

Management of Fats, Oils and Grease in Treatment Programs

Is it a problem or an Opportunity

A. R. Rubin, Professor Emeritus,

And

Visiting Scientist, USEPA

Acknowledgement

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Residuals Management

- Essential Program Element
- 40 CFR Part 503 or Part 257 Compliance Required
- Augmented by State Rule and Local Ordinance

Background Issue

- Public health and safety are two of the major responsibilities of all municipalities and units of local government
- To comply with these responsibilities, units of local government are committed to providing adequate wastewater management service for citizens.

Background Issues

- Whenever a blockage occurs in the sanitary sewer, there is reduced capacity in the line (regardless if onsite or community). A spill or overflow may occur. Raw sewage is discharged from sewer access-ways and onto the streets or sewer lines from properties fail to drain properly

Background

- These sewage spills may pose a threat to public health and safety.



Background

- Examination of Unauthorized Discharge Reports in NC between 1997 and 2004 have shown that sewage spills are caused by roots, grease accumulation, debris, or vandalism.
- Municipalities have determined that one way to address the grease accumulation problem is to prevent the introduction of grease in the sewers in the first place.

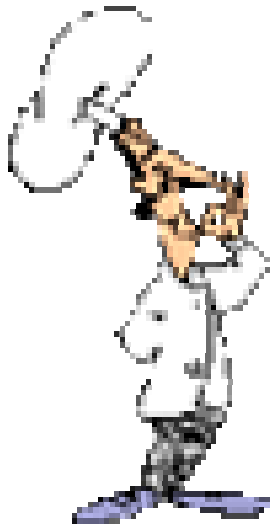


Background

- Regulations to prevent the introduction of Fats, Oil and Grease (FOG) into the sewer lines are often adopted by the City Councils.
- Under these regulations, all Food Services Establishments (FSEs) are required to implement and demonstrate compliance with [Best Management Practices \(BMPs\)](#). FSEs that generate FOG are also required to obtain an Industrial Wastewater Permit.

Background

- Food Service Establishment (FSE) shall mean a facility engaged in preparing food for consumption by the public such as a restaurant, commercial kitchen, caterer, hotel, school, hospital, prison, correctional facility, or care institution.



Program Justification

CMOM Program Objective

Reduce Sanitary Sewer Overflows (SSOs) by implementing source control measures and practices including:

- Inventory Maintenance
- Pre-construction Requirements
- Education, Inspection, and Outreach
- Best Management Practices (BMPs) for FOG
- Industrial Wastewater Permit
- Enforcement Action Plan
- Spill Response Plan
- Staff Development and Training
- Provide support to City Departments regarding FSEs

Program Objective

– Inventory Maintenance

- Department of Health Services List
- Inspection Staff Canvassing and Inspections
- Permit Amendments

– Pre-construction Requirements

- Grease Interceptor requirement for new construction and remodels over \$100,000
 - » Plan Check
 - » Grease Interceptor Sizing
 - » Variance for Grease Interceptor (R & R)

Program Objective

– Education, Inspection, and Outreach

➤ Education/Inspection

- Inspection Checklist
- Video-used as BMP training tool
- Poster-list of BMPs
- Posting of BMPs Required

➤ Outreach

- Involvement of the stakeholders
 - ✓ Bureau of Sanitation Management
 - ✓ Mayor, City Council, Board of Public Works
 - ✓ Environmental Community

Program Objective

– Best Management Practices (BMPs) for FOG

- A series of activities that minimize the amount of FOG introduced to the sewer system from FSEs.

– Industrial Wastewater Permit

- Required permit for all FSEs that have the potential to generate waste FOG during their food preparation process.

– Enforcement Action Plan

- Progressive actions used by the Industrial Waste Management Division to achieve compliance with local code

Program Objective

– Spill Response Plan

- Local plan for investigating reported Sanitary Sewer Overflows (SSOs).
- FSEs clean up measures for on-site oil/grease spills.

– Staff Development and Training

– Provide support to Local Governments regarding FSEs

- Sharing information and resources with other Local Government Departments to improve local services.

Best Management Practices

Grease Traps

- Train all staff to perform correct cleaning and maintenance procedures to ensure the device is properly operating.
- Transfer grease from grease traps to the recycling barrel daily or more frequently if necessary.
- Clean grease traps routinely.
- Keep a maintenance log.



Best Management Practices

Grease Traps

- Do not discharge solvents or grease-emulsifying agents into the sink.
- Do not discharge wastewater with temperatures in excess of 140°F to any grease traps.
- Dishwashing machine discharges must bypass the grease traps per Plumbing Code requirements.
- Food disposal units (garbage grinders) must bypass the grease traps.

Best Management Practices

Sewer System and Storm Drain Protection

- Use water temperatures less than 140°F in all sinks, especially the pre-rinse sink before the mechanical dishwasher.
- Soak up oil and grease under fryer baskets using food grade absorbents.
- Use absorbents like rags or clay litter to pick up spills before mopping the floor.

Best Management Practices

Sewer System and Storm Drain Protection

- Routinely clean kitchen exhaust system filters.
- Cover outdoor fats, oil and grease storage containers.
- Locate grease dumpsters and storage containers away from storm drain catch basins.

FOG Program Support Enforcement Action Plan

- Progressive Actions
 - Notices of Violation (NOV)
 - Telephone Assistance
 - Cease and Desist Order
 - Compliance Order
 - Suspension Order
 - Show Cause Hearing
 - Revocation



(Note: Any of the progressive actions can be skipped depending on the severity of the infraction.)

Benefits of the FOG Program

- Reduction of SSOs
- Improve public health and safety
- Minimize spill related potential fine
- Minimize property damage claims
- Minimize the risk of lawsuits
- Improve sewer maintenance
- Better FSE business environment



FOG Management Options in NC

- Land Application
- Lime Stabilization and beneficial reuse
- Composting and beneficial reuse
- All regulated under:
 - 15 A NCAC Section .0800
 - Permit to
 - transport and
 - treat

Public and Private Operations

- Public
 - Incorporation at NPDES or LAS facility
 - records
- Private
 - 503 recordkeeping requirements
 - Permitted through state WQ or SW agency
 - Operations plan approved at state level

NC Program

- State Rules
- House Bill 1019 Establishes Criteria
- Training and Certification Mandated for All transportation and Land Application
- Continuing Education
- Advisory Committee
 - State personnel
 - Industry and Community Representatives
 - University

Rule Requires

- Permit application and initial fee
- Initial site and soil analysis
- Annual Site Assessment, permit renewal and annual fee!!!
 - Representative Waste Analysis (Required)
 - Soil Testing (Required)
 - Plant Tissue Testing (Optional)

Getting Started

- Options analysis
- Technical issues
- Marketing issues
- Regulatory issues
- Developing Sustainability

Permit requirements

- State agency requirements –
 - Buffers?
 - Site and soil characteristics?
- Local jurisdictions –
 - Planning and zoning administration?
- State permit/local zoning – Primacy?
 - Often a state permit does not supplant local zoning decisions

What's required/recommended

- Permits
- Business plan
- Operations plan
 - Site operation
 - Monitoring and reporting
- Good neighbor policy

Waste Analysis

- 250 Samples Septage
- 80 Samples Grease Trap Waste
- Collected at Time of Application
- 10 Sample Collection Pails Along Vehicle Travel Path
 - Calibration exercise
 - Uniformity

Nutrient Levels in Septage and Grease Trap Waste (Mg/kg)

Parameter	Septage (150)	Grease Trap (80)
TN	15200 (1022)	10980 (2220)
P	3300 (435)	1790 (450)
K	1130 (140)	1270 (190)
Ca	22300 (1400)	17050 (1100)
Mg	1320 (200)	1225 (335)
Na	220 (80)	1730 (750)

Regulated Metal Levels in Septage and Grease Trap Waste (Mg/kg)

Metal	Septage (150)	Grease Trap (80)
Zn	1385 (215)	624 (120)
Cu	680 (170)	560 (195)
Pb	185 (20)	157 (50)
Cd	3.8 (2.1)	8 (3.2)

Residuals Management Effort

- Criteria for management through Land Application and Beneficial Use
- Criteria for In-plant Processing
- Training and Certification for Operators of Facilities Transporting and Managing Residuals
- Strict Regulatory Program with Oversight and Enforcement

Land Application Management Practices

- Element of Guidelines
- NC House Bill 1019 – training and Certification for transporters and land appliers
- Training:
 - Sampling and analysis, agronomics
 - Occupational health, vehicle management, safety
 - Business management

Incorporation at POTW

- Blend into headworks
 - Percent of hydraulic capacity
- Accept at digester
 - Percent of sludge volume
- Separate facility discharge liquid to POTW
- RECORDS!!!

Dewater and Lime Stabilize

- Dewatering Box – Polymers
- Lime stabilization
 - pH 12
 - 30 minutes
 - Lime substitute
 - CCE – 60% to 80 %
 - Coliform – Less than 1000
 - Nutrients and Metals – Low Levels

Compost

- Dewater
- Mix and Blend
- Compost
 - Time!!!
 - Low Levels of Nutrients and Metals
 - Low levels of Coliform bacteria
 - Meets PFRP Levels
 - Dewatered Liquid applied at high rate
 - Compost – unrestricted following PFRP

Independent Facility

- Stand alone
- Solid separation/liquid generation
- Permit
 - Industrial pretreatment
 - Solid waste
 - zoning

Handbook

- Sample permits
- Inspection forms
- Guidelines for operators of POTW for acceptance/incorporation
- Guidelines for Land application and beneficial use
- Case Studies
- Other?

Conclusions – Many Benefits of a Managed FOG Program

- Reduction of SSOs
- Improve public health and safety
- Minimize spill related potential fines
- Minimize property damage claims
- Minimize the risk of lawsuits
- Improve sewer maintenance
- Better FSE business environment
- Multiple Options Available – Cooperation essential

