

# Oil and Grease Removal

## Technologies

EPA Region 8 Conference

May 12<sup>th</sup> -14<sup>th</sup>, 2009



Kyle Sorenson

President

Grease Removal Systems, Inc.

2675 West 2365 South, Unit #5

West Valley City, UT 84119

Phone: (801) 582-7177

Fax: (801) 582-7179

Mobile: (801) 755-0569

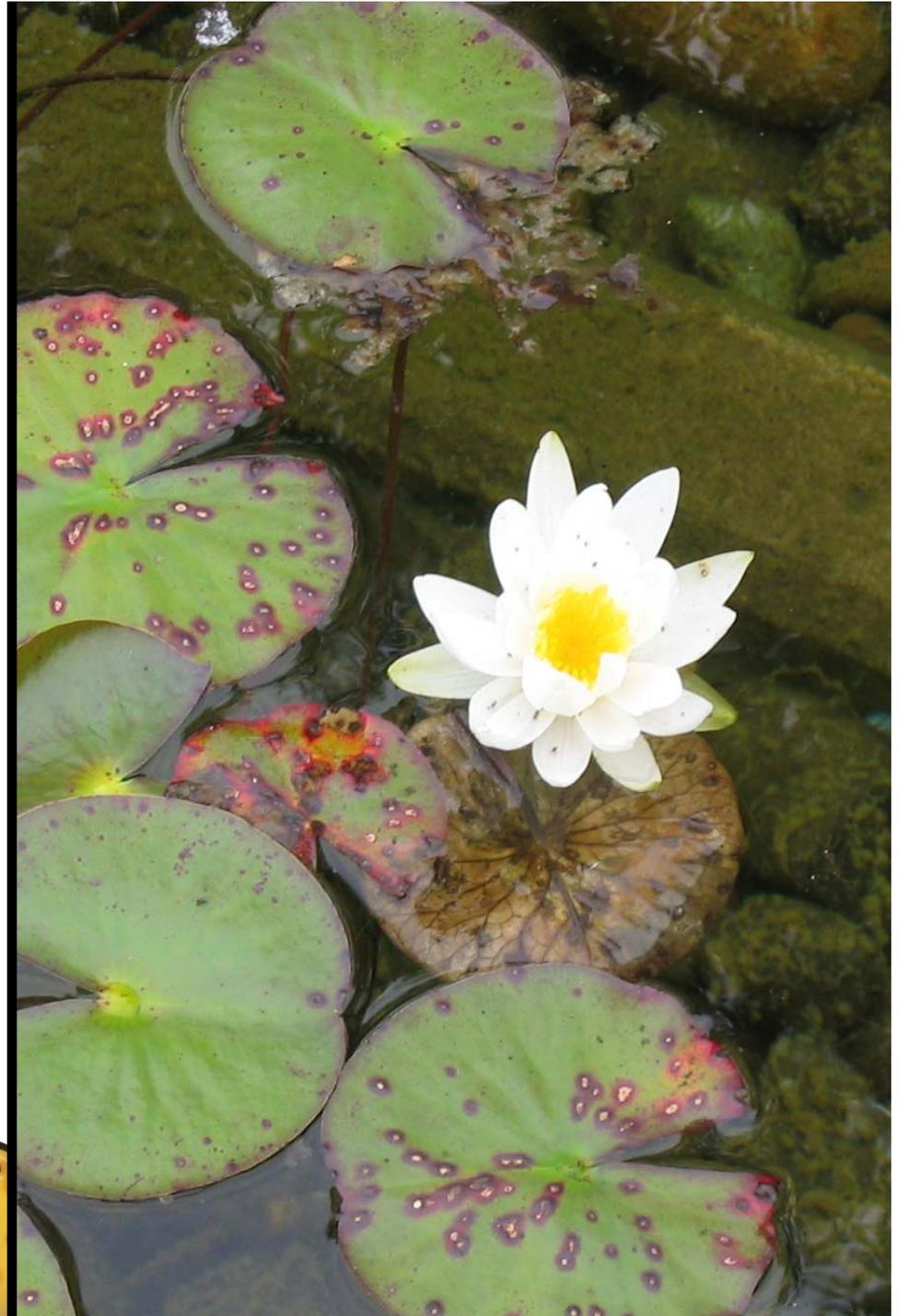
Email: [kyle@greaseremovalsystems.com](mailto:kyle@greaseremovalsystems.com)

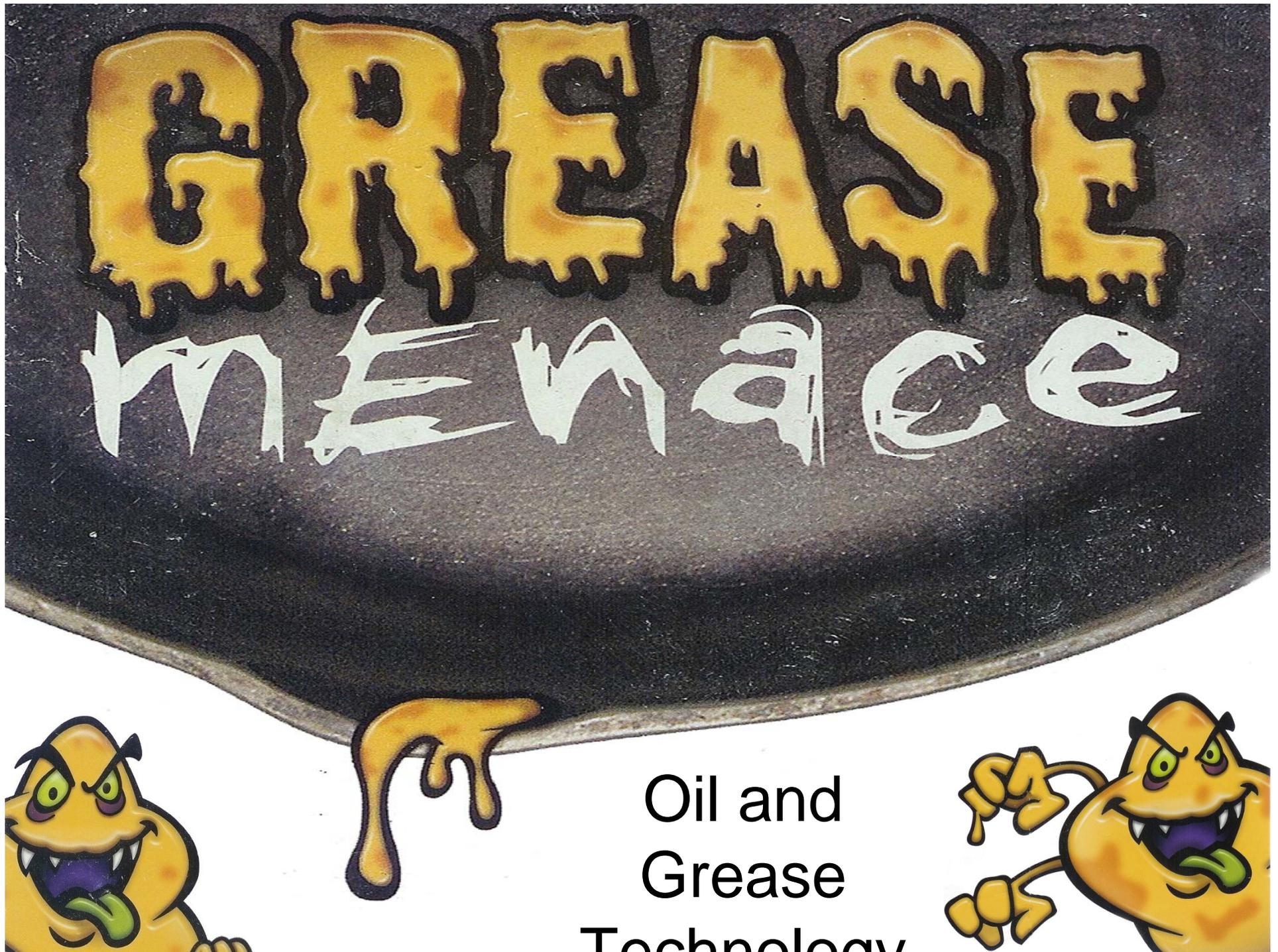
Web: [www.greaseremovalsystems.com](http://www.greaseremovalsystems.com)



Special Thanks  
City of Bismarck – Public Works

Grease Menace characters  
and artwork courtesy of the  
City of Bismarck





Oil and  
Grease  
Technology



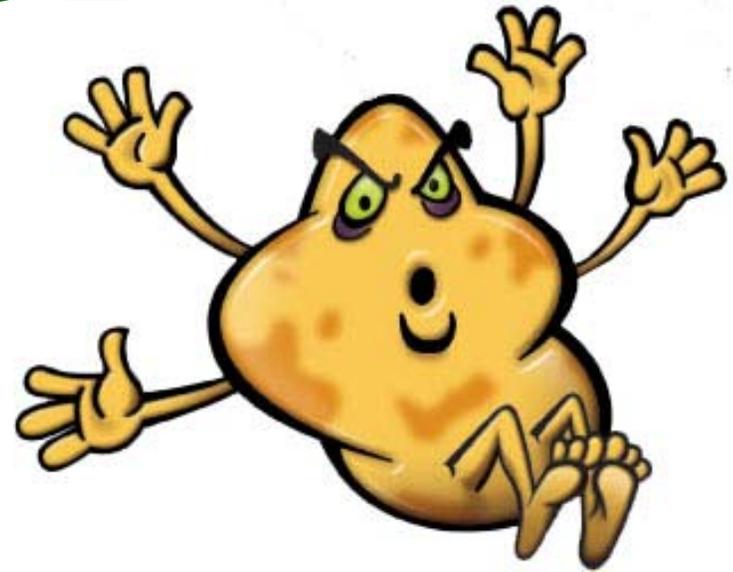
# THE PROBLEM

The EPA estimates there are over 40,000 sanitary sewer overflows/year. The untreated sewage from these overflows contaminate water and the environment, cause serious water quality issues, property damage and threaten public health.

48% of SSOs caused by sewer main blockages

47% of those blockages are F.O.G. related

5,000 - 17,000 F.O.G. related SSOs / year







# GRATEFUL

Just when you think you have it bad,  
you research SSOs and find a picture  
of a man in India unclogging a sewer  
main with his bare hands.

I LOVE MY JOB!

# THE NEED

Recognition of the problems associated with discharging oil, grease, fats and food solids into sewers can lead to only one conclusion:

**If discharging these wastes creates so many problems, the only solution is to avoid putting them down the drain in the first place.**

## Implementation:

- Regulatory Authorities
- Classification of End Users
- Pretreatment devices
- Regulation / Monitoring

## End Users:

- Food Service Facilities
- Restaurants
- Automotive
- Institutional
- Commercial
- Industrial

# Sources of F.O.G.

Pre-rinse station &  
Dishwasher

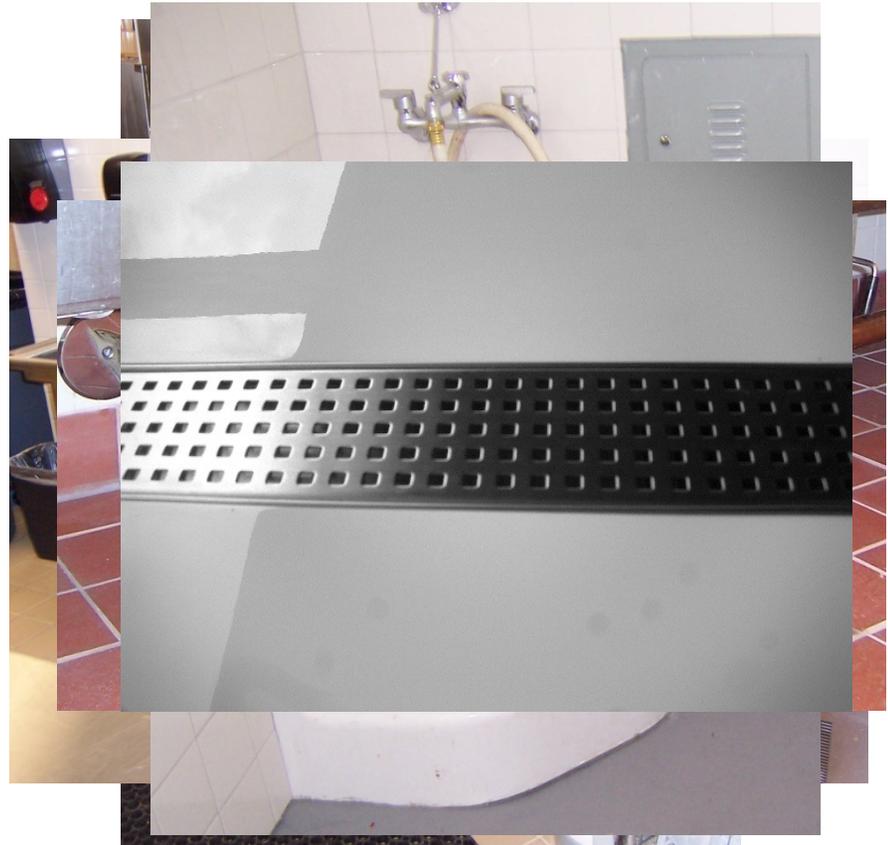
Compartment Sinks

Mop Sinks

Floor Drains

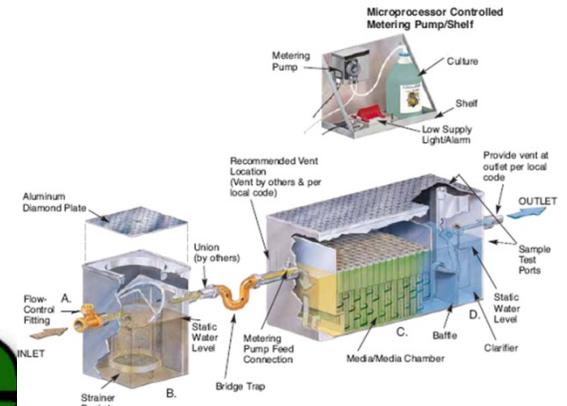
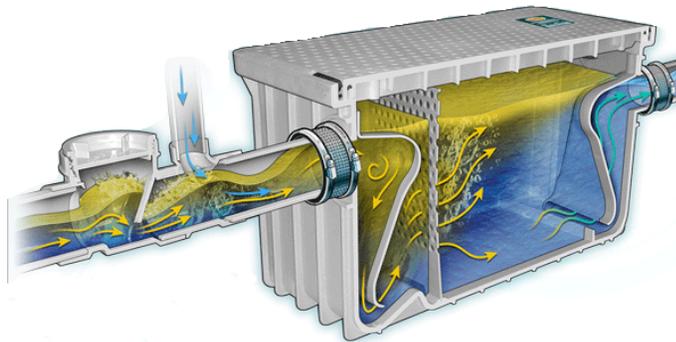
Floor Sinks

Trough/Trench  
Drains

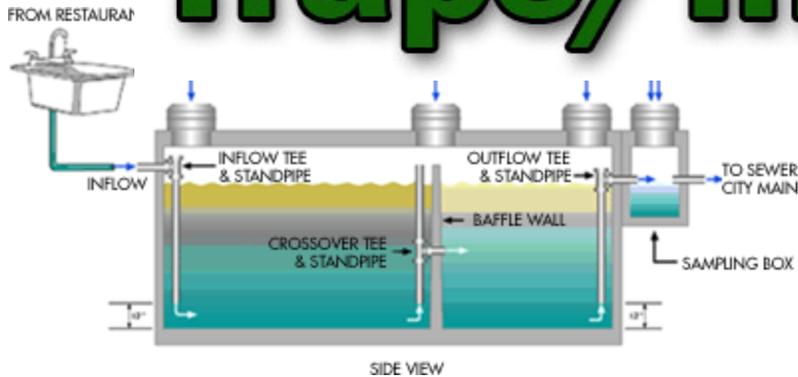


# Hydromechanical Grease Interceptors

# FOG Disposal System



# Traps/Interceptors



# Gravity Grease Interceptors

# Grease Removal Device

# Trap

The term “**trap**” as it is used to relate to grease interception has been eliminated in ASME Standards, Uniform Plumbing Code, USA, and its comprehensive rewrite of Chapter Ten of the International Plumbing Code. The more precise terms below were adopted by IAPMO during its Code.

**Hydro** **Grease Interceptors** **to**  
effect **to**  
**Grease Interceptors** **to**  
be installed in a trapping trap was necessary to protect interior spaces from sewer gas.

## Grease Removal

### Devices

Since then, counter flow baffels, air entrainment and other applications of

**F.O.G. Disposal**  
Principle to increase separation efficiency have

necessitated a change in the design; ergo, no water seal. Following traps

are required to protect against sewer

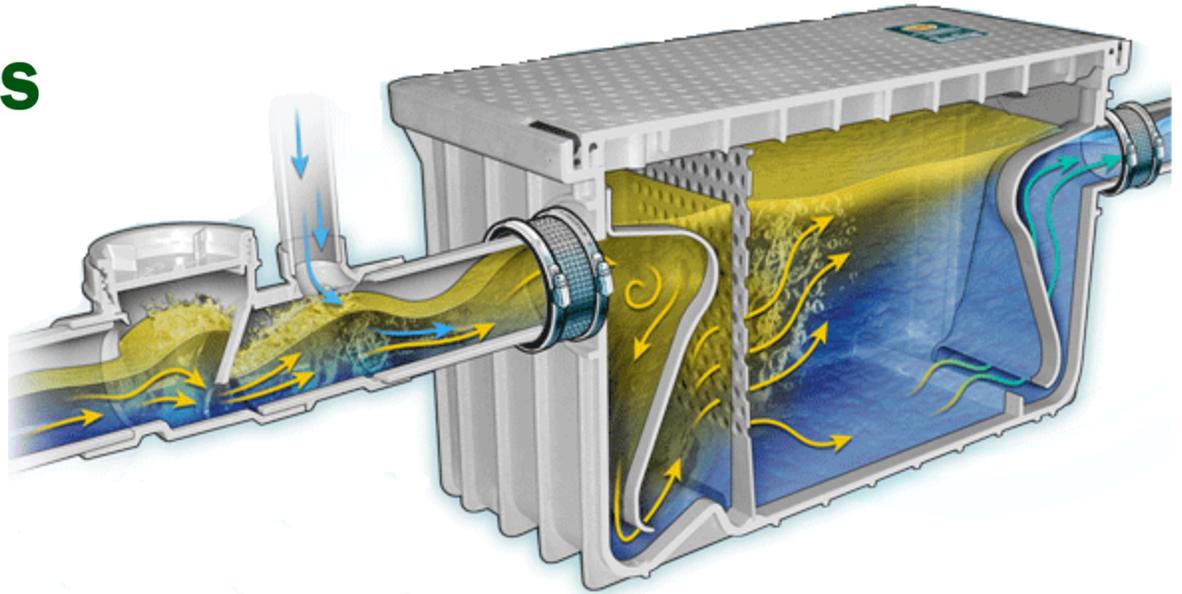
### Gravity Grease

### Interceptors



# Hydromechanical Grease Interceptors

- Air entrainment through air injecting flow control device
- Baffle System
- Energy of the incoming flow to assist in the separation of materials of dissimilar density.
- “Point-Source” Installation
- Certified under PDI G-101 & ASME A112.14.3



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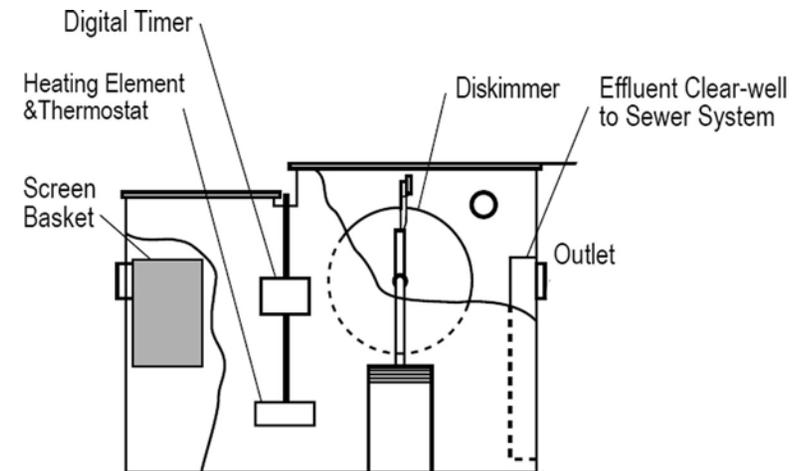
## UPC, Chapter 2 and ASME A112.14.3

*210.0 Hydromechanical Grease Interceptor - A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept non-petroleum fats, oils and greases (FOG) from a wastewater discharge and is identified by flow rate, and separation and retention efficiency. The design incorporates air entrainment, hydromechanical separation, interior baffling, and/or barriers in combination or separately, and one of the following.*

- A- External flow control, with air intake (vent): directly connected*
- B- External flow control, without air intake (vent): directly connected*
- C- Without external flow control, directly connected*
- D- Without external flow control, indirectly connected*

# Grease Removal Device

- Typically separates F.O.G. Hydromechanically
- Coalescing Media
- Include Solids Interceptors
- Maintain separation efficiency and reduces operation costs and eliminates pumping charges
- “Point-source” and “End-of-pipe” installations
- Certified under PDI G-101 and ASME A112.14.3 and A112.14.4.

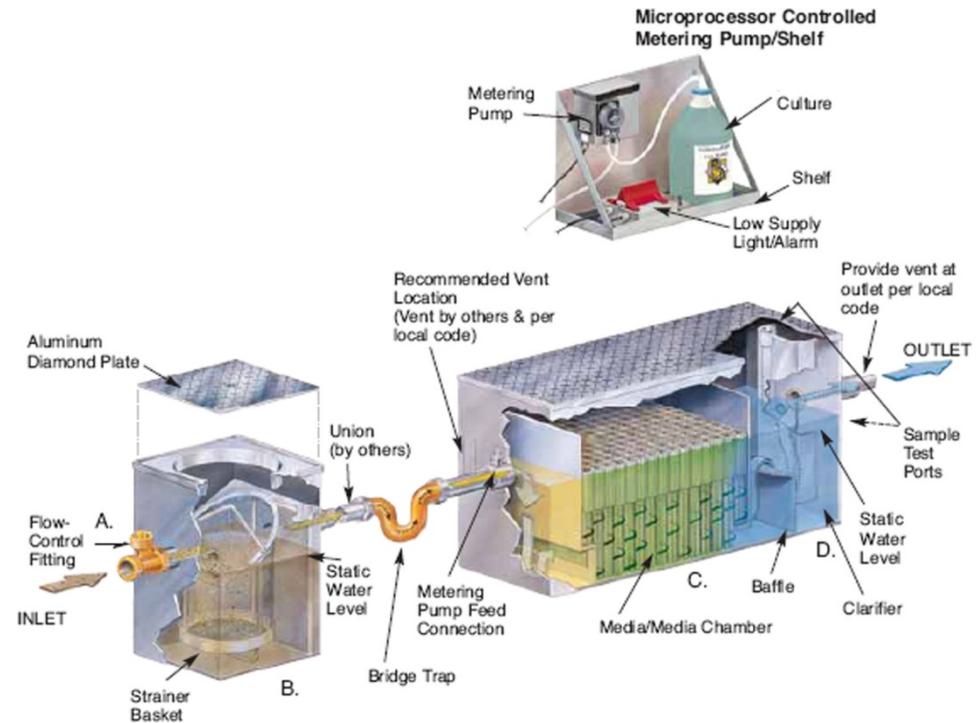


## UPC, Chapter 2 and ASME A112.14.4

**209.0 Grease Removal Device, (GRD)** Any grease interceptor that automatically, mechanically removes non-petroleum fats, oils and greases (FOG) from the interceptor, the control of which may be either automatic or manually initiated.

# FOG Disposal System

- Typically separates F.O.G. Hydromechanically but is still required to have effluent quality of 100 mg/L or less with the disposal function active.
- Disposal can be accomplished by thermal, chemical, electrical or, biochemical means.
- “Point-source” Installation
- Certified under PDI G-101 and ASME A112.14.6

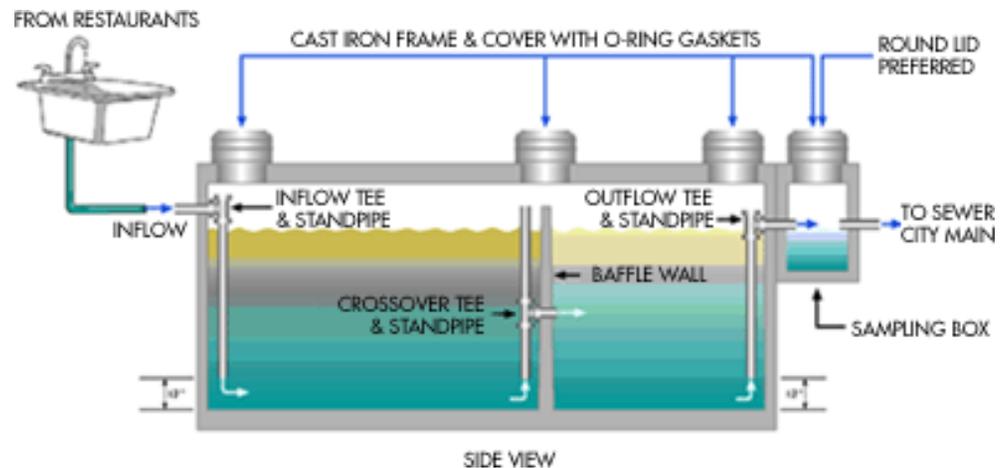


## UPC, Chapter 2 and ASME A112.14.6

*208.0 FOG Disposal System - A type 1 or type 2 grease interceptor that reduces non-petroleum fats, oils, and grease (FOG) in effluent by separation, and mass and volume reduction.*

# Gravity Grease Interceptors

- Separates F.O.G. through gravity alone
- Requires frequent pumping to avoid odor, septic conditions and operating out of compliance.
- Installed outside; “End-of-pipe” application



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## UPC, Chapter 2

*209.0 Gravity Grease Interceptor - A plumbing appurtenance or appliance that is installed in a sanitary drainage system to intercept non-petroleum fats, oils and greases (FOG) from a wastewater discharge and is identified by volume, thirty minute retention time, baffle(s), a minimum of two compartments, a minimum total volume of 300 gallons and gravity separation.*

# Hydromechanical Grease Interceptors

## Pros

- **“Point-Source” Installation**  
Located near the source of the FOG thereby protecting interior piping and, if maintained routinely, the FOG is subject for easy removal.
- Small compared to gravity grease interceptors and can be cleaned with conventional dip and bucket, or hand truck mounted vac units.

**Conventional dip and bucket**

**VS.**

## Cons

- Installed in corners, flush with the floor, under appliances or otherwise obscured; it is more convenient to ignore than to clean. “Out of sight, out of mind”.
- Will continue to flow water even after they have accumulated sufficient FOG; no longer functioning as an interceptor.
- Municipalities are reluctant to rely on operator verified maintenance and hydromechanical interceptors rarely have third party maintenance verification.



# Grease Removal Device

## Pros

- GRD's have installation versatility as conventional hydromechanical interceptors and can be located near the source (Point-Source) of FOG or with certain systems can be installed “End-of-Pipe”.
- Removes the separated FOG from the vessel and deposits it in a container for transfer and proper disposal.
- Require less maintenance and operating costs are reduced accordingly.
- Performance efficiency is not diminished by accumulating FOG.

**VS.**

## Cons

- Depending on application, can be more expensive than conventional Hydromechanical Interceptors
- Requires solids interception preceding the waste stream and neglect of the solids interceptor(s) can affect functionality.



# FOG Disposal System

## Pros

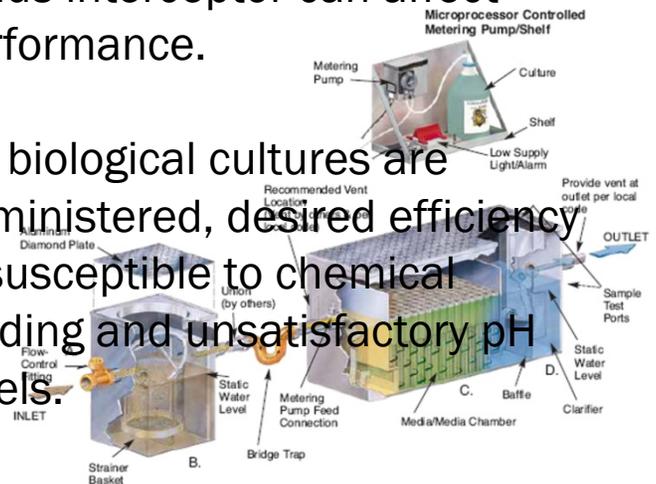
- Remove solids from the waste stream either with the use of a separate solids interceptor or internally.
- Small relative to the size flow capable of being treated and can be located closer to the FOG source or as large as a small treatment plant.

VS.

## Cons

- More expensive than hydromechanical interceptors and GRD's.
- Ongoing operation cost and risk of operating out of compliance.
- Require attention to solids interceptors and neglect of the solids interceptor can affect performance.

- If biological cultures are administered, desired efficiency is susceptible to chemical loading and unsatisfactory pH levels.



# Gravity Grease Interceptors

## Pros

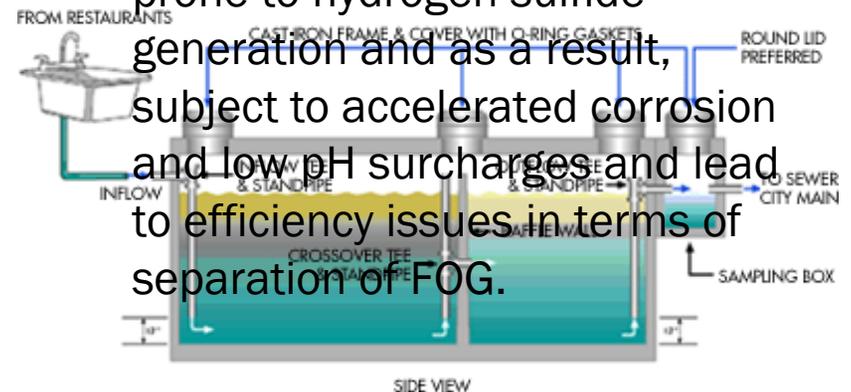
- More recognized by local authorities and usually easier to get approved.
- Compatible with local authorities desire for third party maintenance.
- Require little or no attention from the facility operator.

**VS.**

## Cons

**“Out of Sight, Out of Mind”**

- Significantly more difficult and expensive to install.
- Expensive to service especially if serviced at proper frequency and thoroughness.
- Most frequently improperly sized interceptors becoming prone to hydrogen sulfide generation and as a result, subject to accelerated corrosion and low pH surcharges and lead to efficiency issues in terms of separation of FOG.



# THE SOLUTION

- Proper Type of Device
- Proper Sizing of Device
- Appropriate Installation of Device
- Consistent Maintenance of Device
- Sampling / Surcharge Programs
- Awareness / Education to End Users
- Implementation of Best Management Practices (BMP)

# SUMMARY

Interceptors which have been properly designed and certified must be required and used. They must be installed as they were tested and were intended to be installed. Staff must be given adequate BMP and practice them on a consistent basis. And last, but not least, the devices must be maintained according to the codes and the manufacturer's requirements.

**Proper maintenance of even the poorest interceptor will provide better results than the lack of maintenance on the best interceptor.**



**MAKES EVERYONE HAPPY!**

**Questions?**