

Case Study: FreshAWL® Z-FOG™ and WOW-Air™ for optimal control of Fats, Oils and Grease (FOGs)

Grease Interceptors (Grease Traps) can be found in virtually all food service, food processing establishments and Wastewater treatment Plants (WWTPs). (See Fig. A for grease interceptor configuration for this site case study)

By design, a grease interceptor not only traps grease, but it also collects other solid food material. The purpose of a grease interceptor is for the on-site collection of food waste that would otherwise flow directly into the municipal waste water treatment facility. As the waste collects, the interceptor becomes less efficient and finally reaches the point where it becomes clogged or fails. Interceptor failure results in drain back-ups and the release of obnoxious hydrogen sulfide (H₂S) odors, often in the middle of a working kitchen or other areas of the facility.

Additional expense is often incurred by the fines that are imposed by a sewage receiving municipality due to elevated levels of BOD, FOG, and suspended solids.

- FOG = Fats, Oils, and Grease
- BOD/TSS Loading = Biochemical oxygen demand (BOD) is a measure of how much oxygen is required to biologically decompose organic matter in the water. Total suspended solids (TSS) are the total amount of suspended materials. These both measure the strength of wastewater discharges. Companies get hit twice when waste goes down the drain, first in product loss and second in strength charges.

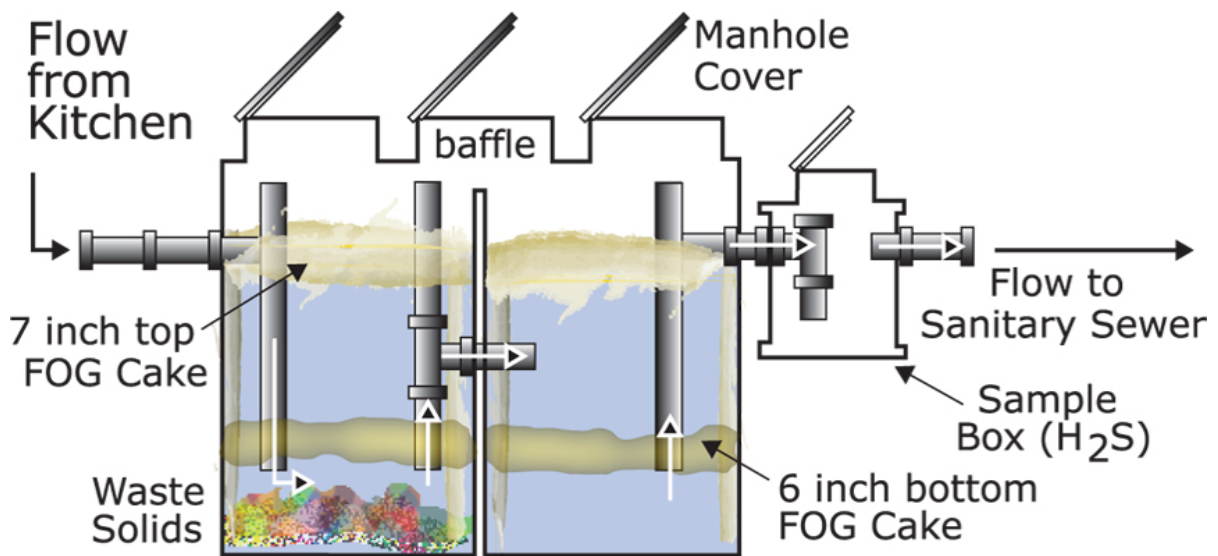


Fig. A Grease Interceptor with 2 Horizontal FOG Cakes (Surface and Submerged) and Vertical Cakes on Chamber Walls

As demonstrated by the following case study, through treatment with environmentally friendly and organically green **FreshAWL[®] solutions** it was possible to significantly reduce the level of FOG build-up and eliminate their H₂S odors in the grease interceptor and drain systems.

Introduction:

An international San Francisco East Bay Biotech Firm was contacted by their local Wastewater Services Officer and informed that high level meter readings for H₂S were being detected in their sewage pipe system for as far away as up to 100 yards. Further investigative testing showed meter readings at the firm's grease trap

Sample Box were reaching H₂S levels that exceeded the meter limit and were greater than 300 ppm (parts per million).



The firm's **Safety and Environment Officer** took immediate proactive measures to find a safe solution for treating the H₂S by contacting the FreshAWL Customer Care Team.

After some preliminary discussion questions a meeting was scheduled at the client facility to view the system and assess the contributing factors.

The H₂S readings from the Sample Box leading from their grease trap

system on that day were >300 ppm and it was discovered that there were two areas from which the FOGs were entering the sewage system.

The primary locations were the drains and the dishwasher located in the employee cafeteria and the second was from a floor drain in an outside trash compactor/waste facility. Both area drains led directly into the onsite





external grease interceptor—see **Figure A.**

Along with some of the internal drains showing back-up problems, there was an extraordinary amount of built-up FOGs in the outside grease collection system. This indicated a potential problem with the procedures practiced by the kitchen cleaning staff and by the practices of the FOG collection company. FreshAWL scheduled a time to come back and treat the system when the grease pumping company was scheduled for the next maintenance.

The FreshAWL treatment requirement consisted of a combination of both **Z-FOG** drain line clearance and to break-up their FOG cakes in the interceptor along with **WOW-Air** to eliminate their odor control problems caused by high levels of H₂S and mercaptans.

Treatment Troubles:

When FOGs enter the sewer lines they cool, solidify and stick to the insides of the pipes thereby trapping food particles and other debris. Over time, this mass continues to grow until it is obstructing the flow of wastewater and causes sewage to back up. The easiest way to solve this problem is to prevent FOGs from entering the sewer system.

Grease interceptors can be effective in controlling FOGs. Proper installation, use, and maintenance of grease interceptors will ensure separation and retention of FOGs from wastewater before it enters the sewer system.

Clean waste disposal trucks adhering to proper best practices and maintenance records (unlike the company we observed) should leave a site's grease interceptor and access portals clean enough to rub a hand over without obtaining a noticeable grease coating. Opening the covers of this interceptor unleashed an odor assault and was followed by a swarm of gnats enjoying a major feast of grease.



Solution Procedure:

Samples of the FreshAWL Solutions and the MSDS documentation were initially provided to the Wastewater Services Officer product for approval and were accepted for use.

Four steps would be required to resolve the troubles with this case and are described as follows:

1. Shock treat the two in-ground 1,000-gal restaurant grease interceptors with **Z-FOG** to break up the solidified FOG build-up from the water surface and interceptor walls;
2. Clear the outside Trash Compactor Room drains and lines of FOG blockage with **Z-FOG**;
3. Treat the entire kitchen and cafeteria sinks and drains to clean FOG build-up with **Z-FOG**; and
4. Run water-soluble **WOW-Air** through the entire system to eliminate odors caused by H₂S and mercaptans.

Treatment began with **Z-FOG** to clear the clogged lines of grease blockage and break up the FOG layers down the drain in the outside storage trash compactor facility followed by spraying water to move the liquefied clog into the grease interceptor. A pail of **WOW-Air** was then poured into the drain to eliminate the high H₂S problem we were all suffering from.

A simultaneous shock dosage was sprayed directly into the grease interceptor access portals. Within 20-minutes the H₂S dropped from 300 ppm to 74

ppm. Owing to the obvious lack of

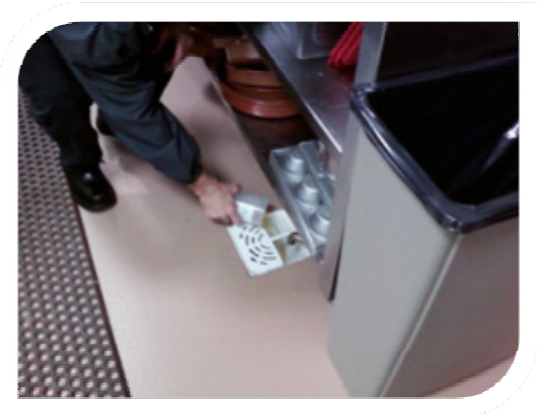
adherence to proper maintenance procedures previously followed by the pumper/rooter organization, the level of fog cake compaction was so severe that the pump hose could not suck them up initially, so while the **Z-FOG** treatment began for the entire kitchen, cafeteria sinks and drains to clean FOG buildup with **Z-FOG**.





Z-FOG prevents grease trap wall buildup liquefying solid fat logs and it disallows the caking formation process.

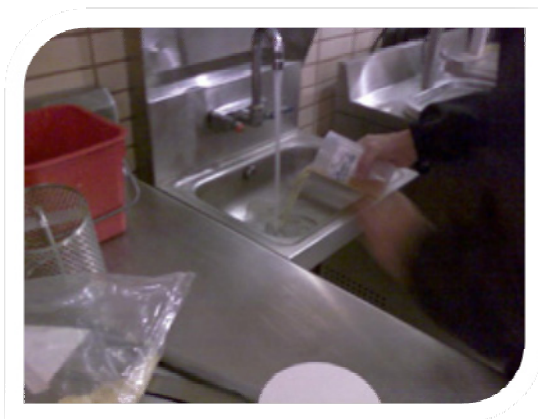
NOTE: Waste disposal companies can rest assured that **Z-FOG** contains no surfactants or enzymes.



Z-FOG behaves as a Eutectic Cloud Point Reducer (A eutectic mixture is a blend of materials that melts below the melting point of any of the individual compounds). FOGs have different melting points and temperature points at which they cloud and then gel before solidifying to the texture of peanut butter. **Z-FOG** depresses the cloud

point of the FOGs, thereby acting as a melting point reducer helping them to be more fluid-like to pump and process easier.

Z-FOG is also helpful for beneficial bacteria which break down grease trap waste or other wastes because it frees them from the sulfur bonds allowing them to conduct their natural beneficial activities. **Z-FOG** actually supports waste decomposition by bacteria, increases the oxygen content of aerobic solutions, assists in methane generation and reduces the sludge in wastewater systems.





WOW-Air works with the same dynamics as does **Z-FOG** but demonstrates its strength in water based environments such as Waste Water Treatment Plants (WWTPs) and it can also be vapor fogged over holding ponds and landfills.

Results: Following the 9:00 am treatment and upon departure at noon all H₂S readings were down from the initial >300 ppm to ZERO. All of drain lines ran freely and the only remaining odor was a slight citrus-almond aroma of the **WOW-Air**.

E-mail from firm's Safety and Environment Officer:

"Steve, I took the scheduled 2:00 pm readings just a little early as I have a meeting. The readings at all 3 sample points remain at ZERO after cleaning and treatment with FreshAWL. Thanks! ;-)."