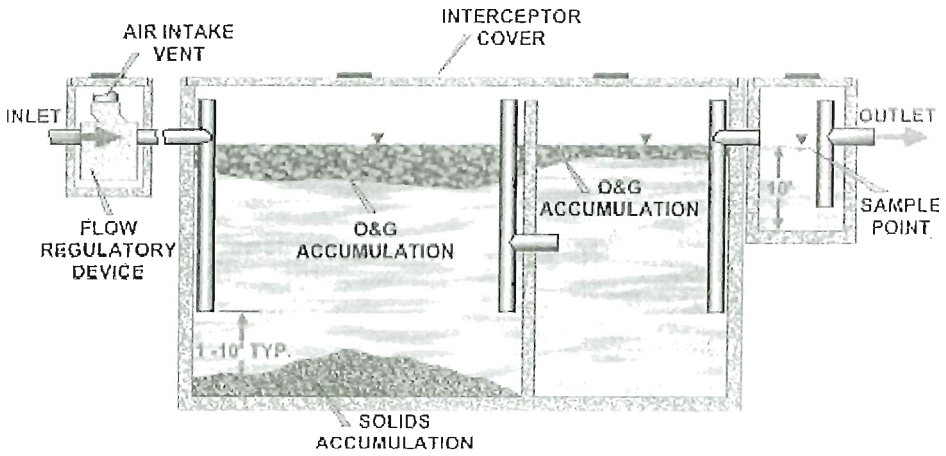
Grease interceptors, due to their size, will usually be cleaned by grease haulers or recyclers. Licensed septic haulers can also pump out grease interceptors and haul the waste to a treatment facility.

A proper maintenance procedure for a grease interceptor is outlined below:
NOTE: Since the establishment is liable for the condition of their pretreatment devices, the establishment owners/representatives should witness all cleaning/maintenance activities to verify that the interceptor is being fully cleaned and properly maintained.

Grease Interceptor Maintenance Procedure:

1. Contact, or contract with, a grease hauler or recycler for cleaning.
2. Ensure that all flow is stopped to the interceptor by shutting the isolation valve in the piping to the interceptor.
3. Pump out the settled solids and then the remaining liquids.
4. Scrape the sides, lid and the baffles to remove as much of the grease as possible.
5. Inspect trap for leaks or rusted parts that need repair.
6. Replace the lid(s).
7. Complete the Maintenance log.
8. Fax, or ask the hauler, to fax the pump slip to the Authority to document the interceptor cleaning.

Typical Grease Interceptor



Record-Keeping Requirements

The following records shall be maintained on-site for no less than two (2) years and the FSE shall make them available to Authority employees upon request:

1. A record or log book of grease interceptor or grease trap cleaning, maintenance practices and activities. The record or logbook shall include:
    a. Dates inspected;
    b. Name of inspector;
    c. Inspector's observations concerning the effectiveness of the grease interceptor or grease trap in controlling FOG;
    d. Dates cleaned; and
    e. Dates and nature of maintenance.

2. A record or logbook of Kitchen BMP's being implemented including employee training as described under Kitchen BMP's.

3. Any other information deemed appropriate by the Authority to ensure compliance with the FOG Management Program.

Additionally, for FSE's with Grease Interceptors:

4. Copies of records and manifests of waste hauling grease interceptor contents, which will include:
    • Name of hauling company
    • Name and signature of operator performing the pump out
    • Documentation of full pump out with volume of water and FOG removed (e.g., 1,500 gallons)
    • Documentation of the level of floating FOG and Settled Solids (to determine if volume exceeds 25% capacity of the grease removal equipment)
    • Documentation if repairs to the grease interceptor are required

5. Records of any spills and/or cleaning of the building sewer or sewer system.

Compliance Inspection and Installation Checklists

The following forms will assist the Authority in implementing a successful FOG Program and will assist FSE's in understanding and complying with all local and other laws:

- Grease Trap Permit Application
- Grease Trap/Interceptor Inspection Report
- Grease Interceptor Maintenance Log

NOTE: This manual was developed from a document produced by Brown and Caldwell for the Oregon Association of Clean Water Agencies (OACWA). This manual includes several modifications of the original document.

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