



FOG 101: Basics of Fats, Oils, and Grease Management

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Northwest FOG Forum

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Highlights

- **Fats, Oils and Grease defined**
- **FOG Sources**
- **Impacts of FOG on Sewers/POTW**
- **Utility Examples**
- **Methods for Controlling FOG Discharges**
- **Importance of Building Alliances***

*(*Both within the utility/agency and with others!)*

FOG Defined

Two main categories of O&G..

- **Non-polar** - (industries, auto/repair shops et al; petroleum-based oils and grease)
- **Polar FOG**- (food services; animal and vegetable-based oils and fats)



*Concentration in water measured by:

Standard Method 1664, Revision A (HEM/SGT-HEM)

MORE FOG FUNDamentals

- Polar FOG
- Byproducts of food preparation and *cleaning*
- Yellow Grease vs. Brown Grease
 - YG = Used cooking oils (i.e. biodiesel production)
 - BG = Interceptor and “trap” wastes

Some sources obvious...



Some are not so obvious..



FOG FIXTURES IN THE KITCHEN



Plumbing and side sewer repairs can be costly..





Spill response no fun for customer, public, or utility...

Liabilities may go beyond plumbing repair costs..

Penalties for dischargers

- ECY fines contractor \$10K + \$20K in cleanup costs (Nov '05)
- ECY fines bakery \$15K for dumping (Dec '06)

Local jurisdiction enforcement

- Sewer user/business liabilities may include cost recovery from users for cleanup, enforcement, POTW O&M

POTW Impacts

Sewer trouble brewing...



Incoming FOG from lateral

Clean sewer lateral below



****Sewers can lose 50% or more of capacity due to FOG...***

Impacts on POTWs (cont'd)

- ~40%+ of SSO/CSOs in U.S. due to FOG buildup
- Reduced sewer capacity significant in many areas
- Ecological damage/Public health impacts/Bad PR
- Increased O&M costs in collections/treatment
- Corrosion, premature deterioration of POTW infrastructure, asset management
- \$25B+ per year to keep lines clean
- Capital budget impacts, costs to ratepayers..



Costs you say?..

POTW Liabilities

- **Los Angeles:**

- 6500 mi. of sewer, 4M pop.
- Sued by EPA 2001 (2,000 overflows in 5 yrs - 41% blamed on FOG)
- \$2B settlement reached in 2005

- **Seattle/King County:** *(per EPA Press Release 4/16/2013)*

- Combined sewer systems, numerous CSOs documented '05-'10
- Civil penalties of \$400K, \$375K resp.
- Settlement requires Long Term Control Plan Development to eliminate 95-99% of CSOs/SSOs, with an estimated costs of \$860M (KC) and \$600M (SPU) in capital etc investments, planning and programs.
- SPU - FOG control program, Floatable Solids Observation Program

Regulatory Authority = State & Local Agency Mandates

(Capacity, Mgmt, Operations, and Maintenance (CMOM) programs)



National Pretreatment Program

(40 CFR 403)



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

Summary

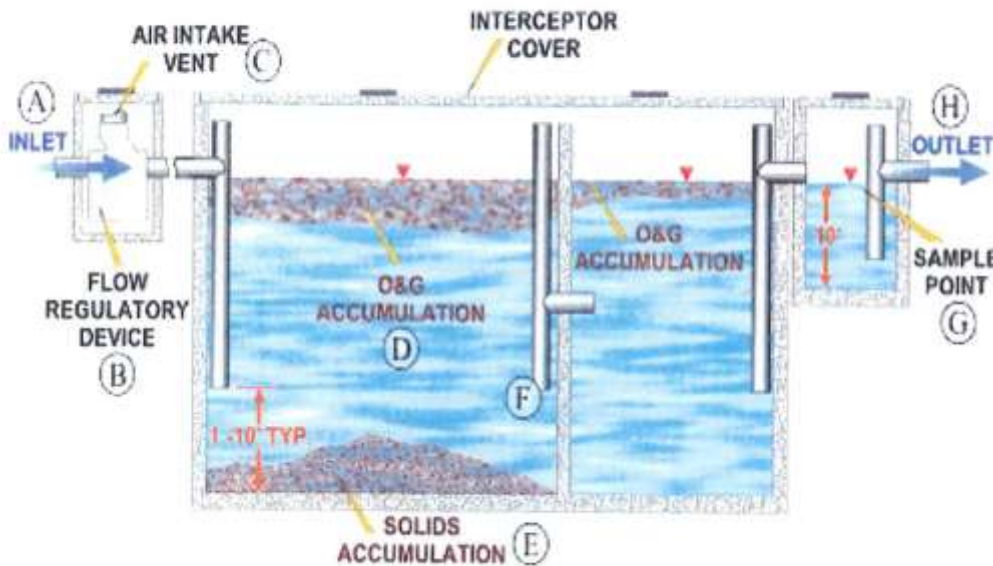
The National Pretreatment Program provides regulatory tools and authority to state and local POTW pretreatment programs for eliminating pollutant discharges that cause interference at POTWs, including interference caused by the discharge of Fats, Oils, and Grease (FOG) from food service establishments (FSE). More specifically, the Pretreatment Program regulations at 40 CFR 403.5(b)(3) prohibit "solid or viscous pollutants in amounts which will cause obstruction" in the POTW and its collection system.

Methods of control...

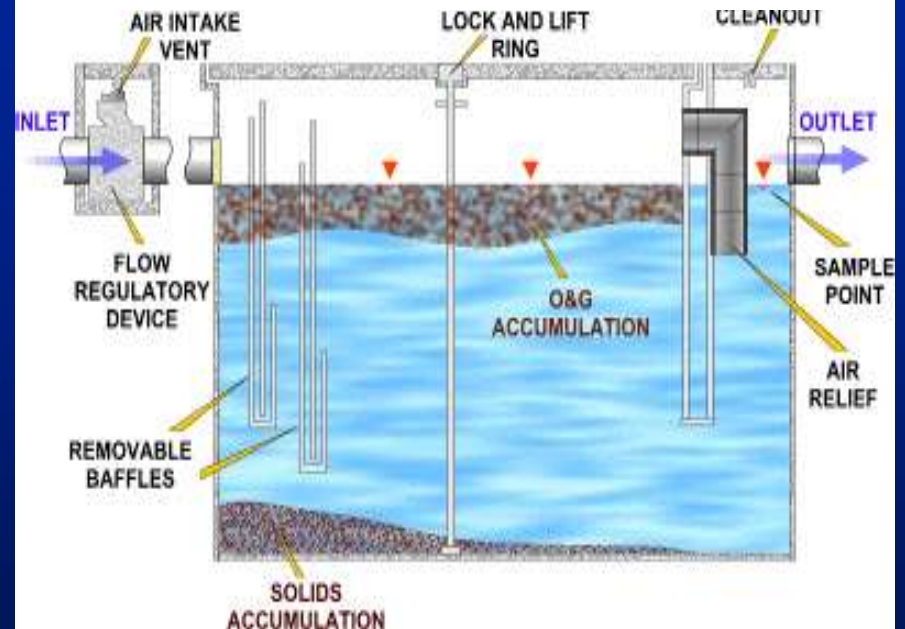
- Local Ordinance and codes
- Grease Removal Technologies
- Importance of Source Control, BMPs
(can NOT be emphasized enough)
- Education as critical as enforcement...

Grease Removal Equipment..

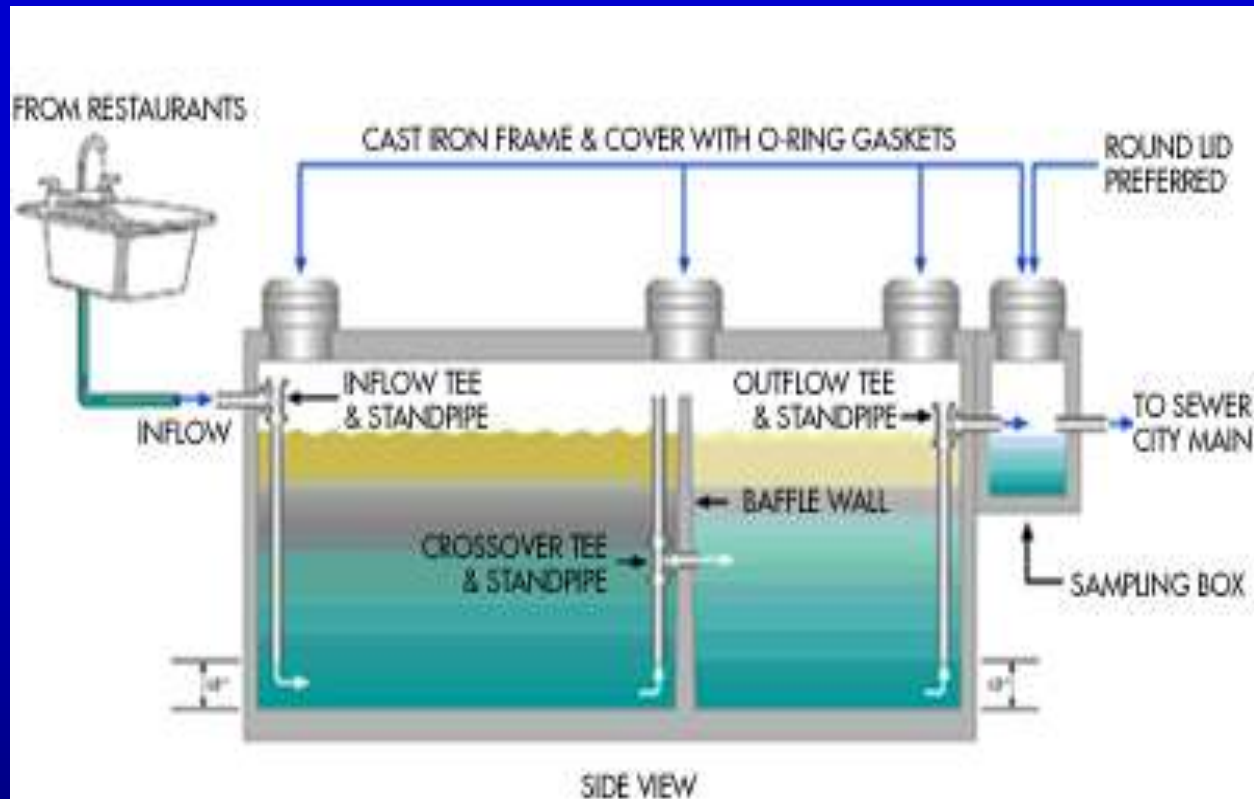
Gravity Grease Interceptor



Hydromechanical GI (grease “trap”)



**New devices and technologies on market, some will be featured in sessions today..*



**GI installations are not all created equal..*

**Sizing... tie to UPC or 'go your own way'*

**Installation... to ensure performance, and facilitate ongoing maintenance of the GRS*

Typical Hydromechanical Grease Interceptor



“Don’t call me a ‘trap!’”

FOG Program Considerations

Communications are Key!

- New users (new construction, “Tenant Improvements”)
- Collaboration with plan examiners, in-house engineering review, plumbing inspectors, project designers/engineers, contractors, new customers
- Standards for grease removal systems, maintenance, records
- Ordinance or city/sewer district codes or bylaws

**Building alliances and proactive tools and procedures helps prevent oversights, surprises, more costly user corrections later..*

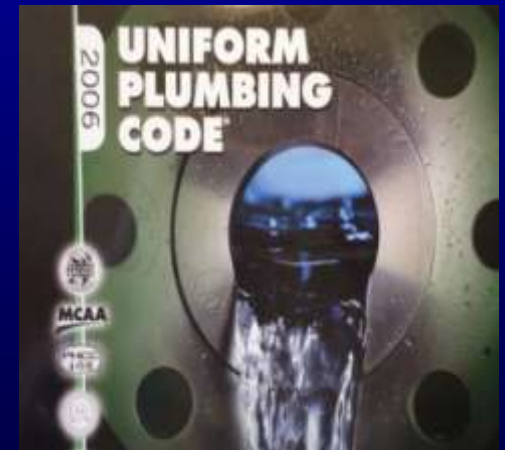
FOG PROGRAM CONTROLS

City Code, Sewer Use, IPT and/or FOG Ordinance

- ID affected users (FSEs, "Non-FSE FOG Dischargers")
- Minimum standards for installing and maintaining a grease removal system, record keeping
- Include Best Management Practices (BMPs)
- Enforcement policy and response plans

Plumbing Codes (UPC/IPC)

- Tracking/adoption of regular updates
- Local agency needs/preferences may apply
- PDI / IAPMO (grease removal systems)



FOG Program Control Approaches

Education and Outreach

- *“I’m from the government and I’m here to help..”*
(should be my job as civil servant, not a joke about public service..)
- *Informed, voluntary compliance always best*

Enforcement

- Required by regulatory mandates/delegation
- May be the only way to motivate corrections/compliance
- Progressive or “Escalating” enforcement
- Resources to fixes vs. fees and fines *(Pima Co., AZ example)*

More Control Strategy/Options

BMPs and “25% Rule”

- More “traditional” MO
- Stress benefits to business (i.e. cost savings) from using BMPs
- 25% Rule as compliance limit
- Outreach/education critical
- Once is never enough

Enforce Polar FOG Concentration Limits

- From 50-450 mg/L (avg. 100)
- Requires representative sampling, usually repeated over time
- Sewer bill surcharges on high FOG
- Analysis turnaround and costs..
- Works well for some programs, may not be practical or cost effective for others...

With either approach, regular visits/inspections, regular maintenance of systems, and user record checks essential..

BMPs...Not just in the kitchen..



Particularly in separated sewer systems, agency criteria and design standards for dumpster areas may be important considerations (sewer and/or surface water codes)

Alliance Building

Yahoo Pretreatment Coordinators Group

- Online network for IPT/WQ professionals since Y2K
- 2000+ members across four continents

(http://groups.yahoo.com/group/Pretreatment_Coordinators/)

PreFOG (PNW regional FOG regulator group)

- Now an American Public Works Association sub-committee
- Diverse stakeholders in FOG management

(<http://groups.yahoo.com/group/PREFOG/>)

Interagency Resource for Achieving Cooperation (IRAC)

- King Co. HWMP-sponsored

*2011 - Development of Preferred Pumper Program proposal

(est. consensus on standards, pursue regional tracking systems, BG2E..)

(e.g. <http://preferredpumper.org/>)

More Strategy..

BMPs and “25% Rule”

- More “traditional”
- Stress benefits to business (i.e. costs) from using BMPs
- 25% of what?
- Outreach/education stressed
- Once is never enough


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Ignorance ≠ Bliss

What's Clogging Your Drains?



Brought to you by the City of Everett



Grease and Hair Clog Household Drains.

الدهون والشعر يسدون بلوعات المنزل


기름기나 머리카락으로 가정의 배수관 막힘.

Жир и волосы засоряют канализацию в вашем доме.

La grasa y el pelo atascan los desagües de su casa.


Đầu mỡ và tóc làm nghẹt ống cống nhà quý vị

Brought to you by the City of Everett
Public Works Department



Fat-Free Sewers

Prevent Fats, Oils, and Greases from Damaging Your Home and the Environment




ALCANTARILLAS SIN GRASA


Evite que las grasas y los aceites dañen su hogar y el medio ambiente

BUSINESS CUSTOMERS

Fight F.O.G.

Keep **Fats, Oils & Grease** Out of Your Drain!™







“Drains and toilets are recycling Bins, NOT trash cans!”



☺ *Thank You!!*

