

BALTIMORE COUNTY MARYLAND FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM MANUAL

September 2010



BALTIMORE COUNTY

M A R Y L A N D

**105 W Chesapeake Avenue, Suite 400
Towson, Maryland 21204**



Section 1 Introduction

Baltimore County (the County) is responsible for keeping the sewer system in your area functioning properly and has implemented a Fats, Oils, and Grease (FOG) Control Program to prevent blockages in the sewer lines that can cause sewage overflows and spills that will affect public health by contaminating our rivers, streams and the Chesapeake Bay.

The County has also adopted regulations, now included in the Code of Baltimore County Regulations (COBCR) 1.01.01 – (Food Service Facilities) which include the institution of the FOG Control Program. The regulations were adopted in response to a federally mandated Consent Decree to eliminate sanitary sewer overflows.

The County will be inspecting restaurants and other grease generating facilities (GGFs) on a regular basis to help you minimize the discharge of grease and to stay in compliance with the requirements of the program. Facilities that are identified as non-compliant with the FOG Program requirements during these inspections will be re-educated on the requirements of the FOG Program. In some cases, enforcement actions may be initiated. This may result in fines or requirements for installing a new or upgraded grease abatement device (GAD).

The County has developed a facility FOG discharge risk scoring system that is used as a guide for determining the risk of each facility to discharge FOG into the sewer system. Facilities that are determined to have the greatest risk of discharging FOG into the sewer system will be inspected more often.

Sanitary sewer overflows are a problem both for GGFs and for the County. The County would like to work together with these facilities to prevent sanitary sewer overflows. By working together to reduce the amount of FOG that enters the sewer system, together we will reduce cleaning costs, odor issues, and sanitary sewer overflows and reduce revenue lost due to FOG related business closures.



Section 2 The Problem

2.1 What is the Problem?

Fats, oils and grease (FOG) are being discharged from the sinks and drains of grease generating facilities (GGFs). The FOG discharged is accumulating in sewer lines and causing blockages. These FOG blockages, located in either the property owner's sewer lateral or the public agency's sanitary sewer system, can cause backups into kitchens or basements and can lead to sanitary sewer overflows (SSOs). SSOs can result in untreated sewage flow onto streets and into storm drains, creeks, and other surface waters. SSOs can cause serious health risks to the public, are very expensive to clean up, can result in expensive fines to property owners, and can even cause businesses to have to shut down.



Grease blockage in pipe

This manual contains detailed information on the County's FOG Control Program for use as a guideline to ensure that each GGF will be equipped with the information necessary to maintain compliance with the Program.

Implementation of the County's FOG Control Program will educate GGFs on how to properly handle and dispose of FOG. By working together with the County to bring GGFs into compliance with the regulations that have been established, GGFs will discharge less FOG into the sewer system and SSOs will decrease.

2.2 Contributing Factors

Before we can begin to reduce the amount of FOG that accumulates in the sewers, we must first understand how FOG is generated and ends up in the sewer system. There are many factors that can contribute to FOG accumulation in sewer lines. Different aspects of a facility's operation will cause different types of FOG to be discharged and at different rates.

A key factor is the type of food being prepared. Foods that produce high concentrations of animal fat tend to produce FOG which has a higher probability to accumulate in sewer lines. Animal fat congeals and hardens when it contacts cooler water in the sewer lines. Facilities which prepare these types of food should ensure they are doing everything they can to prevent the FOG from going down their drains.

Another key factor is the quantity and type of grease generating cooking equipment that is being used. The more equipment being used in a facility, the higher probability FOG will be generated in that facility; however, the type of equipment plays a major part in whether or not FOG is being generated. Equipment such as rotisseries, deep fryers,



kettles, and woks has a high tendency to produce large quantities of FOG. If the FOG generated from these types of cooking equipment is not properly captured and disposed of, then there will be significant FOG accumulation at or downstream of the facility.

Another significant source of FOG in GGFs is dishwashing activities. Facilities serving food on non-disposable dishes that require washing must implement additional measures to prevent residual food and FOG from being washed down the drain and into the sewer system. Proper kitchen best management practices (BMPs) to address dishwashing activities are further discussed in Section 3.2 and the checklist in Appendix B.



Proper food scrapping

The quantity of sinks and drains in the food preparation and clean-up areas of a facility are another important factor to be considered. If a facility has a large number of sinks and drains, then that facility also has more opportunities for FOG to pass into the sewer system. Sinks and drains in a facility should have a specific designated use, and that facility should never differ from that designation. All sinks and drains, which are designated as containing possible grease waste, should be connected to a grease abatement device (GAD). The number of sinks and drains and the flow from those drains will determine the size of the GAD needed. GADs and proper sink and drain connections are further discussed in Section 3.3.

Disposal of residual food scraps is also a factor. All food scraps should be scraped off of plates and into the garbage. Allowing food scrapes to be washed down drains will increase the possibility of FOG to accumulate in the downstream sewer line. If the scraps are big enough, they may even become lodged in the sewer line. This could cause a back-up which could result in a SSO. Removing garbage disposals and installing drain sinks will significantly reduce the amount of food scraps that go down the drain. Also, providing rubber gloves or scraping utensils to employees will encourage employees to scrape the food scraps into the garbage can.

The amount of customer seating available at a facility is another factor in determining the risk of FOG discharge. Typically, a facility with a high number of seats, such as cafeterias, food courts and large restaurants, will serve a large number of meals. High productivity results in high FOG production, and there is a higher likelihood that this type of facility will have FOG accumulation issues if the proper preventative actions are not taken.



Section 3 The Solution

3.1 Providing Education to Grease Generating Facilities

One of the key elements of the County's FOG Control Program is to ensure that all grease generating facilities (GGFs) are provided effective education on the proper disposal of FOG at their facility. Educational materials such as fact sheets and posters are provided to all GGFs for management and kitchen staff training. County inspectors will also work with facility managers to ensure that GGFs are providing proper FOG training to their employees. Periodic inspections will also be conducted at facilities to ensure you are implementing the BMPs that are provided to you in the appendices.

3.2 Practicing Proper Kitchen Best Management Practices (BMPs)

Kitchen BMPs are practices that you can follow which can significantly reduce the amount of FOG that is discharged. The practices are relatively easy to implement and require little to no cost. All GGFs shall implement BMPs in their operations that are acceptable to the County.

Every facility operator is required to train its employees on proper methods of grease disposal. The training should include implementation of BMPs. Each facility should maintain a record or log showing who received training and have this available for review by the County. The Best Management Practices Employee Training Log will be evaluated by the County when a change of ownership or change in the food service procedures occurs. An example of the Best Management Practices Employee Training Log is available in Appendix A.



Proper disposal of grease

Examples of typical BMPs that a facility is required to implement include:

- Scrape grease and food waste from plates and pots before washing and place the waste into the trash
- Install drain screens on all sinks and floor drains
- Clean and maintain grease abatement devices regularly to perform correctly
- Limit garbage disposal usage to non-greasy food materials such as lettuce
- Use absorbent materials to prevent grease spills from entering drains
- Post educational materials throughout the facility



Additional BMPs (such as regular private sewer line cleaning) may also be required. The facility will check off the additional BMPs it plans to implement. The BMP checklist is available in Appendix B.

The additional BMPs will be optional to a facility; however, if a facility is identified as a significant FOG discharger, then the implementation of all additional BMPs may be required for that facility. It is recommended that a facility implement all of the additional BMPs on their own to optimize their ability to reduce FOG discharge.

Every FOG producing facility is required to have a person onsite who is knowledgeable about FOG control and is responsible for effective implementation of BMPs in the facility.

3.3 Grease Abatement Devices (GADs)

Grease abatement devices (GADs) are devices that are designed for the purpose of separating FOG from water. There are two basic types of GADs that are approved for use in Baltimore County. Those types are outdoor in-ground grease interceptors (GIs) and indoor grease removal/recovery devices (GRDs). The two types of GADs are further discussed in the sections below. Each facility must work with the County to ensure the proper GAD is chosen for that facility.

3.3.1 Requirements to Install a GAD

The evaluation for whether or not a grease abatement device is required is site-specific and will be determined by the County. The County has developed a GGF FOG discharge risk scoring system which will be utilized to assess the risk of FOG discharge for each facility, existing or new, based on objective verifiable factors. These factors include but are not limited to the following:

- Cooking equipment used (e.g., grills, fryers, tilt kettles, woks)
- Hours of operation
- Number of seats
- Dishwasher use
- Presence of a Grease Abatement Device (GAD)

The calculated FOG discharge risk score for each facility will be used for two general purposes:

- To make a risk-based determination whether facilities will be required to install GADs
- To assist in prioritizing facility inspections and monitoring of the collection system downstream of facilities based on risk

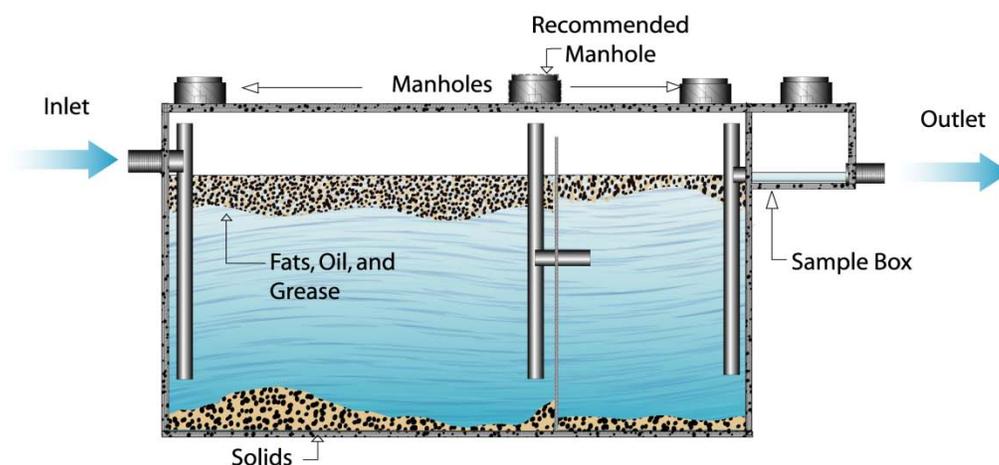


As a rule, new GGFs that have higher FOG discharge risk scores will be required to install GADs. Concurrently, new GGFs that have lower FOG Discharge Risk Score will not be required to install GADs. For existing GGFs, Baltimore County will utilize a combination of the FOG discharge risk score and whether a facility is located within a Hot Zone. Hot Zones are defined as areas in which repeated grease blockages have occurred in the sewer system. Hot Zones are further discussed in section 4.4.

Facilities that undergo significant modifications or change in scope of operations will be reevaluated and might be required to incorporate a GAD into their plans and remove any food grinders that would discharge to the GAD. Significant modifications include capital improvement levels, food process control changes and/or increased FOG discharge risk.

3.3.2 (a) Grease Interceptors (GIs)

One type of GAD is a grease interceptor (GI). GIs are underground or in-ground grease collection tanks that separate FOG, solids, and water. A typical in-ground interceptor is illustrated below. Any GGF that is required to install a GI will need to receive approval of the design and maintenance schedule.



Example of outside in-ground grease interceptor (typical)

The proper dimensions and volume of the GI will provide sufficient retention time to allow the particles to fully rise or settle before they pass-through to the outlet of the abatement device. Over time, the grease and solids layers thicken and will eventually fill the device if they are not removed. If the grease and solids are not removed regularly, the abatement device no longer functions for its intended purpose, and grease will be carried into the sewer system.

Since a GI is not self-cleaning or free of maintenance, it is critical that an abatement device be suitably designed with manholes or access covers in the right locations to facilitate maintenance and that it be cleaned and pumped at a frequency that maintains its design removal efficiency or so that total FOG and solids does not exceed 25% of the GAD's capacity.



3.3.2 (b) Grease Interceptor Sizing Criteria

The County's FOG Source Control Program Manager will review and approve the sizing and installation of all GIs. The recommended minimal size for all outdoor GIs is 1,000 gallons. The Manager will also consider the potential for large GIs becoming septic (which may create nuisance odors and corrosive conditions) due to excessively long retention times. Thus, the FOG Source Control Program Manager may not allow GIs that are too large and may require multiple GIs to be installed instead.

3.3.2 (c) Grease Interceptor Maintenance

In order for a GI to function properly, it must be maintained properly. Maintenance should be performed at a frequency so that the total contents of the FOG and solids do not exceed 25% or the designed limits for the device. Maintenance is typically performed by a certified pumping company. The pumper will remove the entire contents of the device and haul the grease and sludge to an approved disposal facility. Facilities should keep copies of the plumber's receipts at their location, and should also keep a log of the services provided for their records. An example of a Grease Abatement Device Maintenance Log is available in Appendix A.

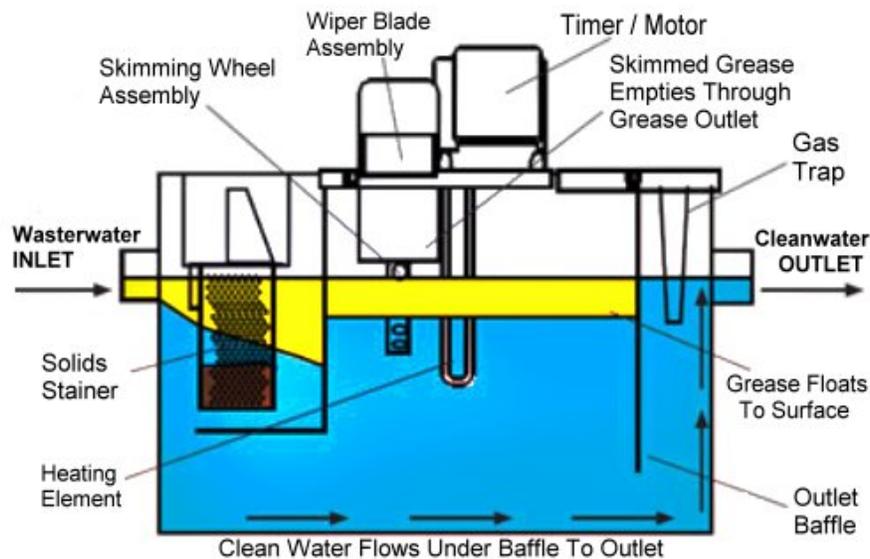


Grease interceptor pump out

Facilities that discharge large amounts of FOG into their GI will need to service their device on a more frequent basis. Facilities that implement BMPs will be able to reduce the amount of FOG that enters the GAD, and these facilities will not have to service their devices as often. The use of additives is not an acceptable FOG control procedure and is not a substitute for a GAD.

3.3.3 (a) Inside Grease Removal/Recovery Devices (GRDs)

In a limited number of cases, the FOG Source Control Program Manager may approve the installation of a grease removal/recovery device (GRD). GRDs include smaller devices that may fit under a pot sink or pre-rinse sink. They also include devices that automatically remove grease. A typical GRD design that automatically removes grease is illustrated below.



Automatic GRD design (typical)

GRDs are ideal for facilities that lack the space or necessary slope that is required for the larger outdoor devices. Also, these types of devices work well for facilities that have low flows and limited FOG production.

The following items are required for all GRD installations.

- GRDs shall be maintained in efficient operating condition by removing accumulated FOG on an as-needed basis or the frequency specified by the manufacturer.
- All food residues and any FOG waste shall be removed during the cleaning practices.
- GRDs shall be inspected at least once a month by kitchen staff to check for leaking seams and pipes, and effective operation of the baffles and flow regulating device.
- Dishwashers and food waste disposal units shall not be connected to or discharged into any GRD.

A grease trap or GRD mounted in the floor is not permitted.

3.3.3 (b) Grease Removal/Recovery Device Sizing Criteria

The County's FOG Source Control Program Manager will review and approve the sizing and installation for all GRDs. GRD type and installation shall conform to the current edition of the National Sanitation Foundation (NSF) or its equivalent. The FOG Source Control Program Manager will evaluate and approve the size of the GRD to avoid problems from occurring within the facility. If the GRD is too large for a facility, it could cause safety risks and even could contaminate food being served at that facility.



3.3.3 (c) Grease Removal/Recovery Device Maintenance

A GRD is an effective option for FOG removal inside a facility; however, the GRD must be maintained properly in order for it to function properly. Maintenance must be conducted in accordance with the manufacturer's guidelines and should be performed at a frequency so that the total contents of the FOG and solids do not exceed 25% or the designed limits for the device. If an automatic GRD is installed, then the internal components should be inspected and changed periodically. Wiper blades should be changed when worn down and solid baskets should be emptied on a daily basis.



Automatic GRD

Facilities that discharge large amounts of FOG into their GRD will need to service their device on a more frequent basis. Facilities that implement BMPs will be able to reduce the amount of FOG that enters the GAD, and these facilities will not have to service their devices as often. The use of additives is not an acceptable FOG control procedure and is not a substitute for a GAD.

3.3.4 Lateral Sewer Line Cleaning

GADs are excellent for removing FOG from discharged water; however even if a GAD is installed and maintained properly, there is still a possibility that FOG can pass into the sewer system and cause blockages. Because of this, private lateral sewer line cleaning should be conducted as often as necessary.

It is recommended that facilities conduct private sewer line cleaning at least once every 6 to 12 months. If your facility is continually experiencing backups and SSOs, your facility may be required to perform private lateral sewer line cleaning more frequently.

3.4 Partnership Between the County and Grease Generating Facilities

Even though it is up to the GGFs to implement kitchen BMPs and to maintain their own GADs, the County will be performing periodic inspections of facilities to ensure they are implementing these FOG control solutions. It is not the goal of the County to “catch” facilities conducting poor FOG control practices. The goal of the County is to help you improve your operations to reduce the amount of FOG that enters the sewer system. If a facility is found to be deficient in any areas that are described in the FOG Control Program Regulation, then it is the goal of the County to work with that facility to ensure they correct those deficiencies.



The most effective approach of controlling the discharge of FOG into the sanitary sewer system is with a strong partnership with you and your facility. Therefore, the County will continue to encourage facilities to do their part in controlling the discharge of FOG into the sewer system. However, if your facility continues to discharge FOG, the County will work with you to enhance your facility's FOG control plan. In the event these efforts are unsuccessful, the County has the right to enforce additional FOG mitigation measures as further discussed in Sections 4.6 and 4.7.



Section 4 Monitoring and Enforcement

4.1 How Monitoring Helps You

As discussed in Section 3.2 it is the responsibility of your facility and your manager to implement the required BMPs and to ensure your GADs are maintained and are functioning properly. The County will be periodically monitoring GGFs by performing routine inspections. The inspections will be used as a tool to help both you and the County to ensure the FOG Control Program Regulations discussed in this manual have been implemented.

The routine monitoring will ensure that facilities are not discharging excess levels of FOG into the sewer system. As a result the potential for FOG related blockages in the sewer system is minimized, keeping the sewer system healthy and functioning properly. A healthy and functioning sewer system does not experience SSOs and prevents the associated damaging effects including facility closures, health risks and fines.

These monitoring activities will also help facilities stay on top of all applicable compliance issues. Facilities will be able to ask inspectors questions about problems and issues they are experiencing. The inspections provide the education and information necessary to help each facility be confident that they are doing everything possible to prevent FOG from entering the sewer system.

4.2 Inspection Frequency

The Department of Environmental Protection and Resource Management (DEPRM) will be inspecting food service facilities on multiple occasions per year, depending upon their food permit ratings, which was previously discussed in Section 3.3.1. FOG compliance will be addressed during these inspections.

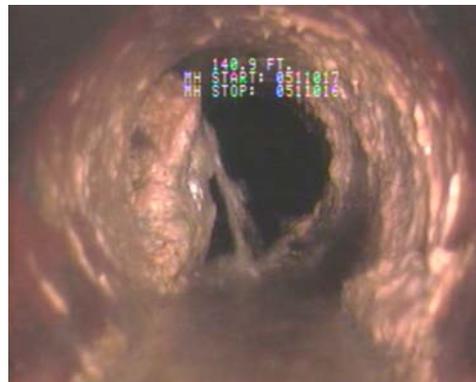
The following areas represent critical areas of FOG compliance:

- Number of seats
- Type and quantity of cooking equipment
- Commercial dishwasher usage
- Presence of GADs
- BMPs being utilized

The total number of inspections each year, however, will also be based on your performance with complying with FOG discharge prevention measures.



Another factor that will affect the inspection frequency is the observation by the Department of Public Works, Bureau of Utilities of FOG accumulation in the downstream sewer system while conducting periodic camera inspections. If significant FOG accumulation is observed downstream of a GGF, then that will warrant an inspection of that facility. The Bureau of Utilities will also inspect additional sewer pipes upstream of grease blockages. In the event of a grease blockage, all upstream GGFs within the service area will be re-evaluated to determine compliance with the FOG Control Program.



Partial grease blockage in sewer pipe

Reviewing BMPs, record keeping, and maintenance of GADs are examples of items that will be evaluated during an inspection. Deficiencies identified by the County will be explained to the facility owner, and the facility will be given a specific timeframe to correct those deficiencies. Notices of violation are further discussed in Section 4.6.

4.3 Inspection and Enforcement by Department of Environmental Protection and Resource Management (DEPRM)

The task of evaluating compliance with, and enforcement of, the FOG Control Program will be the responsibility of the County's Department of Environmental Protection and Resource Management (DEPRM), Environmental Health Section. DEPRM will be performing comprehensive inspections of all facilities.

Areas of inspection include, but are not limited to, the following:

- Drain screen maintenance
- Grease disposal practices
- Employees following scrapping practices
- Presence of an emergency spill kit
- Employee training
- GAD maintenance

Deficiencies observed by DEPRM staff may result in a Notice of Violation, but it is the goal of DEPRM staff to work with you to correct your facility's deficiencies. Educating you on what needs to be done to stay in compliance will ultimately result in more efficient facility operation and promote the health and operation of the Baltimore County sewer system.

Another area of concern for which DEPRM will be responsible is the kitchen plumbing configuration. Inspectors will be checking to ensure that all sinks and drains subject to FOG discharge are connected to a GAD. An inspector may require a GGF to reconfigure plumbing connections if improper plumbing connections are identified.



DEPRM will also be checking for proper GAD maintenance. Inspectors will be performing inspections of each GAD. The inspectors will check to ensure total FOG and solid materials in a grease interceptor do not exceed 25% of the GAD's capacity or that the design limits are not exceeded for each device. Also, inspectors will ensure that the structural components of the GAD are in good condition and that the GAD is still functioning properly.

4.4 Inspection by the Department of Public Works (DPW)

The responsibility of maintaining the sewer system within Baltimore County belongs to the County's Department of Public Works (DPW), Bureau of Utilities. The Bureau of Utilities performs routine cleaning of the entire sewer system at least every seven years and may provide more frequent cleaning in Hot Zones. Hot Zones, as previously discussed in Section 3.3.1, are areas of the sewer system which require more frequent cleaning than other areas due to observations of excessive grease and debris accumulation, increasing the risk for blockages or SSOs in those areas.

These Hot Zones are identified during normal maintenance of the collection system by maintenance staff when they observe conditions that warrant more frequent cleaning. Additionally, locations where an SSO occurs may be designated as a Hot Zone and cleaned on a more frequent basis, if necessary. The frequency of cleaning for these Hot Zones varies depending on the severity of the problem and the cleaning effectiveness. These Hot Zones are evaluated through the judicious use of closed circuit television (CCTV) on an ongoing basis. CCTV is also used to inspect the rest of the sewer system. The County inspects the sewer for structural damage, to ensure cleaning effectiveness, and to evaluate the level of FOG accumulation downstream of a facility.

The Bureau of Utilities also uses CCTV to inspect the condition of private laterals serving GGFs to determine if a GGF is contributing excessive FOG to the sewer system. The Bureau of Utilities will conduct CCTV inspections from the outside cleanout located near the property line of the facility to the connection of the lateral to the main sewer line. If excessive FOG discharge is identified from a facility, then appropriate inspection and enforcement actions will be initiated that may include the requirement for the installation of grease abatement devices.



CCTV Camera (typical)



4.5 Working with the Facilities to Correct Deficiencies

Once an inspection has been conducted, your facility will be informed of any areas found to be deficient. The County inspector will discuss with the facility's manager the required actions that must be taken in order to correct the deficiencies. If the specific deficiencies are not corrected within the allowed time, then further enforcement actions will be initiated.

For certain situations, a facility may require extra time to correct deficiencies. Depending on the type of correction, the County will work with that facility to identify and accommodate an appropriate timeframe to comply. Correction time frames must, however, take into consideration the health and operation of the sewer system. Re-inspection will be conducted for all assessed violations.

4.6 Notice of Violation (NOV)

If a violation of FOG Program Regulations is identified, the County inspector may issue a Notice of Violation (NOV) to the facility directing the facility to comply with the applicable requirements of these Regulations. The notice will be in writing and will describe in detail the following:

- The specific code violation
- The date by which the facility shall correct the violations or deficiencies
- Any other specific requirements or notes which are deemed appropriate by the inspector which may include additional BMPs up to and including the installation of a grease interceptor.

If the facility fails to correct the violation by the date specified, the County may suspend or revoke the facility's wastewater discharge permit, and revoke or suspend the food service facility permit and/or impose civil fines and penalties until the violation has been corrected.

The suspension or revocation of a wastewater discharge permit or food service facility license is an option of enforcement to the County, and may happen if the following situations occur:

- The facility fails to pay all fees or penalties owed
- Violations of multiple critical items
- Failure to correct violations within the given time period
- Immediate danger to the public health or sewer system



4.7 Enforcement Action and Appeals

The County's goal is to work with facilities to correct deficiencies without implementing fines or other enforcement actions; however, in the event a facility has committed a major violation or has not corrected a previous NOV, the County will have no choice but to initiate enhanced enforcement actions. Facilities are either subject to the same penalties afforded for violations related to food safety since they will be governed by the same regulations, or to wastewater discharge regulation penalties that result in prohibited discharges to the public sewer system. These penalties can be assessed through an administrative process and with an equivalent opportunity for appeal through a hearing officer, Board of Appeals and or the District Court of Maryland.

The County has several enforcement options available:

- The County may impose civil penalties in the amount of \$500 per day for each food service violation; and
- The County may impose civil penalties in the amount of \$1,000 per day for each serious violation or \$500 per day for each non-serious violation with each day's continuance considered a separate violation for prohibited discharges to the public system; and
- The County may impose criminal penalties for willful violations of wastewater discharge regulations; and
- The County may also seek injunctive relief in the form of closing the facility to prohibit the discharge of FOG; and
- The County may also seek equitable relief to recover the cost of investigation, corrective services, or other expenses incurred by the County.

The enforcing authority, either DEPRM or DPW, may be contacted regarding the available appeals process.

DEPRM, Environmental Health Section

Inspection and Enforcement	410-887-4065
Plan Reviews	410-887-4068

DPW, Bureau of Utilities

Inspection and Enforcement	410-887-5488
Pipeline Inspection	410-887-7415

Baltimore County Maryland Fats, Oils and Grease (FOG) Control Program Manual

Appendix A Facility Log Sheets



Baltimore County Maryland Fats, Oils and Grease (FOG) Control Program Manual

Appendix B Kitchen BMP Checklist



Kitchen Best Management Practices (BMPs) Document

There are many actions a facility can take to ensure fats, oils and greases do not go down the drain. The County is requiring the following BMPs:

Typical BMPs

- ✔ Scrape grease and food waste from plates and pots before washing and place the waste into the trash
- ✔ Install drain screens on all sinks and floor drains
- ✔ Clean and maintain grease abatement devices regularly to perform correctly
- ✔ Limit garbage disposal usage to non-greasy food materials such as lettuce
- ✔ Use spill kits and absorbent materials to prevent grease spills from entering drains
- ✔ Post educational materials throughout the facility



Additional BMPs

- Update and complete yellow grease collection log
- Update and complete grease abatement device maintenance log
- Properly dispose of fryer (yellow) grease with approved system and carrier
- Conduct periodic refresher training for all employees
- Conduct lateral line cleaning
 - Quarterly
 - Semi-Annually
 - Annually
- Properly dispose of hood cleaning waste to a grease abatement device or have waste disposed off site.
- Provide specific operation and equipment details related to food storage, preparation, service and disposal



***Please list any additional BMPs your facility will be implementing. Thank you for doing your part in preventing FOG discharge.**