

# Removal of FOG from Vent Hoods/Filter Exchange

**West Region Fats, Oils  
and Grease Conference  
Hood River, OR**

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# GREASE FILTER EXCHANGE

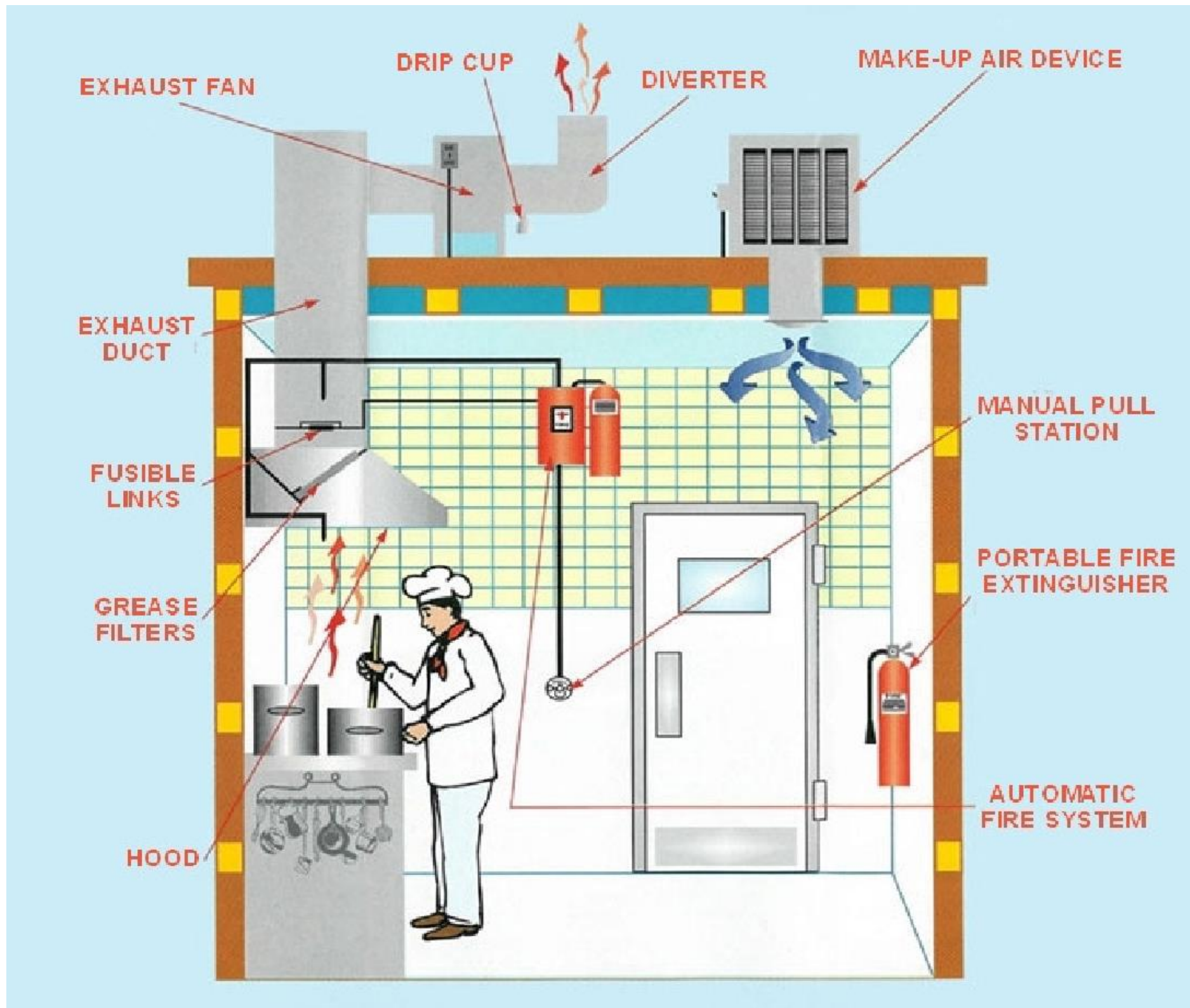
## DEFINITIONS

<b>FOG</b>	Fats, Oils and Grease
<b>BMP</b>	Best Management Practices
<b>CMOM</b>	Capacity, Management, Operations and Maintenance
<b>CSO</b>	Combined Sewer Overflow
<b>FSE</b>	Food Service Establishment
<b>NFPA</b>	National Fire Prevention Association
<b>POTW</b>	Publicly Owned Treatment Works
<b>SSO's</b>	Sanitary Sewer Overflows
<b>GREASE REMOVAL DEVICES / GREASE CONTROL DEVICES</b>	Many plumbing codes refer to these as grease interceptors



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# Basic Commercial Kitchen Exhaust System Layout



## EXPLANATION OF WHERE THE GREASE COMES FROM

- 1) Hood** – Located above all the cooking equipment. Examples of cooking equipment, grills, fryers, woks, and ovens
- 2) Filters** – Located in the hood system directly above the cooking equipment. Filters are a grease removal device.
- 3) Ductwork** – Connects to the hood system and the fan. Runs in the drop ceiling to either the roof or the side of the building.
- 4) Fan** – Exhaust fan is located on the roof or the side of the building. Pulls air from the cooking equipment, through the filters, into the ductwork and then into the atmosphere.



## Hood System





**Filters**



# Ductwork







## **Restaurant Grease: Know Your Environmental Regulations**

### **Is it enough to comply with the NFPA 96 standard?**

The National Fire Prevention Association (NFPA) developed the 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations. This standard is good at preventing fires, but it's not enough to prevent environmental problems. The NFPA 96 Standard does outline some good criteria for a grease collection system, but you need to ensure that grease doesn't wash off your roof. Cleaning equipment as required by the NFPA 96 Standard can also cause environmental problems if done improperly. You need to be especially careful when washing equipment outside.

### **How can cleaning my equipment create an environmental problem?**

Washing your exhaust system, filters, storage containers, areas around the storage container and other items can cause environmental problems if wash water is not managed properly. Just like any grease that gets washed to a storm sewer from the roof, wash water from cleaning equipment can cause environmental problems if allowed to enter a storm drain. In addition to grease, this wash water carries cleaning chemicals, which can cause serious pH or foaming problems in streams, lakes, ponds and other waters.

You or your contractor cannot clean equipment outside, or clean the area around a storage container in any way that will allow the wastewater to drain to a storm sewer, stream or other water of the state. This type of process wastewater discharge requires a permit from Ohio EPA. If you don't have a permit, you must properly manage this wastewater. This may include sending it to your grease trap (with the approval of the local wastewater treatment plant) or collecting it and having it hauled off site for proper disposal. You can obtain more information from the Office of Compliance Assistance and Pollution Prevention's (OCAPP) fact sheet on mobile power washing, available at [epa.ohio.gov/portals/41/sb/publications/powerwash.pdf](http://epa.ohio.gov/portals/41/sb/publications/powerwash.pdf) or by calling the OCAPP at (800) 329-7518.





National Pretreatment Program  
(40 CFR 403)

## **Controlling Fats, Oils, and Grease Discharges from Food Service Establishments**

### **What is the environmental problem with FOG discharges into sewers?**

EPA's Report to Congress on combined sewer overflows (CSOs) and sanitary sewer overflows (SSOs) identified that "grease from restaurants, homes, and industrial sources are the most common cause (47%) of reported blockages. Grease is problematic because it solidifies, reduces conveyance capacity, and blocks flow." See Impacts and Controls of CSOs and SSOs, EPA-833-R-04 001, August 2004.

### **What is the source of FOG at Food Service Establishments?**

FOG wastes are generated at food service establishments (FSEs) as byproducts from food preparation activities. FOG captured on-site is generally classified into two broad categories: yellow grease and grease trap waste. Yellow grease is derived from used cooking oil and waste greases that are separated and collected at the point of use by the food service establishment.

The annual production of collected grease trap waste and uncollected grease entering sewage treatment plants can be significant and ranges from 800 to 17,000 pounds/year per restaurant.



## **How do POTWs determine whether they have FOG issues and how to address them?**

The use of Geographic Information System (GIS) mapping to inventory and locate entities that produce FOG constituents, paired with a complaint database that notes when FOG is responsible for blockages, can be a powerful tool in assessing problems and developing solutions. With knowledge of the sources and of problems areas, a number of steps can then be taken to ensure that FOG does not impact the smooth functioning of the system. **A POTW may work towards amending or putting in place a FOG ordinance to be followed in the community, or establish design requirements for grease traps or other structures to prevent FOG from entering the collection system.**

## **How can CMOM help control FSE FOG discharges?**

EPA expects that blockages from FOG discharges will decrease as POTWs incorporate FOG reduction activities into their Capacity, Management, Operations, and Maintenance (CMOM) program and daily practices. CMOM programs are comprehensive, dynamic, utility specific programs for better managing, operating and maintaining sanitary sewer collection systems, investigating capacity constrained areas of the collection system, and responding to SSOs.

**Collection system owners or operators who adopt FOG reduction activities as part of their CMOM program activities are likely to reduce the occurrence of sewer overflows and improve their operations and customer service.**



## **What can FSEs do to control FOG discharges?**

Food service establishments can adopt a variety of best management practices or install interceptor/collector devices to control and capture the FOG material before discharge to the POTW collection system.

For example, instead of discharging yellow grease to POTWs, food service establishments often accumulate this material for pick up by consolidation service companies for re-sale or re-use in the manufacture of tallow, animal feed supplements, fuels, or other products.

Additionally, food service establishments can install interceptor/collector devices (e.g., grease traps) in order to accumulate grease on-site and prevent it from entering the POTW collection system.

## **How should FSEs design and maintain their FOG controls?**

In many cases, an establishment that implements BMPs will realize financial benefit through a reduction in their required grease interceptor and trap maintenance frequency.

## **What are some POTWs doing today to control FOG discharges from FSEs?**

A growing number of control authorities are using their existing authority (e.g., general pretreatment standards in Part 403 or local authority) to establish and enforce more FOG regulatory controls (e.g., numeric pretreatment limits, best management practices including the use of interceptor/collector devices) for food service establishments to reduce interferences with POTW operations (e.g., blockages from fats, oils, and greases discharges, POTW treatment interference from *Nocardia filamentous* foaming, damage to collection system from hydrogen sulfide generation).

For example, since identifying a 73% non-compliance rate with its grease trap ordinance among restaurants, New York City has instituted a \$1,000-per-day fine for FOG violations.



**Grease hood filters are currently being cleaned in the three-compartment sink, in the dishwasher, or sprayed outside the restaurant in the parking lot.**

## **CONVENTIONAL HOOD FILTER CLEANING**

In the 3-Compartment sink

### **Three-compartment sink cleaning**

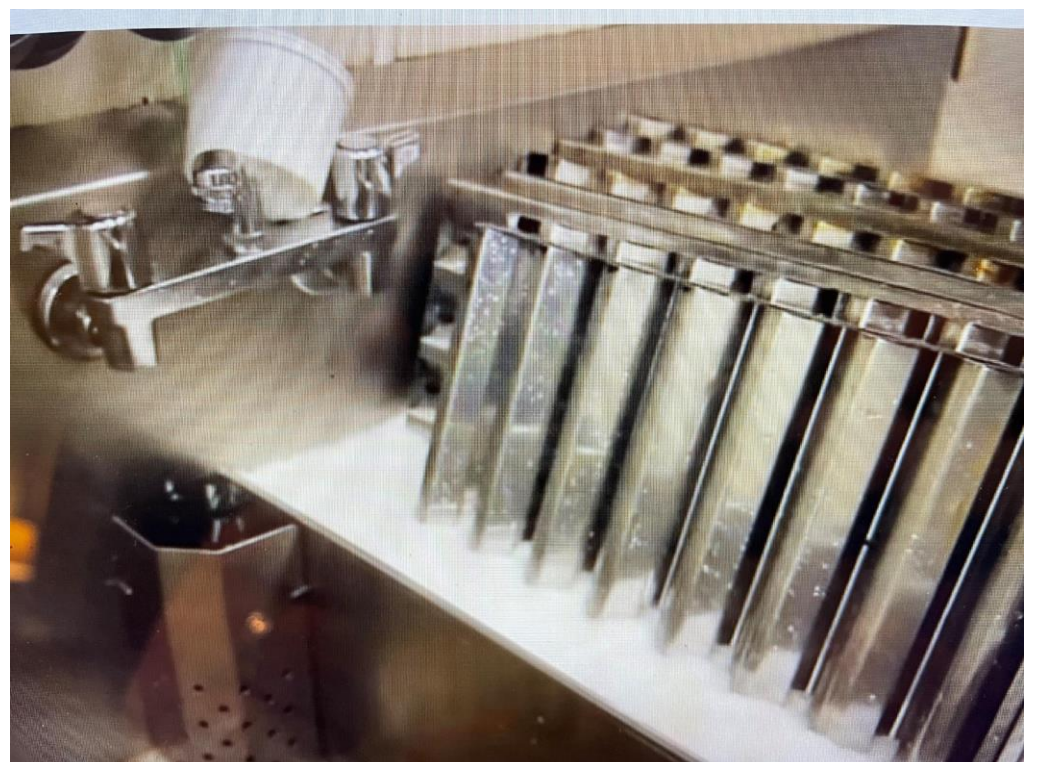
- Filters are removed from the hood system
- The sinks are filled with water
- Caustic or cleaning solution is added
- The filters soak in degreaser
- The filters are hand scrubbed

### **In the Dishwashing machine**

- Every pass in the Dishwasher costs 50 cents
- Hood filters clean only on the outside

### **Outside cleaning in the parking lot**

- Grease and caustic run-off are going in the stormwater drainage system





## In-Sink Filter Cleaning







**Where will this grease go?**





## How much grease from just the filters is going down the drain and into the grease interceptor/ waterways/ stormwater drains/lift stations/ wastewater treatment plants and landfills?

All baffle filters have an open-side offset honeycomb shape, designed to capture the most contaminants as the air tumbles through them. A clean filter can capture up to 30% of contaminants in the air to reduce buildup in your exhaust system.

Because filters are directly over the cooking equipment, they can easily catch fire. So, cleaning the entire filter — inside and out—is critical to safety.



Filter Size: 12x20  
100% Clean  
Weight 3.12 lbs.



Filter Size: 12x20  
Returned dirty  
Weight 4.13 lbs.

A study of 11 restaurants (including Asian, Mexican and American Restaurants) resulted in a finding that a total of approximately 2,200 pounds a year could be prevented from going into our waterways, stormwater drains, lift stations and wastewater treatment plants



2,200 pounds of grease is equal to 62 35 pound jugs of fryer oil in one year



FilterShine Midwest services approximately 600 restaurant/food service facilities.

For each of those facilities, an average of 198 pounds of grease, per year, per facility, could be prevented from entering our waterways, stormwater drains, lift stations and wastewater treatment plants. That equals a total of 118,800 pounds of grease in one year.

118,800 pounds of grease is equal to 3,394 35 pound jugs of fryer oil.



1 pallet (60 jugs) 35 pound fryer oil

3,360 jugs = 56 pallets

A pallet of fryer oil contains 60 35 pound jugs and is equal to the grease from 11 restaurants over a period of one year

There are approximately 3,500 restaurants in the Columbus, Ohio metro area and approximately 2,700 restaurants in the Cincinnati, Ohio metro area



## Filter Cleaning Effectiveness

- Running your filters through the dishwasher will only clean the surface of the filter.
- Cleaning filters in sinks use caustic cleaning products (high pH).

### **Determine effectiveness - How much does a filter weigh?**

After you clean the filter, it should weigh approximately the same as it did when it was brand new, otherwise grease and build-up still inside the baffles.

### **Typical Water Use and Grease Accumulation for Cleaning 10 Filters**

- 120 gallons of greasy water and caustic
- 15 lbs. grease

**This grease-laden wastewater with high pH goes down the drain to the sewer system.**



**If filters are cleaned outside,  
that portion of the grease  
bypasses the grease trap and  
ends up in the stormwater  
drainage system**





**COMMERCIAL KITCHEN  
EXHAUST HOOD CLEANING  
TRAINING & CERTIFICATION  
COURSE**

*Commercial Kitchen Exhaust  
Hood Cleaning is government  
mandated and enforced by  
fire inspectors throughout the  
USA and Canada*

**START YOUR OWN BUSINESS**

**SUPER PROFITABLE  
FIRE INSPECTOR  
ENFORCED**



Two men in black shirts with "MFS CERTIFIED" on the back are cleaning a metal exhaust hood component outdoors. One man is using a high-pressure water spray. The background shows a building with a light-colored facade and a brown door.

**Get TRAINED & CERTIFIED Now!**



TikTok

@captain\_sea\_eagle\_tv



## Filter Exchange Service Benefits

- No water usage,
- No degreaser usage, and
- No grease down the drain or in the grease interceptor.
- Happy employees

National Restaurant Association

# FATS, OILS AND GREASE CONTROL PROGRAM TOOL KIT

September 2006

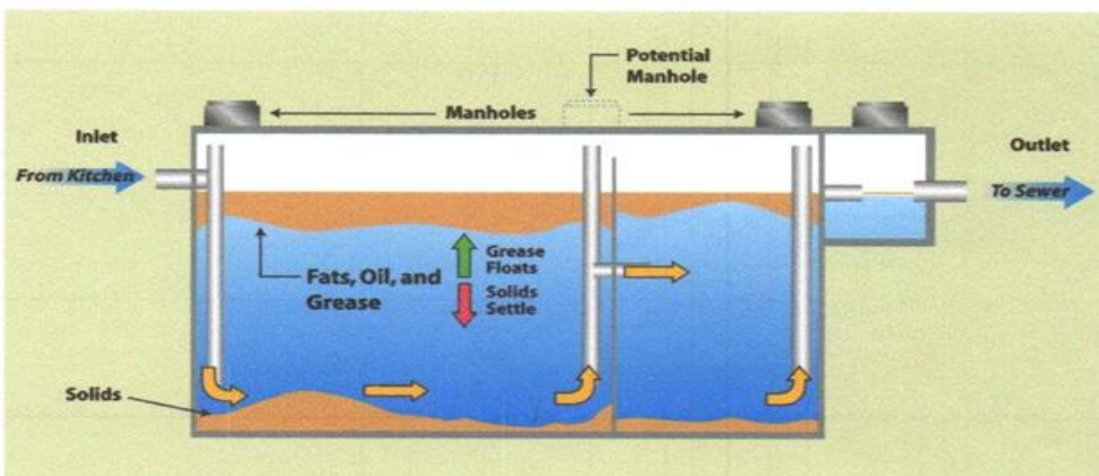


Photo courtesy of Monterey Regional Water Pollution Control Agency

## FATS, OILS AND GREASE CONTROL

### PROGRAM TOOL KIT

# BENEFITS TO THE RESTAURANT OF IMPROVING FOG CONTROL

Whether a restaurant is part of a FOG control program or not, improved FOG control provides multiple benefits for restaurants:

FOG Control Practice	Benefit
Improved Kitchen BMPs (less grease down the drain)	<ul style="list-style-type: none"><li>• Reduced drain line blockages and cleaning</li><li>• Reduced cost of drain line cleaning and jetting</li><li>• Reduced SSOs</li><li>• Reduced odors</li><li>• Reduced non-renderable waste grease generation</li></ul>
Increased cleaning or maintenance of grease control devices	<ul style="list-style-type: none"><li>• Reduced drain line blockages and cleaning</li><li>• Reduced SSOs</li><li>• Reduced odors</li></ul>
Overall compliance with the FOG control program	<ul style="list-style-type: none"><li>• Avoidance of non-compliance fees or fines</li><li>• Benefit the environment and the community</li></ul>

**A grease filter exchange program is a BEST MANAGEMENT PRACTICE that meets all the requirements and provides all the benefits listed above of a FOG Control Program**





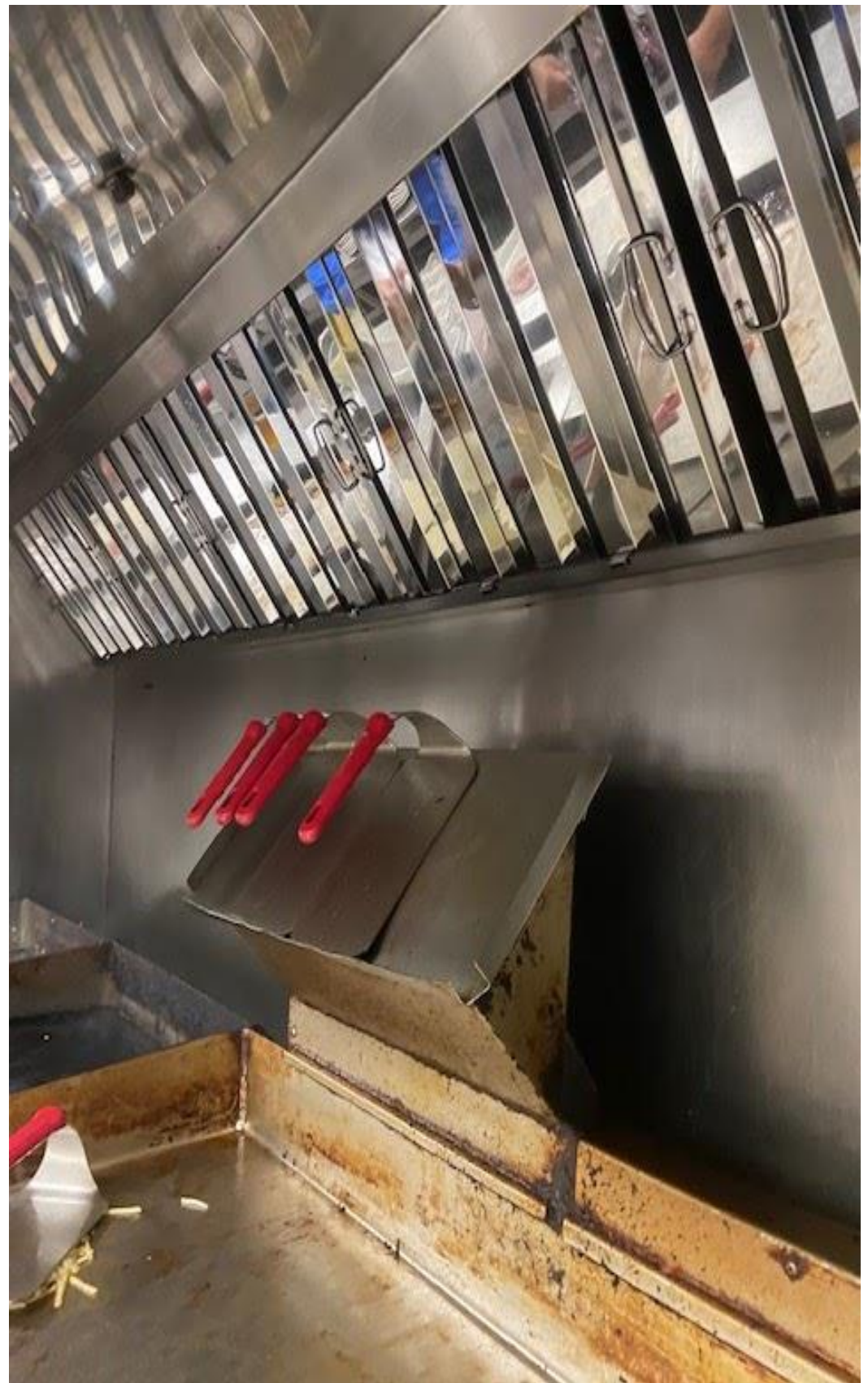


## Hood System Before and After a FilterShine Grease Filter Exchange





## Hood System Before and After a FilterShine Grease Filter Exchange



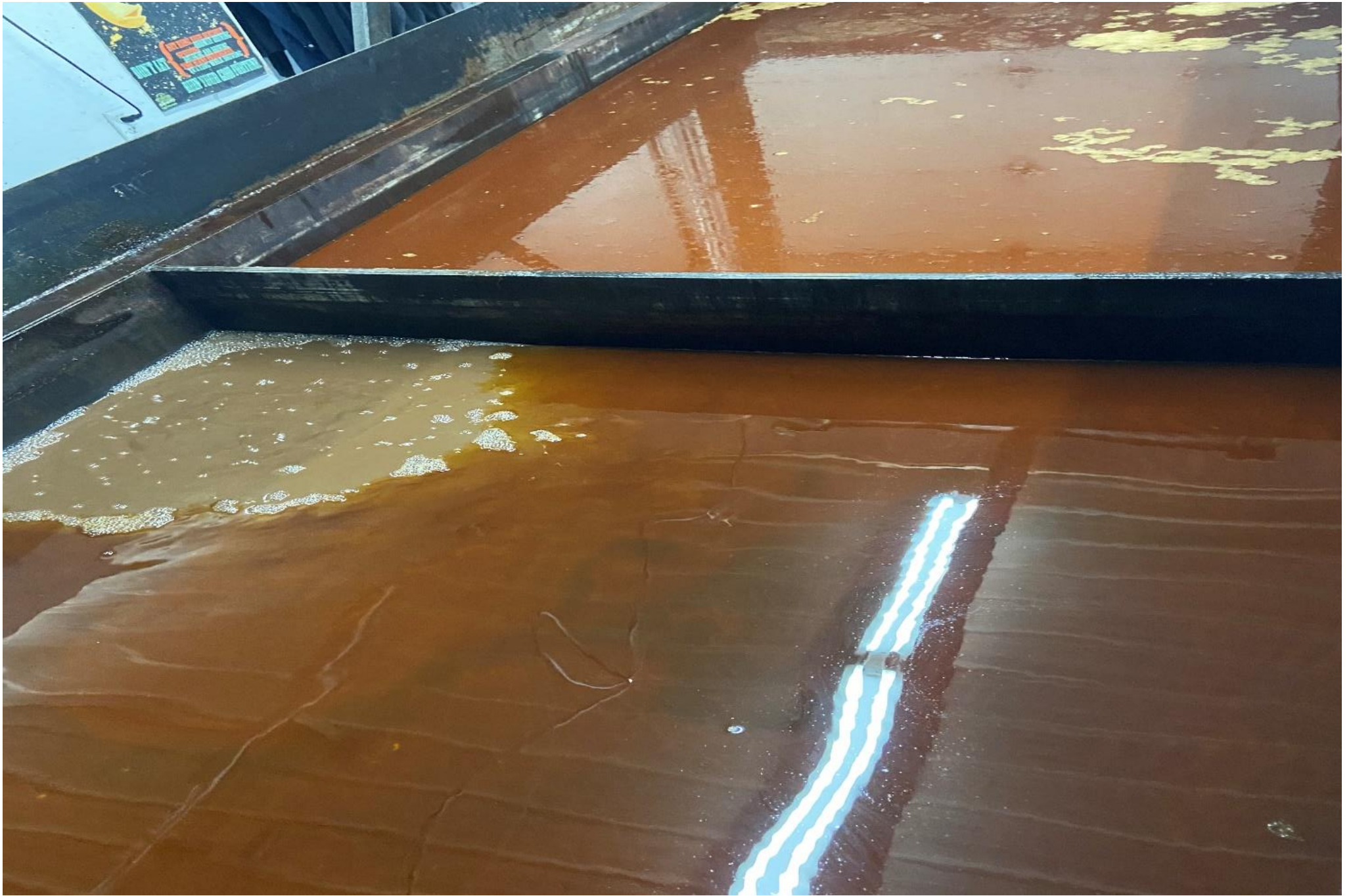


## Before and After Hood Filter Cleaning





# FilterShine Cleaning System





# FilterShine Cleaning System







## COMPARATIVE ANALYSIS

### In-house Restaurant Staff Cleaning / FilterShine Exchange Program

Standard Operating Procedures (for locations cleaning their own filters)	FilterShine Grease Filter Exchange Program
Filters get cleaned on the outside only, not inside the filters	100% clean filters
Employees clean filters two times per week (Approximately 5 hours of labor at \$15.00 per hour) Cost is \$75.00	FilterShine tech will exchange all filters
Soaking filters in water and degreaser – involves more labor. Degreaser cost is approximately \$45 per gallon x 2 gallons – Cost is \$90	Soaking is done at the FilterShine facility
Up to 70% of the grease in your traps is from filter cleaning	0% of grease going down your drains
Employees must climb over hot equipment to remove filters (OSHA, Worker’s Comp claims)	Our techs will remove and replace all filters
Cleaning filters in the dishwasher – involves more labor, more water, may affect dishwasher warranty and is against health code	FilterShine does not use any of your equipment
Appearance – Discolored filters/ missing baffles/missing filters. Health Department and Fire Marshall issues	All stainless steel filters in 100% working order – never buy another filter
Environmental Footprint – Grease, wasted water, cleaning filters in any area that does not go to grease traps/overflowing grease traps/Hood cleaners cleaning filters in parking lot	100% EPA complaint

**Note: There are no cancellation fees. There are no contracts for most customers. Filtershine will save you money, save your grease traps, save on municipality dumping fines, but most importantly will save our environment**

USFOGA

APPROVAL / CERTIFICATION FOR  
FILTER EXCHANGE COMPANIES





PRESENTED BY



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