

FOG Workshop

Are fat, oil
and grease
increasing
your
maintenance
costs?

Cost of FOG

(Fats, Oils & Grease)

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What is FOG?

- *Fats, Oils or Grease (FOG)* means any hydrocarbons, fatty acids, soaps, fats, waxes, oils, and any other nonvolatile material of animal, vegetable or mineral origin that's extractable by solvent in accordance with standard methods.
- Fats – Solid at room temperature
- Oil – Liquid at room temperature
- Grease – Viscous semi-solids at room temperature

FOG

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graph TD; FOG[FOG] --- Animal[Animal]; FOG --- Vegetable[Vegetable]; FOG --- Mineral[Mineral]; Animal --- Lard[Lard (Pork)]; Animal --- Tallow[Tallow (Beef)]; Animal --- Schmaltz[Schmaltz (Poultry)]; Vegetable --- Edible[Edible]; Vegetable --- Inedible[Inedible]; Edible --- Soy[Soy, Corn, Sunflower, Peanut, Cotton Seed]; Inedible --- Linseed[Linseed]; Inedible --- Tung[Tung]; Mineral --- Petroleum[Petroleum Oils]; Petroleum --- Gasoline[Gasoline]; Petroleum --- Lubricating[Lubricating oils];
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Animal



Lard (Pork)
Tallow (Beef)
Schmaltz (Poultry)

Vegetable



Edible
Soy, Corn,
Sunflower,
Peanut,
Cotton
Seed



Inedible
Linseed
Tung



Mineral

Petroleum Oils
Gasoline
Lubricating oils

FOG Impacts

- Block & Obstruct
 - FOGs can create physical obstructions affecting the:
 - Collection system
 - Collection system appurtenances
 - Gates, Steps
 - Instrumentation sensors

FOG Impacts

- Flammability/Explosivity
 - FOGs are combustable over a range of temperatures
 - Chuyahoga River
 - Louisville (1981)
 - Worker health & safety

FOG Impacts

- Uncontrolled loss from System or Plant
 - Oil Spill
 - Cleanup costs
 - Reputation costs

FOG Impacts

- Treatability of FOGs
 - Positive – FOGs are:
 - (generally) 8-12% lighter than water, can be gravity separated
 - 88% average removal rate
 - Negative
 - FOGs are easily emulsified
 - Can mix with other waste materials (So what separates isn't purely FOG)

Cost of FOG

- Soft numbers (variable)
 - Disposal options
 - Labor involved
 - Equipment required
 - Equipment impacted

Cost of FOG

- DWWTP Treatment – Cost of removal
 - 2006/07 = \$0.164/lb (+ \$15.6 M/yr)
- Maintenance Cost – physical cleaning assignable to a source
 - Approx. \$500/event (labor, equipment, disposal)
- Oil Spill
 - 50,000 gallons = \$320 k
- Un-assignable Costs - ?

Conclusion: Costs of FOG

Who should bear the cost?

