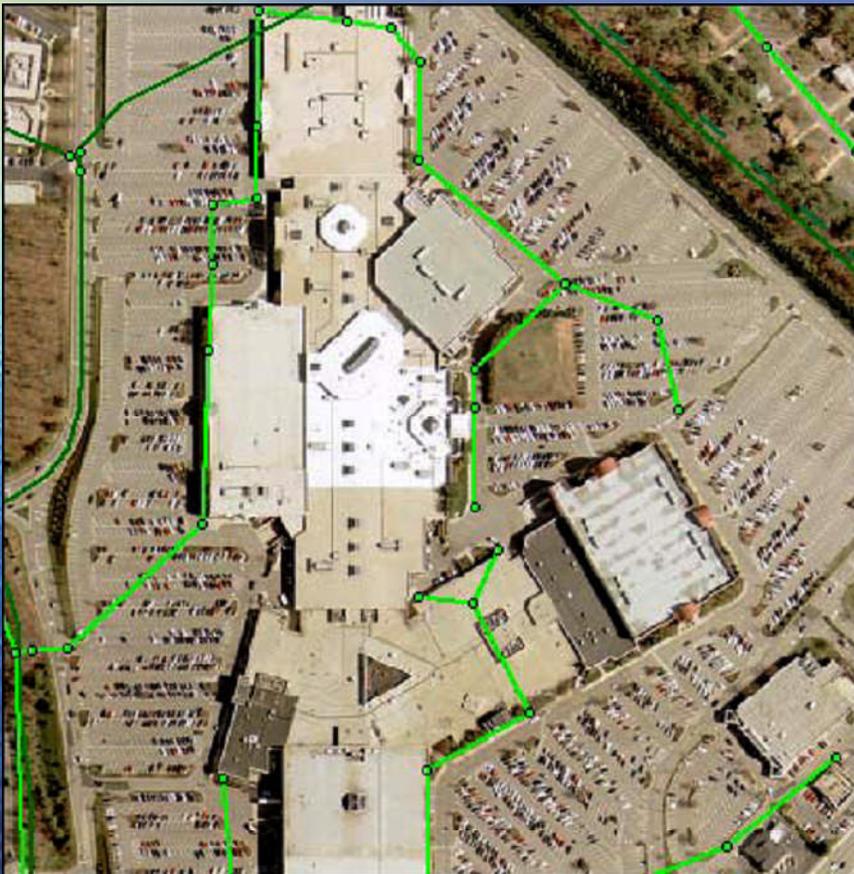


COOKING GREASE

ITS EFFECT ON OUR WATER INFRASTRUCTURE

Sue Allen
Environmental Health Specialist
Registered Sanitarian

EATING OUT IS ON THE RISE!



- ❖ Nearly 4.2 billion pounds of inedible grease produced each year.
- ❖ Concentrated in malls & restaurant districts.
- ❖ Local sewers and stormwater outlets can receive heavy loads of grill & fryer waste grease.

FOG

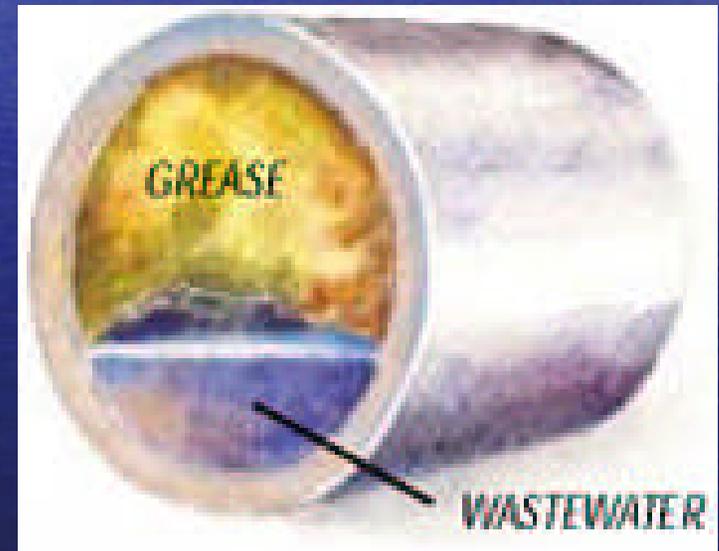
- ❖ **Fats, Oils, and Grease (FOG) – Cooking oil, meat fats, shortening, lard, butter, gravy, and food products.**
- ❖ **Grease breaks down and emulsifies into small particles in an oil-water bond, with less density than water.**
- ❖ **FOG – Compounds of fatty acids & glycerol.**
- ❖ **FOG comes from many animal and plant sources.**
- ❖ **Two types of grease – Yellow & Brown.**
- ❖ **Insoluble in water & can accumulate into hardened masses, adhering to sewer equipment.**

FOOD SERVICE ORIGINS

- ❖ **Restaurants**
- ❖ **Hospitals/Schools**
- ❖ **Nursing Homes**
- ❖ **Bakery/Delicatessen**
- ❖ **Caterer**
- ❖ **Mobile Food Trailers**
- ❖ **Residential Homes**
- ❖ **High-density Condominiums**

WHY IS GREASE A PROBLEM?

- ❖ Not easily decomposed.
- ❖ Public Health concerns – virus/bacteria
- ❖ Flies, vermin & odor
- ❖ Grease fires.
- ❖ Causes loss of dissolved oxygen in streams/bays, killing aquatic life.
- ❖ Potential plumbing/sewer back-ups/overflows.
- ❖ Cost to WWTP's & residents.



WHERE IS GREASE GENERATED?

- ❖ Floor Drains
- ❖ Pre-rinse Sinks
- ❖ Pot Sinks
- ❖ Dishwashers
- ❖ Stove Hood Cleanings
- ❖ Floor Mopping



VISUALS OR



Grease needs enough time to separate from soapy water.



Grease accumulation in a Sewer Pump Station.

HOW TO KILL AN APPETITE

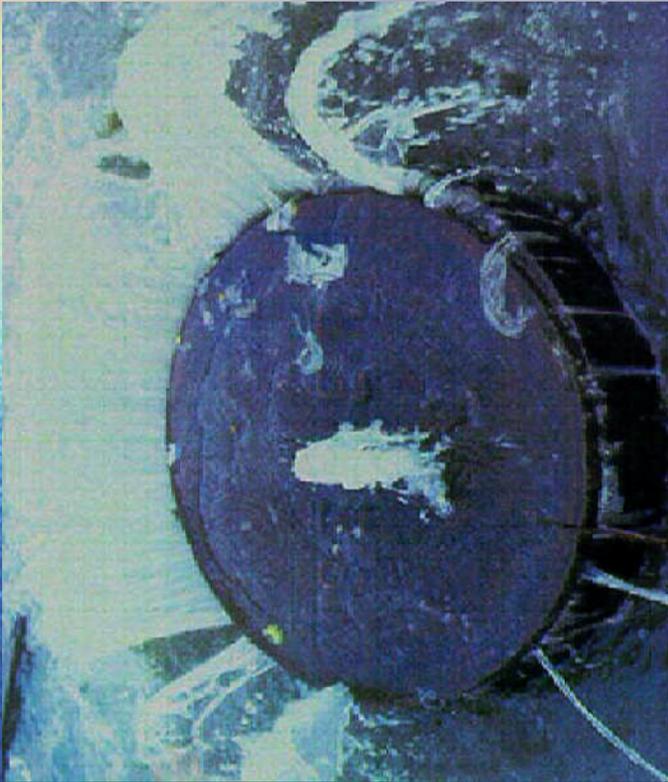


Fog deposits in manhole invert.



Buildup in a grease interceptor.

BLOCKAGE CONSEQUENCES



Sanitary Sewer overflow.



Stream impact.

Stream Pollution



VIEW FROM BEAUTIFUL MONTGOMERY COUNTY



08.30.2007 12:33

MONTGOMERY COUNTY



Fast-food restaurant was issued two citations for \$1000 for illegally discharging cooking grease.

GREASE STATISTICS

- ❖ Many WWTP's are closing doors to grease because of separating and treating costs. Due to federal mandates under NPDES, cities are implementing new programs to utilize grease.
- ❖ From 50 - 80% of SSO & CSO's are caused by waste grease.
- ❖ There are from 23,000 – 75,000 SSO's per year discharging between 3 & 10 billion gallons of untreated water into our streets, rivers, & groundwater.

How A Sewer Blockage Affects the Sewer System

Sewer Blockage Formation



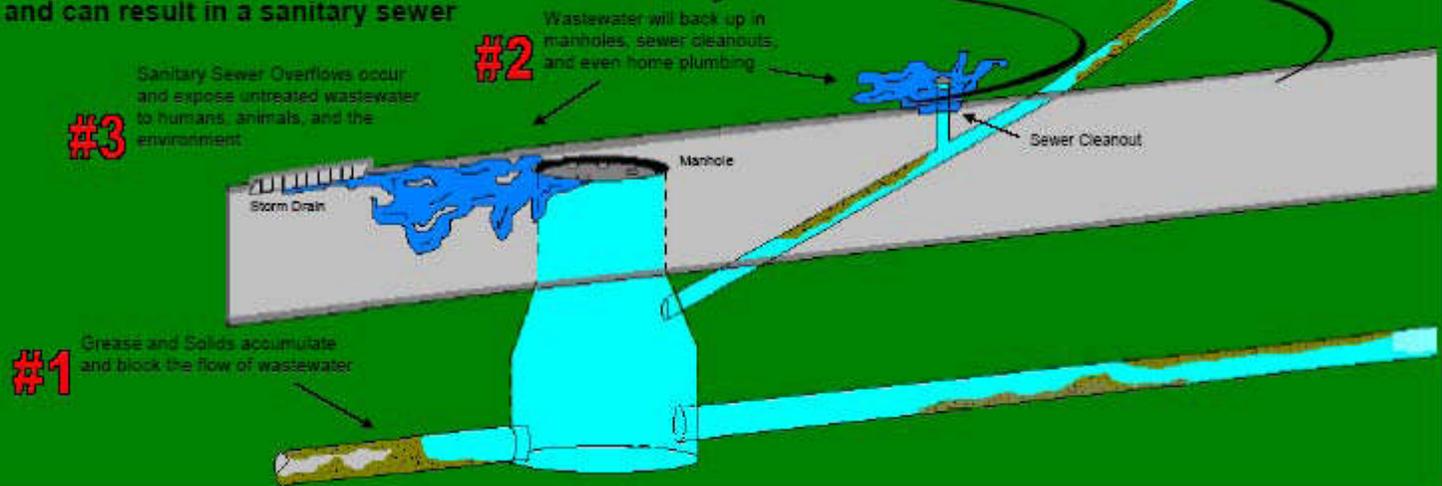
The start of a blocked pipe begins when grease and solids collect on the top and sides of the pipe interior.



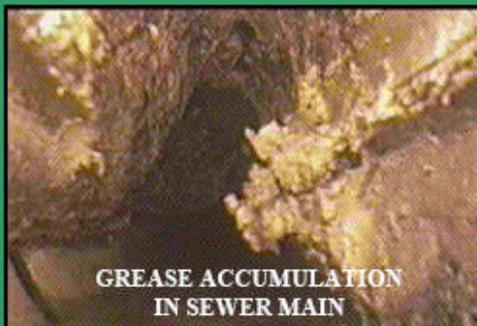
The build-up increases over time when grease and other debris are washed down the drain.



Excessive accumulation will restrict the flow of wastewater and can result in a sanitary sewer overflow.



SSO's CAN LEAD TO FISH KILLS



CAN RESULT IN



CAN LEAD TO

GREASE TRAP

- ❖ Slows down flow of greasy water & allows it to cool. The grease & oil separate, float to the top, & the cooler water flows down to sewer pipe. Grease is trapped by baffles & prevented from flowing out of trap.
- ❖ Must be properly sized, constructed, & installed to provide enough retention time for FOG settling & accumulation.
- ❖ Typically small, inside & above ground, maintained by restaurant staff.

IN-FLOOR MANUAL GREASE INTERCEPTOR



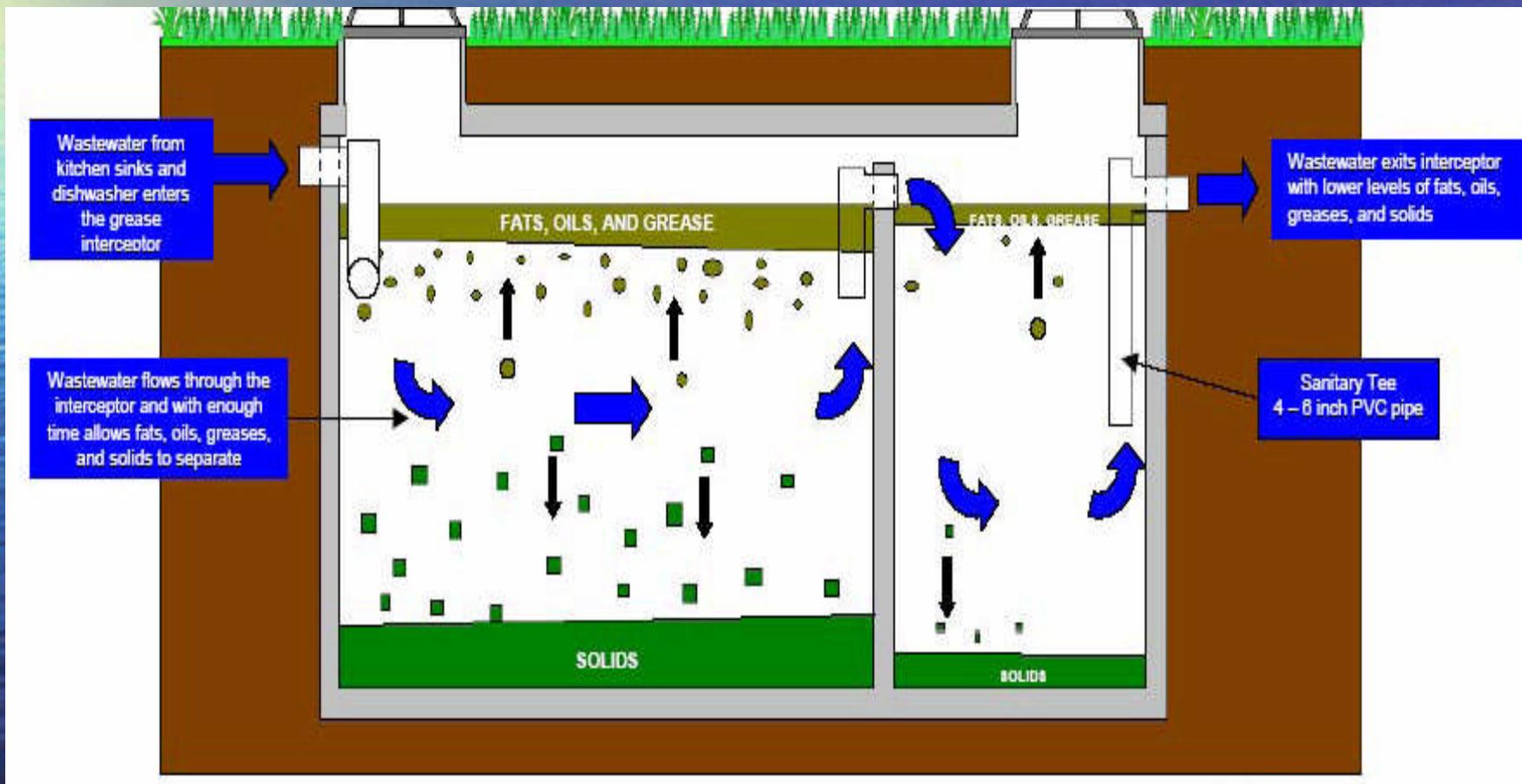
ALL GREASE TRAPS CLOG IF NOT CLEANED REGULARLY



Just 3 months after a restaurant opens.

Grease Interceptor

- ❖ Large grease control tank, outside and in-ground, cleaned by pumping company.



POOR HOUSEKEEPING



Unfortunately, most grease dumpsters and drums are located close to stormwater outlets.

BEST MANAGEMENT PRACTICES

IT STARTS IN YOUR OWN KITCHEN



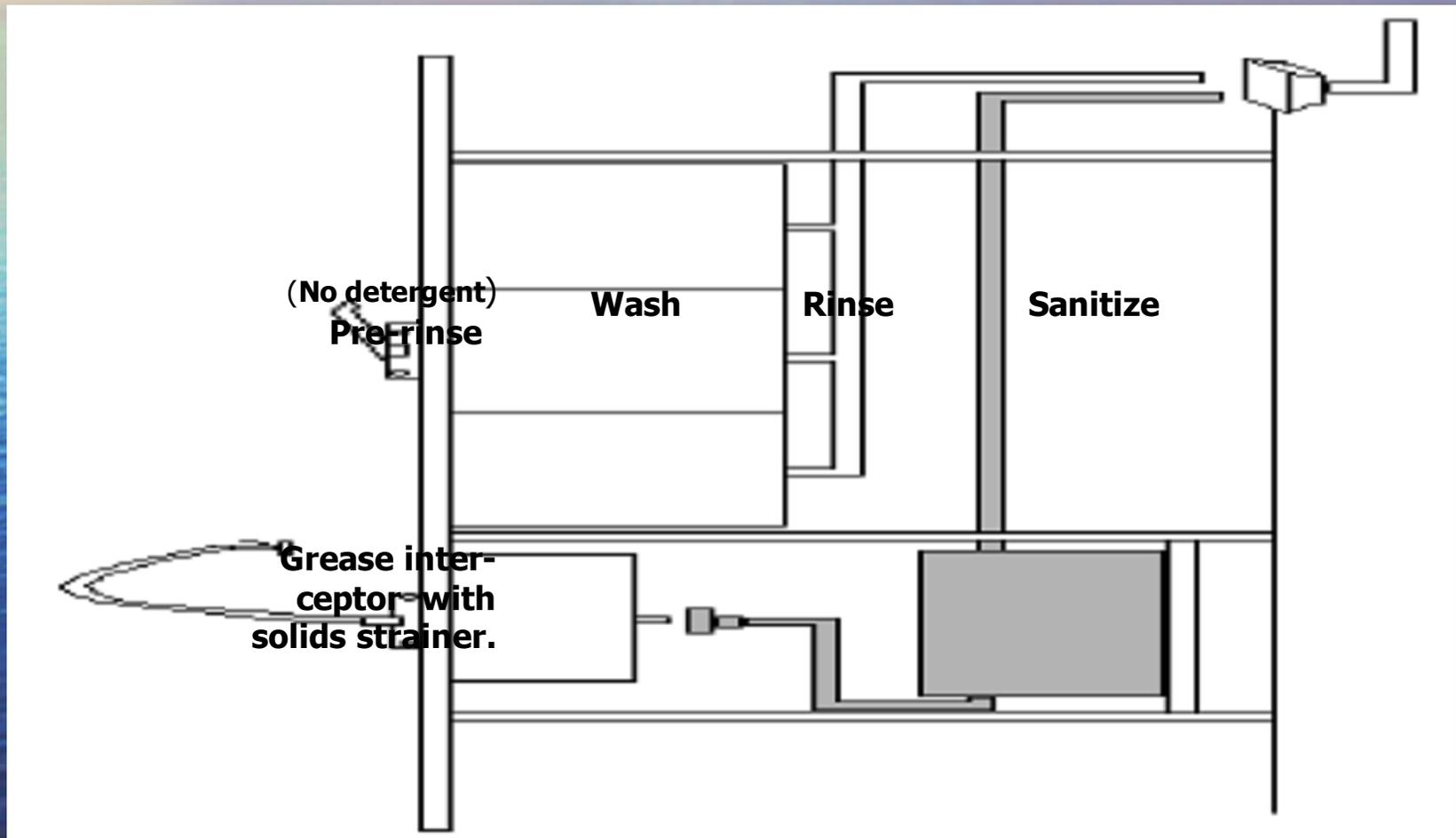
BEST MANAGEMENT PRACTICES - HOME

- ❖ **Freeze the grease! Pour liquid oils into disposable containers & seal. Foil-lined bags work.**
- ❖ **Scrape fats, food into trash-use strainers.**
- ❖ **Garbage disposals do not work on FOG.**
- ❖ **Practice dry cleanup.**
- ❖ **Don't use the toilet as a wastebasket.**

BEST MANAGEMENT PRACTICES - RESTAURANTS

- ❖ **Hang BMP posters in kitchen & provide regular employee training.**
- ❖ **Dispose of food waste directly into trash.**
- ❖ **Dry-wipe pots, pans, prior to washing & have ample paper towels available.**
- ❖ **Use hot water-only pre-rinse process.**
- ❖ **Label grease recycling receptacles & keep covered.**
- ❖ **Use strainers or drain screens in sinks to catch food wastes.**

HOT WATER-ONLY PRERINSE



RESTAURANT BMP'S

- ❖ Direct all drains from grease to properly - sized grease interceptor, except dishwashers.
- ❖ Provide regular maintenance of grease interceptors, depending on type/volume of food use.
- ❖ Contact disposal company to pick up FOG before barrels are full.
- ❖ Hand-clean small hoods and have large hood filters professionally cleaned.
- ❖ Skim/filter fryer grease daily.
- ❖ Use as little FOG as needed in food prep.

RENDERING PLANTS

- ❖ Recycle food wastes into livestock, aquaculture, & pet food.
- ❖ Manufacture bio-diesel and bio-fuels.
- ❖ Cure hides/skins for tanneries.
- ❖ Odors controlled by condensation, air scrubbing, & vapor incineration.



REUSE

- ❖ Land application for corn crops, septage and FOG.
- ❖ Composting – In Fort Knox, Tenn. FOG is mixed with wood chips, which absorbs it, allowing water to drain out. Wood chips are mixed with green waste & composted.



GREASE BIODIESEL

- ❖ Burns cleaner, has little sulfur & is biodegradable.**
- ❖ Takes far less energy to manufacture & distribute than petroleum.**
- ❖ Diverts a waste that can clog sewer pipes & turns it into a valuable product.**

GREASE BIOFUEL NEWS



- ❖ **A N.C. company converts brown grease into a soil amendment and an Alternative-Energy Feedstock.**
- ❖ **Riverside and Millbrae, California turn restaurant grease into electricity at their POTW's. Grease water is added to anaerobic digesters to generate methane gas. Gas is fed to cogeneration facility to produce electricity.**
- ❖ **A Raynham, MA private septage plant uses brown grease waste, pasteurizes it, adds lime and land applies the material for agricultural reuse.**



BIOFUEL NEWS

- ❖ **San Francisco - Fryer oils fuel the city's vehicle fleet.**
- ❖ **Las Vegas casinos' restaurant grease fuel Clark County School Buses.**
- ❖ **Santa Cruz, Cal. Biodiesel plant uses restaurant & agricultural waste as feedstock.**
- ❖ **"Bio-Beetle" cars in Hawaii & LA Airport.**



States must mandate that only consistently high-quality wastewater be discharged

Unacceptable



WSSC EFFORTS

- ❖ WSSC has a FOG Program – issue discharge permits to restaurants.
- ❖ Any non-residential operations with potential to discharge grease.
- ❖ “Can the Grease” educational pamphlets

Can the Grease!



www.wsscwater.com

CONCLUSION

- ❖ **Need for enactment of a uniform FOG Control Ordinance. County-State –WWTP's work together.**
- ❖ **Enforcement/permit restrictions to back it up.**
- ❖ **Continued educational efforts aimed at the restaurant industry.**



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