

**ENVIRONMENTAL COMPLIANCE
AND POLLUTION PREVENTION GUIDE**
for the
FOOD PROCESSING INDUSTRY

MARCH 2001

New York State Department of Environmental Conservation
Pollution Prevention Unit



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The production and printing of this publication has been funded in part through a Pollution Prevention Incentives for States (PPIS) grant from the U.S. Environmental Protection Agency.

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INTRODUCTION

This environmental compliance guide is part of a series of industry-specific manuals that is being offered by the Pollution Prevention Unit to assist businesses in New York State with environmental regulations, better waste management and waste minimization methods. The regulatory requirements discussed in this manual provide a good framework for understanding your regulatory responsibilities. You should, however, consult directly with the NYS Department of Environmental Conservation's regulations and other compliance assistance material.

Also developed as part of this industry sector is the manual, *Environmental Self-Assessment for the Food Processing Industry*, which is intended to help your business achieve the maximum performance from your day-to-day operation as well as prevent pollution and identify opportunities for additional pollution prevention measures. In an effort to assist the food processing industry, the DEC is offering this manual to provide information on how to properly manage wastes that are generated at these facilities.

As you are aware, food safety should be kept in mind when reviewing the information in this guide and complying with environmental regulations. Under the Federal Food, Drug and Cosmetic Act (FFDCA), the Food and Drug Administration (FDA) of the U.S. Department of Health and Human Services (USDHHS), and the Food Safety and Inspection Service (FSIS) of the U.S. Department of Agriculture (USDA), the food processing industry is regulated to assure the safety of the food supply. These regulations address sanitation, microbial pathogens, and other sources of foodborne illness. NYSDEC is involved in food safety by virtue of its responsibility in regulating pesticides. The NYSDEC regulates the application of pesticides in New York State and is responsible for compliance assistance and

public outreach to ensure enforcement of state pesticide laws, Article 33 and parts of Article 15 of the Environmental Conservation Law, and regulations, Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Parts 320-329.

This guide is divided into six sections:

- **Section I** - A brief overview of the food processing industry.
- **Section II** - Compliance assistance tools available to the food processing industry.
- **Section III** - Regulations as they pertain to the food processing industry.
- **Section IV** - Identification and management of waste streams that are generated by the food processing industry and pollution prevention tips for each waste stream mentioned.
- **Section V** - Pollution Prevention techniques for the food processing industry.
- **Section VI** - A resource guide that will assist the food processing industry with names and addresses of technical assistance providers.

Preventing waste is better than managing it. If your company generates less waste, you will have less waste to manage and dispose of, resulting in lower disposal fees. If your business generates less waste, you reduce your risk of spills and discharges that contaminate the environment; you also reduce your liability risk.

When you and your employees familiarize yourselves with both the *Environmental Compliance and Pollution Prevention Guide* and the *Environmental Self-Assessment Guide*, your food processing facility will have a competitive advantage as far as knowing the regulations and the latest pollution prevention techniques. Keep this manual where it will be available to your

employees so they can refer to it as needed.

Section I - DESCRIPTION of the FOOD PROCESSING INDUSTRY

Introduction

The food industry is a manufacturing industry that processes raw or prepared animal, marine, and vegetable material into intermediate foods or edible products. It is one of the largest industry groups comprising the manufacturing sector of the U.S. economy. According to the 1994 Census of Manufacturers, New York State had approximately 1,363 (6.5%) food processing facilities. With this large number of facilities in the State, it is important that this industry sector properly manages the many different waste streams that may be generated. Wastes from air emissions, process water, and a variety of solid and hazardous wastes must be managed in accordance with applicable DEC regulations. Pollution prevention should play an important role in minimizing many of these harmful wastes. There is a growing need for New York's food processing facilities to understand and comply with environmental regulations in order to avoid potential enforcement actions and/or fines as well as potential harm to human health and the environment.

The U.S. Environmental Protection Agency's (USEPA) Toxic Release Inventory (TRI) system indicates that the chemicals released from the food processing industry that may have an environmental impact include ammonia, phosphoric acid, sulfuric acid, chlorine, hydrochloric acid, nitric acid, copper compounds, and zinc compounds.

The air issues deal mainly with volatile organic compound (VOC) emissions from fryers, commercial bakeries and machine lubricating oils, and refrigeration systems that use ammonia and chlorofluorocarbons (CFCs).

The main water quality issues are the

storm water management plans, excessive water usage and discharges to Public Owned Treatment Works (POTW).

Some waste streams that will be covered in this manual are the following:

- Wastewater
- Refrigerants
- Hazardous Wastes
- Air Emissions
- Pesticides
- Solid Wastes
- Used Oil

Section II - COMPLIANCE ASSISTANCE TOOLS

Compliance Incentive Policy for Small Business

The Compliance Incentive Policy was established by the DEC for promoting environmental protection and improving compliance by encouraging small businesses to detect and expeditiously correct violations discovered through environmental audits or compliance assistance. As set forth in this policy, DEC will adjust penalties when a small business makes a good faith effort to comply with environmental requirements by expeditiously disclosing and correcting all violations. The penalty adjustment does not apply to circumstances such as those involving criminal wrongdoing or significant threats to health, safety or the environment. For additional information on this policy and how it may apply to you, you can contact the DEC's Division of Environmental Enforcement at (518) 457-4348.

Environmental Management System

An Environmental Management System (EMS) uses a defined process to help businesses integrate environmental concerns

into business decision making, improve compliance and promote pollution prevention. It can provide businesses with a predictable structure for managing, assessing, and continuously improving the effectiveness and efficiency of the management of their environmental activities. An EMS approach builds in periodic review by top management and emphasizes continuous improvement instead of crisis management. The systematic nature of the EMS allows an organization to focus on implementation and take a more inclusive and proactive view of environmental protection.

Properly implemented, an EMS can reduce costs and improve productivity while advancing environmental protection and performance.

An EMS includes five key elements which are defined as follows:

Environmental Policy: top management commits to environmental improvement and establishes a written company environmental policy.

Planning: the company conducts a review of its operations, identifies legal requirements and environmental concerns, establishes objectives, sets targets, and devises a plan for meeting those targets.

Implementation: the company follows through with the plan by establishing responsibilities, training, communication, documentation, operating procedures, and an emergency plan to ensure that environmental targets are met.

Checking/Corrective Action: the company monitors its operations to evaluate whether the targets are being met and, if not, takes corrective action.

Management Review: the EMS is modified to optimize its effectiveness. The review stage creates a loop of continuous improvement for the company.

The DEC supports the development and use of EMSs that help a business achieve its environmental obligations and broader environmental performance goals. The DEC encourages the use of EMSs that focus on improved environmental performance and compliance, as well as pollution prevention.

At this time, the DEC is not basing any regulatory incentives solely on the uses of EMSs or certification to ISO 14001.

Small Quantity Hazardous Waste Generator Program

The DEC's Pollution Prevention Unit provides individual help to businesses or organizations that generate small amounts of hazardous waste. Site visits, workshops, and a toll-free hotline (1-800-462-6553) are available free of charge.

The DEC has developed numerous written guidance documents to assist you with environmental compliance and pollution prevention initiatives. Visit the DEC's Small Business Assistance Internet site for more information at: www.dec.state.ny.us/website/about/smalbus.html

Section III - REGULATIONS

Air Regulations

OVERVIEW

If your facility has boilers, emergency generators, some form of printing or degreasing operation, refrigeration units, fryers or bakery ovens, you may have to comply with some state and federal air regulations. This section of the manual will summarize these air regulations. In addition, you should be aware that National Emission Standards for Hazardous Air Pollutants (NESHAPS) have been proposed and will soon be promulgated, which may affect food processing facilities. These include the NESHAP's for Vegetable Oil Solvent Extraction and for Nutritional Yeast Manufacturing.

VOLATILE ORGANIC COMPOUNDS

Several air pollutants can be emitted from a bakery during the bakery process.

Ethanol is the primary pollutant of concern because of the quantity that is emitted into the air from the ovens. It is produced when yeast ferments. Ethanol becomes a gaseous volatile organic compound (VOC) when exposed to elevated temperatures in a baking oven. DEC requires commercial bakeries to have air permits. Those commercial bakeries that are “major” sources of VOC are subject to the VOC Reasonably Available Control Technology (RACT) requirements of Part 212. However, retail bakeries are exempt from both permitting and control requirements. (The NYSDEC air regulations define **commercial** bakeries as those who derive less than 50% of their revenues from on-site retail sales.) The NYSDEC air regulations exempt “batch” (non-conveyorized) ovens, and ovens used to bake products that are leavened chemically (without yeast).

Did you know?

Ground-level ozone, a major component of “smog”, is formed in the atmosphere by reactions of VOC and oxides of nitrogen (NOx) in the presence of sunlight. High levels of ground-level ozone can endanger public health and damage crops and forests.

Volatile organic compounds are commonly found in emissions from printing and degreasing operations. These air emissions may be considered Hazardous Air Pollutants (HAPS), which may be subject to additional controls under the National Emission Standards for Hazardous Air Pollutants (NESHAPs). Food processing facilities that have printing operations may be affected by air regulations covered in 6NYCRR Part 234 and the NESHAP rule, Subpart KK for Printing and Publishing Operations. For facilities with degreasing operations, possible applicable air regulations include 6NYCRR Part 228 and Subpart T in the NESHAP rules.

REFRIGERANTS

Refrigeration units, motor vehicles,

and certain appliances (i.e., freezers, air conditioners) that use chlorofluorocarbons and other ozone-depleting substances may be subject to requirements of the EPA’s stratospheric ozone protection program. The stratospheric ozone regulation does the following: bans the use of certain ozone depleting substances in non-essential products; requires labels for products containing or manufactured with regulated ozone-depleting substances; and bans the production of many of these substances (see 40 CFR 82). The EPA has established requirements for servicing and disposal of air-conditioning and refrigeration equipment that contains regulated ozone-depleting refrigerants. These requirements described briefly below are intended to minimize the release of such refrigerants to the atmosphere. If you own/operate appliances containing ozone-depleting refrigerants, you must do the following:

- When opening any appliance containing refrigerants for maintenance, service, repair, or disposal, you must have at least one piece of certified, self-contained recovery equipment available at your facility.
- Notify EPA that such equipment is available at your facility. This equipment must be operated to certain specified standards that minimize atmospheric release of refrigerants.
- If your appliance contains 50 or more pounds of refrigerant, you must repair leaks in a timely manner. You must maintain records documenting the date and type of all servicing performed on the appliance, as well as the quantity of refrigerant added.
- If you are an appliance owner/operator who adds the refrigerant, you must maintain records of refrigerant purchased and added.
- If you use technicians to service and maintain refrigerant-containing appliances, they must be certified by

an approved technician certification program. You can obtain a list of EPA-approved Section 609 certifying organizations by calling (800) 296-1996, or by visiting EPA's website at: <http://www.epa.gov/ozone/title6/609>. Also, the New York State Department of Motor Vehicles, Division of Vehicle Safety, Technical Training Unit offers a course called, "Systems Training and Air Conditioning (STAC)". That course goes beyond the certification requirements for servicing, handling, recycling, and retrofitting procedures for motor vehicle air conditioning. STAC provides training in diagnosing and repairing vehicle air conditioning, mechanical, electrical and electronic systems. For more information on this and other courses, call the NYS Department of Motor Vehicles at (518) 474-4279 or fax (518) 473-9903.

- If you employ such technicians, you must maintain records demonstrating compliance with the certification requirements (see 40 CFR 82).

For information about the EPA's Stratospheric Ozone Protection Program, call the Stratospheric Ozone Hotline at 1-800-296-1996 or visit EPA's website at <http://www.epa.gov/ozone/>.

DOES MY FOOD PROCESSING FACILITY NEED AN AIR PERMIT OR REGISTRATION?

The information in this section will help you to determine if your facility will require an air permit, registration or state facility permit. The air permit program is regulated under Title 6 New York Codes, Rules, and Regulations, Part 201 (6 NYCRR Part 201). If applicable, the reasonably available control technology (RACT) for each emission point will be regulated under 6 NYCRR Part 212, General Process Emission Sources.

Regulations Information

Air permit requirements can be found in 6 NYCRR Part 201, while the Reasonably Available Control Technologies (RACTs) are provided in 6 NYCRR Part 212.

EXEMPTIONS

The exemptions discussed in this section exempt the operation from air permitting requirements only. Your facility will still be expected to comply with all other air pollution controls and provisions.

Commercial bakeries are subject to air permitting, registration or state facility permit requirements. The air regulations define **commercial** bakeries as those which derive less than 50% of their revenues from on-site retail sales. However, **retail** bakeries are exempt from both permitting and control requirements. Other air permitting exemptions include: the use of non-conveyorized bakery ovens (this includes batch ovens, which are defined as a non-conveyor belt oven operating a single baking cycle in which a determinate amount of product is cooked at one baking); bakery ovens used exclusively to produce baked goods leavened chemically in the absence of yeast; process or exhaust or ventilating systems involved in the preparation of food, food blanching or cooking in water; and process, exhaust or ventilating systems or stationary combustion installations exclusively involved in the production of maple syrup.

MINOR FACILITY REGISTRATION

The following facilities must operate under a Minor Facility Registration.

Facilities in the New York City Metropolitan Area

The New York City Metropolitan Area consists of New York City, Westchester, Rockland, Nassau, and Suffolk Counties, and the Lower Orange County Metropolitan Area consists of the towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo,

Warwick, and Woodbury.

To be eligible to operate under a registration permit, a facility must meet all of the following conditions:*

- Total annual actual VOC emissions are not greater than 12.5 tons per 12-month period.
- Total actual annual emissions of any individual actual HAP emissions are not greater than 5 tons per 12-month period.
- Total combined actual annual HAP emissions are not greater than 12.5 tons per 12-month period or 5 tons of total VOC emissions for those sources seeking a cap to avoid the applicable requirements of 6 NYCRR Section 212.10.
- Total actual emissions of all contaminants must be less than half of the applicable thresholds.

The “actual annual emissions” limits apply to the rolling 12-month basis at the end of each month of operation. The Major Source thresholds are found in 6 NYCRR Part 201.2.1(b)(21).

All Other Areas

To be eligible to operate under a registration permit, a facility located outside of the New York City and Lower Orange Metropolitan Areas must meet all of the following conditions:*

- Total annual actual VOC emissions are not greater than 25 tons per 12-month period or 5 tons of total VOC emissions for those sources seeking a cap to avoid the applicable requirements of 6 NYCRR Section 212.10.
- Total actual annual emissions of any individual actual HAP emissions are not greater than 5 tons per 12-month period.
- Total combined actual annual HAP

emissions are not greater than 12.5 tons per 12-month period

- Total actual emissions of all contaminants must be less than half of the applicable thresholds.

The “actual annual emissions” limits apply to the rolling 12-month basis at the end of each month of operation. The Major Source thresholds are found in 6 NYCRR Part 201.2.1(b)(21).

STATE FACILITY PERMIT

The following facilities must operate under a State Facility Permit:*

Facilities in the New York City and Lower Orange County Metropolitan Areas

- Total annual actual VOC emissions are greater than 12.5 tons, but less than 25 tons per 12-month period.
- Total actual annual emissions of any individual actual HAP emissions must be between 5 and 10 tons per 12-month period.
- Total combined actual annual HAP emissions are not greater than 25 tons per 12-month period or between 5 and 10 tons of total VOC emissions for those sources seeking a cap to avoid the applicable requirements of 6 NYCRR Section 212.10.
- Total actual emissions of all contaminants must be less than half of all “Major Source” thresholds.

The “actual annual emissions” limits apply to the rolling 12-month basis at the end of each month of operation. The Major Source thresholds are found in 6 NYCRR Part 201.2.1(b)(21).

All Other Areas

To be eligible to operate under a State Facility Permit, a facility located outside of

the New York City and Lower Orange County Metropolitan Areas must meet all of the following conditions:*

- Total annual actual VOC emissions are greater than 25 tons, but less than 50 tons per 12-month period or between 5 and 10 tons of total VOC emissions annually for those sources seeking a cap to avoid the applicable requirements of 6 NYCRR Section 212.10.
- Total actual annual emissions of any individual actual HAP emissions must be between 5 and 10 tons per 12-month period.
- Total combined actual annual HAP emissions are not greater than 25 tons per 12-month period.
- Total actual emissions of all contaminants must be less than all “Major Source” thresholds.

The “actual annual emissions” limits apply to the rolling 12-month basis at the end of each month of operation. The Major Source thresholds are found in 6 NYCRR Part 201.2.1(b)(21).

TITLE V FACILITY PERMIT

Title V Facility Permits are required for all “Major Sources” in New York State. The definition of Major Source is found in 6 NYCRR Part 201-2.1(b)(21). All food processing facilities in the **New York City Metropolitan Area** (New York City, Westchester, Rockland, Nassau, and Suffolk Counties) and the **Lower Orange County Metropolitan Area** (towns of Blooming Grove, Chester, Highlands, Monroe, Tuxedo, Warwick, and Woodbury) with an annual potential to emit 25 tons or more of nitrogen oxides or 25 tons or more of volatile organic compounds must obtain a Title V air permit and are subject to the VOC RACT control requirements of Part 212. Facilities located outside of Lower Orange County and the New York City Metropolitan Area with an annual

potential to emit 100 tons or more of nitrogen oxides or 50 tons or more of volatile organic compounds must obtain a Title V air permit and are subject to the VOC RACT control requirements of Part 212.

* The following rules override the conditions listed above for Minor Facility Registrations, State Facility Permits, and Title V Permits:

- Any new facility that is in an industrial category to which a federal New Source Performance Standard (NSPS) exists and has a potential to emit below the major source thresholds must obtain a State Facility Permit, regardless of location or quantity of emissions from that facility.
- Any new facility that emits a contaminant listed as a hazardous air pollutant, excluding those facilities subject to VOC Reasonably Available Control Technology (RACT) requirements must obtain a State Facility Permit, regardless of location or quantity of emissions from that facility.
- Any facility that is subject to a DEC-approved variance from the requirements of a state VOC RACT regulation must obtain a State Facility Permit, regardless of location or quantity of emissions from that facility.
- Any facility that is subject to a National Emission Standard for Hazardous Air Pollutant (40 CFR Part 63) must obtain a Title V Permit, regardless of location or quantity of emissions from that facility.

RECORD KEEPING

Even if your facility is exempt from minor facility registration or air permitting requirements, you should still maintain records of your VOC emission rates.

- Show proof of compliance with applicable DEC air requirements.
- Be able to determine if your facility needs any registrations or permits.
- Be prepared to provide information to any Regional DEC inspectors if, and when they call to visit your facility.
- Help your facility toward implementing a pollution prevention program.

If you are a food processing facility with fewer than 100 employees and need assistance in computing your VOC emissions and finding out what registration/permits you need, call the Small Business Assistance Program (SBAP) at (800) 780-7227. The SBAP is a non-regulatory program that provides *free* confidential technical assistance to help small businesses achieve voluntary compliance under the Clean Air Act.

Water Regulations

PERMITTING REQUIREMENTS

Wastewater is commonly generated at food processing facilities during food preparation, processing, and cleaning operations. If your food processing facility directly discharges wastewater into surface or groundwaters, then you are required to obtain a State Pollutant Discharge Elimination System (SPDES) Permit. These permits are regulated under 6 NYCRR Parts 750-758.

A SPDES Permit will list all pollutants your facility is discharging into surface or groundwater that DEC determines necessary to address. It may contain limits, action levels or monitoring for each pollutant. Limits applied to your discharge will be the more stringent of either technology-based limits (sometimes referred to as best available technology or BAT limits), or water quality limits. Water quality limits are calculated according to the classification and ambient standards assigned to the specific water body receiving the discharge. All surface waters

and groundwaters in NYS are classified according to the best usage, e.g., drinking water or fish propagation.

To make certain you are complying with your permit limits, you may be required to sample your discharge and submit monitoring reports. Contact your regional DEC office for information on obtaining a SPDES Permit.

PRETREATMENT PROGRAM

In most instances, wastewater from food processing facilities will require some form of pretreatment prior to discharge into a municipal sewer system. The goal of the pretreatment program is to: (1) protect municipal wastewater treatment plants from damage that may occur when hazardous, toxic, or other wastes are discharged into a sewer system from industrial activities; (2)

Regulations Information

It is illegal to discharge directly to surface or groundwaters without a SPDES permit.

monitor the quality of sludge generated by these plants; and (3) protect receiving water by preventing the introduction of pollutants into a publicly owned treatment works (POTWs) which could pass through untreated. If you discharge wastewater directly into a municipal sewer system, you should check with your local POTW for discharge requirements. There may be certain restrictions, in addition to pretreatment requirements, for the discharge of wastewater into POTWs.

NONPOINT SOURCE PROGRAM

If you are a food processor, you might have a nonpoint source discharge. Nonpoint source pollution is a term that includes, for example, urban and agricultural runoff, erosion and sedimentation, or atmospheric deposition (acid rain). DEC has identified more than 40 different types of nonpoint

sources associated with common activities such as agriculture and silviculture, urban storm water runoff, construction and land development, streambank use, chemical and petroleum bulk storage, mining and roadway maintenance.

Typical pollutants from nonpoint sources include soil particles, nutrients such as phosphorous and nitrogen, toxic substances, pathogens, and organic materials such as sewage and food waste that use up the water's oxygen as they decompose.

STORM WATER MANAGEMENT

Another potential source of wastewater at your food processing facility is storm water discharges. Stormwater gathers a variety of pollutants that are mobilized during runoff events that comes in contact with potential pollutants, such as product spills, uncovered waste containers, or spilled liquids related to vehicle or mechanical maintenance. The pollutants found in storm water will be dependent on the type of material(s) the rain comes in contact with prior to discharge.

In 1987, under the Clean Water Act, EPA established a program to address storm water discharges associated with industrial activity. The term "storm water discharge associated with industrial activity" refers to a storm water discharge from one of 11 categories of industrial activity defined in 40 CFR 122.26. Six of the categories are defined by SIC codes, while the other five are identified through narrative descriptions of the regulated industrial activity. Food processing facilities are listed in category xi. This category includes facilities with storm water discharges from areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, byproducts, or industrial machinery are exposed to storm water. These areas may include:

- Industrial plant yards
- Material handling sites
- Refuse sites

- Sites used for application or disposal of process wastewater (as defined in 40 CFR 401)
- Sites used for storage and maintenance of material handling equipment
- Sites used for residual treatment, storage, or disposal
- Shipping and receiving areas
- Manufacturing buildings
- Storage areas (including tank farms) for raw materials and intermediate and finished products
- Areas where industrial activity has taken place and significant materials remain.

Material handling activities at your facility include the storage, unloading and loading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product, or waste product.

If your food processing facility is required to obtain a storm water permit, you may be required to prepare and implement a storm water pollution prevention plan.

- In order to develop a Storm Water Pollution Prevention Plan, you must obtain a copy of the *SPDES General Permit for Storm Water Discharges*. You can get a copy by calling your DEC Regional office (see Section IV for the location of your regional office). The Storm Water Pollution Prevention Plan can be written by you or consultant.
- Second, submit a "Notice of Intent" (NOI) to: Storm Water Notice of Intent, P.O. Box 1215, Newington, VA 22122. This address may change later this year.

Call DEC at (518) 457-0624 if you have any questions on the storm water management program.

SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) authorizes the EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes. The

EPA accomplishes this by the federal Underground Injection Control (UIC) program. Under this program the EPA requires owners and operators of facilities that discharge non-sanitary wastewaters into groundwater to (1) either close the cesspool, drywell or septic system, or (2) obtain a permit under the UIC Program. This section is included to notify the food processing industry that floor drains should not have a direct discharge to the ground or groundwater. This could be considered an underground injection and would constitute a violation of the SDWA unless authorized by a UIC permit.

Pesticide Use

The control of insects, weeds, and other pests in and around your facility should have minimal impact on human health, the environment, and non-target organisms. The NYS Department of Environmental Conservation (NYSDEC) is the lead agency in New York for the regulation of the sale and use of pesticides. NYSDEC conducts public outreach activities and regulatory compliance assistance activities. Questions on pest management and the state pesticide regulatory program can be directed to the NYSDEC Central Office, Bureau of Pesticides Management, (518) 457-0917 or to any of the NYSDEC regional offices. (See the Resource Guide for a listing of NYSDEC Regional Offices.) Your facility should be aware that the NYSDEC has regulatory and Commercial Pesticide Certification Requirements in the Food Processing Category for all pesticide applications. In an effort to reduce to the greatest extent possible the use of chemical pesticides, your facility should institute an integrated pest management plan (IPM). An IPM plan is a systematic approach to managing pests that focuses on long-term prevention or suppression with minimal impact on human health, the environment, and non-target organisms. Other techniques to

reduce pesticide use can include the following:

- Keeping food preparation and storage areas within the facility clean and free from residues to avoid harboring or attracting pests.
- Removing litter, waste refuse and uncut weeds and grass within the immediate vicinity of the building to reduce attraction and harborage of rodents and insects.
- Inspecting all the structures on the premises to identify needed repairs that could reduce or prevent pest infestations.
- Preventing breeding grounds for insects by ensuring there is proper drainage around your building.

Hazardous Waste Regulations

HAZARDOUS WASTES GENERATED BY THE FOOD PROCESSING INDUSTRY

Hazardous wastes are regulated under both the federal Resource Conservation and Recovery Act (RCRA) and New York State laws. The regulations first apply when a hazardous waste is generated and extended through accumulation, handling, shipping and disposal of the waste. Regulations cease only when the waste and all hazardous residuals are ultimately disposed. These regulations were enacted to protect human health and the environment, as well as to reduce the amount of waste generated and ensure that wastes are managed in an environmentally sound manner. The hazardous waste regulations are multi-tiered such that facilities generating and accumulating smaller quantities of waste are able to comply with less regulatory requirements, while those facilities that generate larger quantities of waste will be required to comply with more stringent requirements. The New York State hazardous

waste regulations are covered under 6 NYCRR Parts 370-374 and 376 and apply to any business in the food processing industry that generates hazardous waste.

No matter what wastes you dispose of, it is your responsibility to determine the type and quantity of hazardous waste you generate and to properly manage it. Since disposal fees for hazardous waste can be very expensive, it would be in your best interest to practice good hazardous waste management. Call the DEC Pollution Prevention Hotline toll free at (800) 462-6553 for assistance with managing your hazardous waste. Also, refer to Section IV for more information on technical assistance providers.

Below are some waste streams commonly generated by the food processing industry which may be considered hazardous waste:

- Vehicle maintenance waste
- Waste ink from packaging and printing
- Spent or unusable chemical preservative
- Solvent-laden rags
- Spent solvent-based cleaning materials
- Pesticides
- Spent lab chemicals
- Fluorescent lamps
- Used electronics (i.e., computer equipment)

DO YOU GENERATE HAZARDOUS WASTE?

If you generate waste at your facility, you should determine which wastes are hazardous. As a good management practice, you should always keep solid waste separate from your hazardous wastes. This will reduce or eliminate the mixing and/or contamination of wastes which could increase your disposal costs.

One way to make a hazardous waste determination is to see if your waste is listed in the New York State regulations, 6 NYCRR Part 371. If your waste is listed, it is hazardous. If your waste is not listed in Part

371, it could exhibit a hazardous waste characteristic such as: ignitability, corrosivity, reactivity, or toxicity according to the methods explained in 6 NYCRR Parts 371 and 372.

You can apply your knowledge of the waste to determine if it exhibits a hazardous characteristic. You must have a basis for making this determination such as material safety data sheets (MSDSs) or past analytical results. MSDSs may contain important information such as ignitability (flashpoint), corrosivity, or reactivity for substances or chemicals that you use in your shop. Please note that MSDSs only describe the new product. Due to use of the product, waste may become hazardous, e.g., by mixing or contamination.

Knowledge

If you are certain that a specific waste that you generate is not hazardous because of your knowledge about this it, then you can dispose of it as a solid waste. However, it is your responsibility to make this determination, and you will be liable for any illegal disposal of hazardous waste if your determination is not correct.

HAZARDOUS WASTE CATEGORIES

Once you have determined that your business generates hazardous waste, then it is necessary to determine your hazardous waste category status. Depending on the quantity and type of waste generated and the amount of waste stored, you will be in one of the following categories: Conditionally Exempt Small Quantity Generator (**CESQG**), Small Quantity Generator (**SQG**), or Large Quantity Generator (**LQG**).

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR

You **must** meet all of the following conditions in order to qualify for this generator status:

- Generate no more than 220 pounds (approximately 28 gallons) of hazardous waste per calendar month.
- Generate no more than 2.2 pounds of acute hazardous waste per calendar month.
- Store no more than 2,200 pounds of hazardous waste on site at any time.
- Store no more than 2.2 pounds of acute hazardous waste at any time.

A CESQG Must Comply with the Following:

- Identify its hazardous waste.
- Comply with storage quantity limits.
- Ensure proper treatment and/or disposal of its waste.
- Ensure delivery of the waste to a treatment or disposal facility by bringing no more than 220 pounds of hazardous waste to the authorized treatment or disposal facility; or have the waste transported by a 6 NYCRR Part 364 permitted hazardous waste transporter.

Did You Know?
As a CESQG, you can transport up to 220 lbs. of your own waste to a NYS approved facility.

A CESQG must ensure delivery of its hazardous waste to an offsite treatment or disposal facility that is a:

- State or federally regulated hazardous waste management treatment, storage or disposal facility.
- Facility permitted by NYS to manage municipal or industrial solid waste.
- Facility that uses, reuses or legitimately recycles the waste.
- Permitted household hazardous waste collection facility that accepts CESQG waste. See Section IV for a list of participating municipalities.

SMALL QUANTITY GENERATOR

You **must** meet all of the following conditions in order to qualify for this

generator status:

- Generate no more than 2,200 pounds of hazardous waste per calendar month.
- Generate no more than 2.2 pounds of acute hazardous waste per calendar month.
- Store no more than 13,200 pounds of hazardous waste on site at any time.
- Store no more than 2.2 pounds of acute hazardous waste at any time.

A SQG Must Do the Following:

- Obtain an EPA Identification Number by calling EPA at (212) 637-4106.
- Submit a completed hazardous waste manifest form.
- Use a 6 NYCRR Part 364 permitted hazardous waste transporter.
- Limit on-site storage. Waste must be shipped within 180 days of accumulation, or 270 days if the treatment, storage, or disposal facility is greater than 200 miles away.
- Follow emergency preparedness and response requirements.
- Adhere to land disposal restrictions.

Did You Know?
As a Small Quantity Generator, you cannot transport your own waste. You must use a 6 NYCRR Part 364 permitted transporter.

Storing Your Hazardous Waste

- Keep the waste in a separate storage area which is labeled “**Hazardous Waste Storage Area**”.
- Label all containers.
- Mark each container with the date you began collecting waste in that container.
- Use proper containment (pallets with built-in spill containment or berms) in case of leaks.
- Keep containers closed when not in use.
- Keep containers in good condition and periodically inspect for leaks, cracks or

rust.

For more information on small quantity generators, request a copy of the manual, *Environmental Compliance and Pollution Prevention for Small Quantity Generators* by calling (800) 462-6553.

LARGE QUANTITY GENERATOR

Large Quantity Generators are fully regulated under 6 NYCRR Parts 370-374 and 376 and are not covered in this manual. Large Quantity Generators can obtain a copy of the regulations by calling (518) 457-0532.

UNIVERSAL WASTE

In an effort to streamline environmental regulations for wastes that are generated by large numbers of sources in relatively small quantities, USEPA issued the Universal Waste Rule in 1995. It is designed to reduce the amount of hazardous waste items in the municipal solid waste stream; encourage the recycling and proper disposal of some common hazardous wastes; and reduce the regulatory burden on businesses and other sources that generate these wastes. Although, handlers of universal wastes must meet less stringent standards for storing, transporting, and collecting wastes, the wastes must comply with full hazardous waste requirements for final recycling, treatment, or disposal.

Universal wastes include such items as hazardous batteries, hazardous mercury-containing thermostats, certain pesticides, and now hazardous lamps.

The rule adding hazardous waste lamps to the federal list of universal wastes took effect in non-RCRA authorized states on January 6, 2000. New York State is an authorized state, so the rule didn't take effect in New York State until it was adopted by the New York State Department of Environmental Conservation (NYSDEC). In order to include hazardous waste lamps as universal wastes, NYSDEC had to either amend the NYSDEC hazardous waste regulations or publish an enforcement directive. An enforcement directive can be used as an interim tool to

allow certain USEPA regulations to be used in lieu of NYSDEC regulations until such time as NYSDEC regulations can be updated.

On October 22, 1999, NYSDEC issued an enforcement directive allowing hazardous waste lamps, such as most fluorescent lamps, to be regulated as universal wastes. Notice of this enforcement directive was published in the Environmental Notice Bulletin on November 3, 1999. This enforcement directive took effect on January 6, 2000. As of January 6, 2000, handlers of hazardous waste lamps are able to choose between handling their lamps under the traditional regulatory scheme or as universal wastes. However, once you declare your lamps universal wastes, you must continue to handle them as universal wastes. Jumping back and forth between the traditional RCRA approach and the Universal Waste Rule in order to avoid any requirements is prohibited. If a handler of hazardous waste lamps fails to comply with the USEPA Universal Waste standards, they may be considered to be in violation of existing hazardous waste laws and regulations. The 6 NYCRR Part 364 Waste Transporter requirements are applicable, requiring transporters carrying over 500 pounds of universal wastes to have a Waste Transporter Permit.

All hazardous waste generators that are required to manifest their hazardous waste are subject to the Environmental Conservation Law (ECL) 27-0907. These generators must sign a certification on the manifest form that, "the generator of hazardous waste has in place a program to reduce the volume or quantity of toxicity of such waste to the degree determined by the generator to be economically practical." A good source of guidance is the "Hazardous Waste Reduction Plan - Guidance Document," available by calling the Hazardous Determination Section of the Division of Solid and Hazardous Materials at (518) 485-8988.

Hazardous Waste Determination

DEFINITION

The term hazardous waste determination will be mentioned throughout this section of the manual. If you are a business that generates hazardous waste, you should understand the term since it applies to most of the waste streams mentioned in this section. If you have not read Section II of this manual, *Regulations*, you should do so in order to familiarize yourself with the requirements and conditions for hazardous waste generators.

Specific hazardous waste types have designated waste codes. A waste code is a four-digit classification system used by the NYSDEC to identify wastes on labels, shipping papers, and other records. All hazardous waste codes begin with either “F”, “K”, “U”, “P” or “B”; characteristic wastes begin with the letter “D”. For a complete listing, consult 6NYCRR Part 371. If you generate a waste at your facility that is not listed in 6 NYCRR Section 371.4 of the Hazardous Waste Regulations, you must then determine if that waste is hazardous by any of the following four characteristics: ignitability, corrosivity, reactivity, and toxicity.

Ignitability

If your liquid waste has a flashpoint of less than 140° F, it is hazardous. Examples include: parts cleaners, solvents, and waste gasoline.

Corrosivity

If your waste has a pH of 2.0 or lower, or a pH of 12.5 or higher, it is hazardous. Examples include: caustic degreasers, and acid or alkaline cleaning solutions.

Reactivity

If your waste is unstable and undergoes violent chemical reaction spontaneously or reacts violently with air or water, it is hazardous. An example would be pressurized aerosol cans.

Toxicity

If your waste is not ignitable, corrosive or reactive, then it might have to be tested for toxicity according to the methods explained in 6 NYCRR Parts 371 and 372, or in the federal regulations, 40 CFR Part 261. Examples include: used facility towels or rags, oily wastes, oil absorbents, floor drain and sump sludge, and used antifreeze. A toxicity test is done by having a representative sample of the waste tested by a certified lab where it is analyzed using a toxicity characteristic leaching procedure (TCLP) test. For a copy of certified labs in New York State, call (800) 462-6553. If the test exceeds one or more of the allowable standards shown in the Appendix, then the waste is hazardous.

Solid Waste Regulations

In 1988, the Solid Waste Management Act put emphasis on waste reduction, reuse and recycling as primary solid waste management methods. Every food processing facility should be aware of what items they are discarding and how they are disposing of them. The best way to do this is to develop a solid waste management disposal plan for your facility. The first step in developing your plan is to conduct a waste audit of your business. A waste audit will show where you can improve your purchasing practices and help identify potential waste reduction and recycling options. Also, a waste audit will help you get accurate information on the nature and quantity of your waste. Businesses that implement waste reduction, reuse and recycling have benefitted by reducing costs.

Here are some waste reduction and recycling strategies your company can adopt:

- Use reusable shipping containers and pallets.
- Use minimal or reusable packaging.
- Purchase reusable products and supplies.
- Recycle your office paper.
- Make sure your employees practice

waste reduction and recycling methods.

If you need a copy of the *Waste Audit Reference Manual*, call the DEC Bureau of Waste Reduction and Recycling at (518) 457-7337.

Land Application, Composting, Rendering and Animal Feed

Composting of organic waste can be an effective waste reduction measure by preventing organic materials from entering the waste stream. It is a natural process by which organic materials are allowed to decompose under controlled conditions. Compost is used for fertilizing and conditioning soil. Another possible method for reducing waste disposal while enhancing soil conditions is the landspreading of organic waste. Exemptions for the land application of food processing waste are found in 6NYCRR Part 360-4.1(c)(1) and (c)(2). An exemption for the composting of food processing waste is found in 6NYCRR Part 360-5.1(b)(2). The definition of food processing waste, for the purpose of Part 360, is found in Part 360-1. For more information on composting contact the NYSDEC, Division of Solid and Hazardous Materials, Bureau of Waste Reduction and Recycling at (518) 457-7337. For more information on land spreading contact the NYSDEC, Division of Solid & Hazardous Materials, Bureau of Waste Reduction and Recycling and the NYSDEC Division of Water, Bureau of Water Permits at (518) 457-0656.

The rendering of oil, grease, fat, and meat and bone cuttings, which results in tallow, grease, and protein meals, is another waste disposal reduction method. For more information on rendering, contact the NYS Department of Agriculture and Markets, Division of Food Safety and Inspection at (518) 457-5382.

Some facilities collect food by-products (including liquid food waste) for local farmers to use as animal feed or for animal food manufacturing. Offering certain food by-products for use as animal feed is an

economical and environmentally sound way for food processors to reduce waste discharges and waste management costs. Check with the NYS Department of Agriculture and Markets, Division of Food Safety and Inspection at (518) 457-5382 and the NYSDEC, Division of Solid and Hazardous Materials, Bureau of Waste Reduction and Recycling at (518) 457-7337 for information regarding the laws governing food for animal feed.

Bulk Storage Regulations

If your facility utilizes solvent, degreasers, petroleum products, etc., you may have to comply with state and federal bulk storage regulations. The bulk storage regulations pertain to tank registration, upgrades, and inspections for the safe handling and storage of over 1,000 different hazardous substances as well as stringent design standards for new construction.

HAZARDOUS SUBSTANCES

New York's Chemical Bulk Storage (CBS) Program addresses both underground (UST) and aboveground storage tanks (AST) containing regulated hazardous substances. In 1986, the state legislature passed the Hazardous Substance Bulk Storage Act, which required DEC to establish a program for preventing the release of hazardous substances into the environment. Phase I (6 NYCRR Parts 595, 596, and 597) of the CBS regulations was adopted on July 15, 1988 and established a list (Part 597) of chemicals to be regulated. These regulations (Part 596) required the registration of ASTs that exceed 185-gallon capacity and all USTs that store any of these hazardous substances whether singularly or in combination.

Phase II was adopted on August 15, 1994. This phase modified Parts 595, 596, and 597 and established minimum requirements and schedules in Parts 598 and 599 for the design, construction, installation, operation, maintenance, repair, monitoring,

testing, and inspection of storage facilities.

Regulatory Deadlines and Requirements for Facility Upgrade

Part 598 establishes the upgrade requirements for USTs with a deadline of December 22, 1998 (the same as the EPA's UST program) and for ASTs with a deadline of December 22, 1999. Facilities constructed after February 11, 1995 must meet the standards for all new or substantially modified facilities (Part 599). The installation of a new tank, even a replacement tank, is considered a substantial modification. Repairs and replacements to ancillary piping, vents, gauges, pumps, etc., are not considered substantial modifications.

USTs are required to be (1) corrosion resistant, consisting of cathodically-protected steel, fiberglass-reinforced plastic, or a combination of both, and must have (2) secondary containment with interstitial monitoring for leak detection.

If the tank is not double-walled, it must be installed inside an excavation liner to contain any release. All USTs must be equipped with spill and overflow prevention devices to include high-level alarms or automatic shutoff devices, spill catchment basins at the fill-port, and secondary containment for the transfer station. Underground piping must be corrosion resistant and have secondary containment with interstitial monitoring.

By December 22, 1999, all ASTs must be upgraded. Tanks in contact with soil must be cathodically protected. Tanks constructed of materials which could melt when exposed to fire must be protected from fire. All ASTs must have secondary containment and be equipped with a product level gauge and either a high-level alarm, a high-level rip, or an overflow to a catch tank. The storage tank must be equipped with valves to control the flow of product for each tank connection.

Secondary Containment at Transfer Stations

A transfer station is an area where pipes

or hoses are connected and disconnected to empty or fill a storage tank. This includes railways, roads, containment basins, curbs, collection sumps, and impervious pads where a vehicle or container is located to off-load or to receive a hazardous substance, where a coupling to a transfer line is made for the purpose of hazardous substance transfer, or where a system to collect and contain spills resulting from transfer is located. By December 22, 1999, all transfer of hazardous substances at a registered facility must occur within a transfer station equipped with permanently installed secondary containment. The goals of the program are to control any release from bulk storage systems and transfer operations and to reduce/eliminate releases to soil, surface water, and groundwater.

SPILL PREVENTION REPORT

The Spill Prevention Report (SPR) is considered to be the cornerstone of the CBS regulations and was required after August 11, 1996. The major elements of the SPR require a listing of all spills over the previous five-year period, an assessment of the causes of those spills, a compliance assessment of bulk storage operations, a record of inspections, a spill response plan, and management's signature indicating acceptance and approval of the report. A proper SPR can minimize and eliminate injury, loss of life, hospitalization, subsequent remediation, and reduce the facility's overall liability.

PETROLEUM PRODUCTS

In 1983, the NY State Legislature enacted Article 17, Title 10 of the Environmental Conservation Law, entitled "Control of the Bulk Storage of Petroleum." The law applies both to Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs), or groupings of such tanks with a combined storage capacity of more than 1,100 gallons. Exempted from this law because they are regulated under other programs are: oil production facilities; facilities licensed under the Navigation Law; and facilities regulated under the Natural Gas Act.

Under 6 NYCRR 612-614 passed in 1985, owners were required to register storage facilities with DEC by December 27, 1986. Facilities must be re-registered every five years. Registration fees vary from \$50 to \$250 per facility, depending on capacity. New facilities must be registered before being placed into service. DEC must be notified within 30 days prior to substantial modifications

Nassau, Suffolk, Rockland and Cortland Counties administer the program in these localities, pursuant to delegation from DEC. Because these counties may have more stringent requirements than the state, owners and operators should contact their county to learn of specific local requirements.

All facilities regulated under Article 17, Title 10 must meet certain handling and storage requirements established by DEC. Existing USTs and ASTs must observe rules for color coding of fill ports, shutoff valves, gauges and check valves. Aboveground tanks must be provided with secondary containment (i.e., berms or other devices to contain spills). Operators of USTs must keep daily inventory records (and maintain them for five years) and notify DEC and the tank owner within 48 hours of unexplained inventory losses. They must test tanks and pipes every five years or monitor the interstitial space of double-walled equipment. Operators of ASTs must conduct monthly visual inspections. Every 10 years they must clean out the tanks, remove the sludge from the bottom, inspect for structural integrity and test for tightness. Tanks that are temporarily out of service (30 days or more) must be drained of product to the lowest draw off point. Fill lines and gauge openings must be capped or plugged. Inspection and registration must continue. Those tanks that are permanently out of service must be emptied of liquid, sludge and vapors and must either be removed or filled with solid inert materials such as sand or concrete slurry. DEC must be notified 30 days prior to filling or removal.

Part 614 applies to all new and modified facilities. New USTs must be made of

fiberglass-reinforced plastic; cathodically protected steel (to protect against the corrosion caused by contact between steel and soil); or steel clad with fiberglass-reinforced plastic. Secondary containment such as a double-walled tank, a vault, a cut-off wall or an impervious underlayment must be provided. Monitoring of the interstitial space, an in-tank monitoring system or one or more observation wells is required. New ASTs must be constructed of steel. If their bottom rests on the ground, the tank must have cathodic protection. An impermeable barrier must be installed under the tank bottom, with monitoring between the barrier and the bottom. New underground piping systems must be designed with a 30-year life expectancy. If made of steel, they must be cathodically protected. Pipes may be constructed of fiberglass-reinforced plastic or other equivalent non-corrodible materials.

REPORTING A SPILL

Reporting spills is a crucial first step in the response process. There may be several different state, local, and federal laws and regulations that require spillers to report petroleum and hazardous material spills.

Hazardous Substances

Associated with each regulated hazardous substance under Part 597 is a Reportable Quantity (RQ), one for a release to air and one for a release to land/water. Appropriate parties are required to take prompt remedial action to protect human health and the environment in the event of a spill. A spill that exceeds the RQ but is contained by effective secondary containment, and which is cleaned up within 24 hours, is not reportable unless it could result in a fire or explosion or pose a health risk to adjacent parties. When a release exceeds the reportable quantity for that substance, the facility must report the release to the DEC Spill Hotline (800) 457-7362) within two hours of discovery. Part 595 applies to all releases, including those from chemical process tanks, chemical fires, explosions, and non-registered facilities.

Petroleum Products

Petroleum spills must be reported to DEC unless they meet **all** of the following criteria:

- The spill is known to be <5 gallons.
- The spill is contained and under the control of the spiller.
- The spill has not and will not reach the state's water or any land.
- The spill is cleaned up within two hours of discovery.

All reportable spills must be reported to the DEC Spills Hotline at (800) 457- 7362.

Section IV - POLLUTION PREVENTION

There are many different kinds of pollution prevention techniques that can be incorporated into your major process activities (e.g., receiving, preparation, processing, packaging and distribution) as well as your ancillary operations (e.g., refrigeration, cleaning, maintenance, laboratory activities).

Food processors who practice pollution prevention benefit the environment by producing less waste and reducing the transfer of waste from one environmental medium to another. In addition, business performance improves through greater efficiency, wiser energy use, increased product quality and enhanced public image.

The term pollution prevention (P2) refers to the elimination or reduction in volume or toxicity of waste prior to generation or prior to recycling, treatment or release to the environment. Pollution prevention can be referred to as waste reduction, waste minimization, or source reduction. An effective pollution prevention program can:

- Reduce the risk of criminal and civil liability.
- Reduce your operating costs.
- Improve employee morale, participation, and safety.
- Enhance your company's image in the community.
- Protect the public health and the environment.

Here are a few general pollution prevention tips that you can try at your facility:

- Always obtain the material safety data sheets (MSDS) from your supplier or vendor for any chemical you use in your facility. They provide specific information about the material.
- Inspect all shipments and return all unacceptable or damaged materials; especially those items that could become hazardous wastes once they are signed for.
- Implement cost-effective modifications or improvements to operating and cleanup procedures. Process operations will run more efficiently and less waste will be generated
- Reduce the amount of water and the waste resulting from process material and product loss through better preventive maintenance.
- Improve your purchasing and inventory methods to ensure that materials do not exceed shelf life. Date all raw materials and chemicals and use the first-in, first-out method of inventory control. Expired and outdated materials that can't be used create waste.
- Turn off electrical equipment such as lights and copiers when not in use.

Remember, the first step in establishing a pollution prevention program at your facility is to implement employee awareness. One way this can be achieved is by offering training sessions on regulatory compliance and waste minimization so that your employees can familiarize themselves with the proper waste management strategies.

Even though your facility may generate a small amount of waste, keep in mind that there are thousands of facilities that generate a small amount just like you. Together these facilities generate a large amount of waste that must be managed properly.

For more information on food processing

pollution prevention techniques, the Pollution Prevention Unit developed the *Environmental Self-Assessment for the Food Processing Industry* manual. This manual will allow you to compare and evaluate pollution prevention techniques to identify those that may help you meet your pollution prevention goals.

All pollution prevention activities should be carried out in accordance with food safety requirements and regulations.

Section V-WASTE STREAM MANAGEMENT

To assist the food processing industry in complying with environmental regulations, this section will discuss the best management practices for the waste streams that may be generated in this industry. Each waste stream listed will give the reader an interpretation of the DEC regulatory requirement and the preferred waste management techniques that facilities should use when disposing of their waste. If you need assistance in determining how to manage any of the following waste streams, you can call the Pollution Prevention Hotline toll free at (800) 462-6553.

Used Oil

REGULATORY REQUIREMENTS

Used oil is not regulated as a hazardous waste if it is recycled or burned for energy recovery. This means that your used oil, if not mixed or contaminated with hazardous waste, can be managed under the used oil regulations, 6 NYCRR Subparts 360-14 and 374-2. Used oil includes used crankcase oil, metal working oils, gear oil, transmission fluid, brake fluid, hydraulic fluid, dielectric fluid (excluding PCBs), and tank bottoms from used oil tanks only.

If you are disposing of any used oil rather than recycling or burning for energy recovery (i.e., spills, soil contamination, cleanup), or your used oil is mixed with other wastes, then

you must make a hazardous waste determination and comply with any applicable hazardous waste regulations.

Used Oil Storage Tanks

All used oil retention tanks, no matter what size, must be registered with DEC and clearly labeled "USED OIL". However, fees are required only if the storage capacity of the used oil tank is greater than 1,100 gallons, and the used oil is burned on site for heating. For more information on registration of petroleum storage tanks, please call (888) 457-4351.

Remember
All retention tanks for storing used oil must be registered with DEC.

Secondary Containment

Secondary containment is any structure which is designed to prevent leaks and spills from reaching the land or water outside the containment area. All aboveground tanks with a capacity of 10,000 gallons or more must be equipped with secondary containment. All aboveground tanks smaller than 10,000 gallons are required to be equipped with secondary containment if it is reasonably expected that the facility is within close proximity to ground or surface waters of the state. Facilities within 500 feet of the following resources may be considered presumptive evidence of being in close proximity to ground or surface waters:

- perennial or intermittent stream
- public or private well
- primary or principal aquifer
- wetlands as defined in 6 NYCRR 664
- lake, pond, estuary, etc.
- storm drain

Did You Know?

- It takes 42 gallons of crude oil to yield 2.5 quarts of lubricating oil.
- When used oil is recycled, it takes about one gallon to yield 2.5 quarts of lubricating oil.

- Used oil from a single oil change can contaminate a million gallon water supply for 10,000 people.
- Used oil is the largest single source of pollution in our nation's waterways.
- Used oil can contain toxic substances such as arsenic, benzene, cadmium, lead, and zinc.
- There are 1.2 billion gallons of waste oil generated annually in the United States.

Transporting Used Oil

- Your facility can transport up to 500 pounds (roughly 55 gallons) of used oil at one time to an approved used oil management facility.
- Your facility can transport up to 500 pounds of used oil to a facility owned by your company.
- If you transport over 500 pounds of used oil, you are required to have a DEC 6 NYCRR Part 364 Transporter's Permit to transport used oil.
- You cannot transport used oil to another service station or business unless they are authorized by DEC to accept used oil.

POLLUTION PREVENTION TIPS

Here are some tips on managing your used oil:

- Store used oil in closed containers labeled "USED OIL". This is also a requirement under the used oil regulations.
- Do not mix hazardous waste with used oil. This can contaminate your used oil with hazardous waste, which then cannot be managed as used oil.
- Make sure your used oil storage tanks or drums have proper containment in case there is a leak or spill.
- Inspect your used oil storage tanks or drums on a regular basis for leaks and spills.
- Use large drum funnels or fill tubes when filling used oil drums.
- Place drip pans underneath leaking machines to collect dripping oil.

- Send used oil for recycling.

Parts Cleaning and Degreasing

REGULATORY REQUIREMENTS

Spent solvents are the largest hazardous waste stream created by the automotive industry. Spent solvents are dangerous to workers because they are toxic and they emit harmful vapors. If your facility still uses a parts washing system that contains a hazardous solvent, you may be generating listed hazardous wastes which have EPA Hazardous Waste Codes of F001-F005. In addition, many solvents may be hazardous because of ignitability, which has an EPA Hazardous Waste Code of D001.

When using hazardous solvents in your parts-washing system, you are required to keep track of the amount generated each month and dispose of them as hazardous waste. The following are some of the common spent halogenated and non-halogenated solvents used in degreasing operations that are considered hazardous:

Tetrachloroethylene (Perchloroethylene)
 Methyl isobutyl ketone (MIBK)
 Chlorinated fluorocarbons
 Trichlorofluoromethane
 Carbon tetrachloride
 Ortho-dichlorobenzene
 Methylene chloride
 1,1,1-trichloroethane
 Methyl ethyl ketone (MEK)
 Methanol
 Isobutanol
 Toluene
 Acetone
 Xylene
 Benzene

If your facility uses any of the above parts-washing solvents or degreasers or any other hazardous solvent not listed above, you should make every effort to replace your parts washer or degreaser with nonhazardous substitutes as soon as possible.

Air regulations that may affect your facility's degreasing operations are covered under NYCRR Part 228 and Subpart T in the NESHAP rules.

TYPES OF PARTS WASHERS

There are many opportunities available to minimize or eliminate your generation of hazardous solvents. One of your first choices should be to use a nonhazardous or less hazardous parts cleaning system. Here are some tips you should follow before purchasing or leasing your parts washer:

- Buy a parts washer with a lid rather than an open bucket or pan. This will reduce evaporation or spillage of the solvent.
- Instead of leasing, purchase your own parts washer. Service agreements tend to change your solvents more often, which generates more waste. Also, if you are a conditionally exempt small quantity generator, you can transport your spent solvent and sludge to an approved facility. See Section II for more details.
- Talk to other facilities to find out which system works best. This will save you time and money trying to decide which system is best for your facility.
- When a supplier or vendor lets you demo a parts washer, make sure you specify that he will take away the whole unit, including the spent solvent if you decide not to buy the unit. Disposing of the spent solvent will cost you money.
- Buy a parts washer with a drain shelf that fits inside the basin. This allows solvent to drain from parts prior to removing them from the washer.
- Buy a parts washer with a filtering unit that will extend the life of the solvent by filtering out contaminants. Remember, when discarding the filters, a hazardous waste determination must be made prior to disposal.
- Parts washers that are heated seem to work better than unheated units.

The following are some types of parts

washers available:

Aqueous Cleaners

Aqueous cleaning refers to the use of water, detergents, acids, and alkaline compounds rather than organic solvents. Aqueous cleaners are one of the most popular choices for degreasing parts and are a good alternative to the petroleum-based and halogenated solvents. Some of the benefits include:

- Less risk of hazardous exposure for workers and more environmentally friendly.
- Not flammable or explosive.
- Oils and greases can be removed more effectively.
- Potential savings in disposal costs, since used aqueous parts-cleaning water may be eligible for discharge into public sewer system. Prior approval is needed. Check with your publicly owned treatment works (POTW) for requirements.

Hot Soap Washers

Hot soap or jet spray washers are like dishwashers that clean parts. They use detergent and hot water to remove oil, grease, and dirt. Employees like hot soap washers because they can clean parts automatically while they perform other duties in the facility. Other benefits of hot soap washers include:

- Eliminates employee exposure to hazardous solvents.
- Less employee time spent on parts washing.
- Not flammable or explosive.
- Little or no hazardous waste generated.
- Potential savings in disposal costs, since used aqueous parts-cleaning water may be eligible for discharge into public sewer system. Prior approval is needed. Check with your publicly owned treatment works (POTW) for requirements.

The sludge from oil, grease, dirt and other contaminants should be cleaned out frequently. Prior to disposal, you must make a hazardous waste determination on the sludge. Nonhazardous sludge can be hauled by a septic tank company or dried sludge can be taken to a landfill. If you are a conditionally exempt small quantity generator (CESQG), dried sludge that is considered hazardous can be taken to a landfill as long as you get prior approval from the landfill operator. Check with your local landfill for requirements.

Semi-Aqueous Cleaners

These cleaners are called: less toxic solvents, less hazardous solvents, non-halogenated solvents, petroleum-based solvents or terpene solvents.

Semi-aqueous cleaners are products that can be dissolved in water or applied in a concentrated form. They are called semi-aqueous because they can be applied either way. Terpenes are hydrocarbons derived from wood or citrus fruits, usually orange or lemon peel oils. Even though most of the semi-aqueous cleaners are not ozone depleters, they are highly toxic to aquatic life, some have a high cost and they may still be considered a hazardous waste when spent. A hazardous waste determination should be made prior to disposal.

Solvent Distillation

If hazardous solvents must be used at your facility, then you may want to consider purchasing a solvent distillation unit to recycle your solvents. For example, if your facility generates five gallons of paint and solvent waste, you may be able to reclaim four and a half gallons of solvent. This would leave you with only one half gallon of sludge that must be disposed of as hazardous waste. This sludge that is generated is called “still bottoms.” Solvent is reclaimed by heating spent solvent to its boiling point and then cooled, which produces nearly pure liquid solvent that can be reused. Spent solvent need only be counted the first time that it is

generated in a calendar month if it is reclaimed and reused on site. If spent solvents are counted, then still bottoms don’t need to be counted for the purpose of determining generator category, but do need to be managed as a hazardous waste.

POLLUTION PREVENTION TIPS

Here are some pollution prevention tips on managing your degreasing operations:

- Wipe off parts with a rag or wire brush before soaking in parts washer.
- Do not clean parts unnecessarily.
- If possible, try to maintain two parts washers so that you can use one for pre-rinsing.
- If your parts washer doesn’t have a drip shelf inside the tub, use a drip tray to drain cleaned parts.
- Turn off solvent stream and cover the unit when not in use. Also, if your unit is equipped with a heating element, turn it off at the end of the day.

Industrial Rags

REGULATORY REQUIREMENTS

Industrial rags (also known as facility towels) or soiled clothing, which are contaminated with listed or characteristic hazardous wastes, do not have to be managed as hazardous wastes when sent to a commercial or non-commercial laundry or dry cleaner to be cleaned and then returned to the owner. The following conditions must be met:

- There is no exemption for rags or soiled clothing contaminated beyond saturation (containing free liquids). Any rags or soiled clothing containing free liquids will be subject to full regulation.
- Rags and soiled clothing must be managed in accordance with 6 NYCRR Part 372 and Subpart 373-1 until the materials are sent for laundering and counted as wastes generated and accumulated for the purpose of

determining generator category.

All rags and soiled clothing that contain flammable materials must be stored and transported in fire proof containers.

POLLUTION PREVENTION TIPS

Here are some tips on managing your facility towels:

- Send your facility towels to a laundry or dry cleaning service. You have to manage your facility towels in accordance with the hazardous waste regulations only until they leave your facility.
- If your facility is large enough, consider purchasing a centrifuge to collect and recycle excess solvent from your facility towels. Most laundries will not accept saturated facility towels. *Centrifuges may be costly, which would **not** make this a cost-effective purchase for small maintenance facilities.*
- Store your facility towels in metal safety cans to reduce the risk of fires. If your facility towels contain solvents, they should be stored in a double-bottom drum to allow the solvent to drip where it can be collected.
- To reduce the risk of spontaneous combustion when storing facility towels in metal cans, keep the towels moist with water.

Floor Drains and Wastewater

REGULATORY REQUIREMENTS

As discussed in Section III, the Environmental Conservation Law prohibits the discharge of pollutants into surface or groundwaters without a State Pollutant Discharge Elimination System (SPDES) Permit. The Safe Drinking Water Act, under the Underground Injection Control Program administered by the EPA was designed to prevent contamination of groundwater resulting from operation of injection wells. In

addition, the disposal of hazardous waste illegally is a violation of the federal Resource Conservation and Recovery Act (RCRA).

If you have floor drains in your facility, you must meet the following requirements:

- Make sure floor drains are connected to a public sewer system. In most cases floor drains may be connected to a publicly owned treatment works (POTW), however, the owner should refer to the Local Codes Enforcement Officer and the Sewer Use Ordinance before making any new connections. Some municipalities restrict floor drains from being connected to the sewer system depending on the type of operation. Also, you may be required by your POTW to connect an oil/water separator between the floor drains and the sewer system. Oil/water separators should be checked on a monthly basis to make sure they are working properly. This includes cleaning out the sludge annually, testing it for toxicity and then disposing of it properly. If you are a conditionally exempt small quantity generator (CESQG), you can transport this sludge to an approved facility. This includes transporting dried sludge to your local landfill. Prior approval is needed.
- Make sure these drains are connected to some kind of holding tank where the wastewater can be pumped out and treated or disposed of properly. All wastewater should be hauled away by a DEC 6 NYCRR Part 364 permitted waste transporter to avoid any liability.

POLLUTION PREVENTION TIPS

Wastewater is generated in the food processing industry from washing floors and vehicles. By minimizing the amount of wastewater that is generated, you can reduce the amount of wastewater and sludge that must be managed or discharged. Here are some tips that could help you minimize your generation of wastewater:

- Use dry floor cleaning methods. This includes sweeping and vacuuming.
- Train employees to use water efficiently.
- Use only non-toxic soaps instead of hazardous materials to clean floors, instead of hazardous materials.
- Prevent drips and spills from reaching the floor.
- If a small spill does occur, clean it immediately with facility towels or mops. This was discussed in the facility towel section. Never clean spills by hosing them down with water.
- Perform vehicle maintenance work in areas where there are no floor drains. If floor drains are present, seal them off during work to prevent spills from entering the drains.
- Never have floor drains where hazardous materials are stored.
- If you collect your wastewater in a holding tank, try to reuse it whenever possible.
- You may want to consider buying a water recycling unit in order to treat your wastewater on site.
- If your wastewater is nonhazardous, you may want to purchase evaporating equipment to evaporate your wastewater. It should be noted that evaporators may require an air permit or registration, and evaporator bottoms may be a hazardous waste.

Section IV - RESOURCE GUIDE

The following organizations provide technical assistance, publish information, conduct workshops and conferences, and provide telephone and on-site information on pollution prevention and better management of air, water, solid and hazardous waste issues.

Trade Organizations

New York Apple Association

7645 Main Street
P.O. Box 350
Fishers, New York 14450-0350
Phone: (716) 924-2171
Fax: (716) 924-1629
Internet: <http://www.applecountry.com>

American Frozen Food Institute

2000 Corporate Ridge, Suite 1000
McLean, Virginia 22102
Phone: (703) 821-0770
Fax: (703) 821-1350
Internet: <http://www.affi.com>

New York State Farm Bureau

RT 9W, P.O. Box 992
Glenmont, New York 12077-0992
Phone: (518) 436-8495
Internet: <http://www.nyfb.org>

National Food Processors Association

1350 I Street, NW Suite 300
Washington, DC 20005
Phone: (202) 639-5900
Fax: (202) 639-5932
Internet: <http://www.nfpa-food.org>

New York State Restaurant Association

455 New Karner Road
Albany, New York 12205
Phone: (518) 452-4222 or (800) 452-5212
Internet: <http://www.nysra.org>

American Meat Institute

1700 North Moore Street, Suite 1600
Arlington, Virginia 22209
Phone: (703) 841-2400
Fax: (703) 527-0938
Internet: <http://www.meatami.org>

American Dairy Products Institute

300 West Washington Street, Suite 400
Chicago, Illinois 60606-1704
Phone: (312) 782-4888
Fax: (312) 782-5299
Internet:
<http://www.americandairyproducts.com>

United Fresh Fruit and Vegetable Association

727 North Washington Street
Alexandria, VA 22314
Phone: (703) 836-3410
Fax: (703) 836-7745
Internet: <http://www.uffva.org>

National Renderers Association

801 N. Fairfax Street, Suite 207
Alexandria, Virginia 22314
Phone: (703) 683-0155
Fax: (703) 683-2626
Internet: <http://www.renderers.org>

Local Assistance

NEW YORK STATE:

University at Buffalo
Center for Integrated Waste Management
Jarvis Hall, Room 207
Buffalo, NY 14260-4400
Phone: (716) 645-3446, Ext. 2340
Fax: (716) 645-3667

METROPOLITAN AREA:

NYC Dept. of Environmental Protection
Environmental Economic Development
Assistance Unit
59-17 Junction Boulevard, 11th Floor
Corona, NY 11368-5107
Phone: (718) 595-4462
Fax: (718) 595-4479

MONROE COUNTY:

Monroe County Department of
Environmental Services
444 East Henrietta Road, Bldg, #15
Rochester, NY 14620
Phone: (716) 760-7523
Fax: (716) 324-1213

ONONDAGA COUNTY:

Onondaga County Resources Recovery
Agency
100 Elwood Davis Road
North Syracuse, NY 13212
Phone: (315) 453-2866
Fax: (315) 453-2872
Hotline: (315) 453-2870

BROOME COUNTY:

Broome County
Division of Solid Waste Management
Edwin L. Crawford County Office Building
P.O. Box 1766
44 Hawley Street
Binghamton, NY 13902
Phone: (607) 778-2250
Fax: (607) 778-2395

ERIE COUNTY:

Erie County Department
of Environment and Planning
Office of Pollution Prevention
95 Franklin Street, Room 1077
Buffalo, NY 14202-3973
Phone: (716) 858-7583
Fax: (716) 858-7713

CHAUTAUQUA, CATTARAUGUS and ALLEGANY COUNTIES:

The Southwestern New York
Environmental Compliance Network
Jamestown Community College
525 Falconer Street, P.O. Box 20
Jamestown, NY 14702-0020
Phone: (716) 665-5220, Ext. 446
Fax: (716) 665-2585

The Center for Business and Industry

SUNY at Fredonia
Lograsso Hall
Fredonia, NY 14063
Phone: (716) 673-3177
Fax: (716) 673-3175

NYSDEC Regional Offices

REGION 1

Nassau and Suffolk Counties
SUNY Campus
Loop Road, Building 40
Stony Brook, NY 11790-2356
Phone: (516) 444-0354

REGION 2

*Bronx, Kings, New York, Queens and
Richmond Counties*
1 Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101-5407
Phone: (718) 482-4900

REGION 3

*Dutchess, Orange, Putnam, Rockland,
Sullivan, Ulster and Westchester Counties*
21 South Putt Corners Road
New Paltz, NY 12561-1696
Phone: (914) 256-3000

REGION 4

*Albany, Columbia, Delaware, Greene,
Montgomery, Otsego, Rensselaer,
Schenectady and Schoharie Counties*
1150 Westcott Road
Schenectady, NY 12306-2014
Phone: (518) 357-2234

REGION 5

*Clinton, Essex, Franklin, Fulton, Hamilton,
Saratoga, Warren and Washington Counties*
Route 86, PO Box 296
Ray Brook, NY 12977-0296
Phone: (518) 897-1200

REGION 6

*Herkimer, Jefferson, Lewis,
Oneida and St. Lawrence Counties*
State Office Building
317 Washington Street
Watertown, NY 13601
Phone: (315) 785-2238

REGION 7

*Broome, Cayuga, Chenango, Cortland,
Madison, Onondaga, Oswego,
Tioga and Tompkins Counties*
615 Erie Blvd. W.
Syracuse, NY 13204-2400
Phone: (315) 426-7400

REGION 8

*Chemung, Genesee, Livingston, Monroe,
Ontario, Orleans, Schuyler, Seneca,
Steuben, Wayne and Yates Counties*
6274 East Avon-Lima Road
Avon, NY 14414
Phone: (716) 226-2466

REGION 9

*Allegany, Cattaraugus, Chautauqua,
Erie, Niagara, and Wyoming Counties*
270 Michigan Ave.
Buffalo, NY 14203-2999
Phone: (716) 851-7000

Pollution Prevention Unit

Phone: (518) 457-2553

Small Quantity Generator P2 Hotline
(800) 462-6553; outside NYS: (518) 485-8471

This technical assistance unit provides P2 information, develops industry sector manuals and other publications, offers workshops/training, holds annual pollution prevention conferences, coordinates NYS Governor's P2 Awards, and prepares annual toxic release inventory (TRI) reports.
<http://www.dec.state.ny.us/website/ppu>

Division of Solid and Hazardous Materials

Bureau of Hazardous Waste Management
(518) 485-8988

Responsible for making hazardous waste determinations, reviewing hazardous waste reduction plans, hazardous waste permitting, and hazardous waste compliance.
<http://www.dec.state.ny.us/website/dshm>

Bureau of Waste Reduction and Recycling
(518) 457-7337

Responsible for the beneficial use program, the composting program, the waste tire program, and other solid waste recycling and waste reduction issues.
<http://www.dec.state.ny.us/website/dshm/redrecy>

Bureau of Pesticide Management

(518) 457-0917

The NYSDEC is the lead agency in New York State for regulating the sale and use of pesticides. Public outreach activities and regulatory compliance assistance activities are conducted.
<http://www.dec.state.ny.us/website/pesticid/pesticid.htm>

Division of Water

Bureau of Water Permits

(518) 457-0656

Responsible for managing the State Pollutant Discharge Elimination System (SPDES) permits, the SPDES program for storm water discharges, water resources programs and municipal water supply permits.
<http://www.dec.state.ny.us/website/dow>

Division of Environmental Remediation

Bureau of Spill Prevention and Response
(518) 457-9412

Responsible for registering tanks, presenting workshops and training, developing publications, receiving spill notifications, and serving as an information clearing house for industries and the public.
<http://www.dec.state.ny.us/website/der>

Spill Response Hotline

(800) 457-7362 (within NYS)

(518) 457-7362 (outside NYS)

To report releases of petroleum products or hazardous substances to air, land or water in New York State. Regulations require reporting within two hours if certain conditions are not met. Also, the National Response Center should be notified (see listing on page 20).

Petroleum Bulk Storage Hotline

(888) 457-4351

Provides technical assistance on chemical and petroleum aboveground and underground storage tanks.

Federal Assistance

Small Business Ombudsman Hotline

401 M Street SW
Washington, DC 20460
Phone: (800) 368-5888
Fax: (703) 305-6462

Helps private citizens, small businesses, and smaller communities with questions on all program aspects with the EPA.

RCRA/Superfund/EPCRA Hotline

401 M Street SW
Washington, D.C. 20460
(800) 424-9346
(202) 557-1938

Answers questions on matters related to solid waste, hazardous waste, or underground storage tanks. Also, can be used to order EPA publications.

EPA Region II Office

Compliance Assistance and Support Branch
290 Broadway, 21st Floor
New York, NY 10007-1866
(212) 637-3268

Provides compliance and pollution prevention assistance to EPA Region 2 area businesses.

EPA Region II Office

Division of Enforcement and Compliance Assistance - RCRA Compliance Branch
290 Broadway, 22nd Floor
New York, NY 10007-1866
Phone: (212) 637-4145
Fax: (212) 637-4949

In addition to conducting RCRA inspections of small businesses, this office provides technical assistance on RCRA related issues.

EPA Headquarters

Office of Compliance (2224A)
401 M Street SW
Washington, DC 20460
Phone: (202) 260-1821
Fax: (202) 564-0009

Regulatory, technical, compliance and pollution prevention assistance.

Department of Transportation Hotline

Office of Hazardous Materials Standards
Research & Special Programs
Administration
400 7th Street SW

Washington, DC 20590-0001
Phone: (202) 366-4488
Fax: 366-3753

Technical assistance on matters related to DOT's hazardous materials transportation regulations.

Pollution Protection Information Clearinghouse (PPIC)

PPIC-EPA
401 Main Street SW (3403)
Washington, DC 20460
Phone: (202) 260-1023
Fax: (202) 260-0178
email: ppic@epamail.epa.gov

Provides a library and an electronic bulletin board dedicated to information on pollution prevention.

National Response Center

(800) 424-8802
In Washington, D.C. (202) 426-2675
To report oil and chemical spills to the federal government. This hotline is manned by the U.S. Coast Guard.

Resources on the Internet

Organization	Internet Address
USFDA Center for Food Safety and Applied Nutrition	http://vm.cfsan.fda.gov
National Restaurant Association	http://www.restaurant.org
Empire State Restaurant and Tavern Association	http://www.esrta.org
Integrated Pest Management in New York State	http://www.nysaes.cornell.edu/ipmnet/ny
Food Processors Institute	http://www.fpi-food.org
U.S. Environmental Protection Agency Office of Solid Waste	http://www.epa.gov/epaoswer/non-hw/reduce/wastenot.htm
United States Department of Agriculture	http://www.usda.gov
Cornell Cooperative Extension	http://www.cce.cornell.edu
American Dairy Products Institute	http://americandairyproducts.com
National Pollution Prevention Roundtable	http://www.es.epa.gov/nppr
Tellus Institute	http://www.tellus.org
Waste Reduction Resource Center	http://www.owr.ehnr.state.nc.us
<i>NEW YORK STATE</i>	
Empire State Development Services to Business	http://www.empire.state.ny.us
NYS Department of Environmental Conservation	http://www.dec.state.ny.us
NYS Environmental Facilities Corporation	http://www.nysefc.org
<i>U.S. ENVIRONMENTAL PROTECTION AGENCY</i>	
Common Sense Initiative	http://www.epa.gov/commonsense
Design for the Environment	http://earth2.epa.gov/dfore
EnviroSenSe	http://epa.gov/envirosense/nppr/index.html
Office of Mobile Sources	http://www.epa.gov/omswww
Office of Underground Storage Tanks	http://www.epa.gov/swerust1
Small Business Assistance Program	http://www.epa.gov/tmn/sbap
Technology Transfer Network	http://www.epa.gov/tmn
<i>U.S. DEPARTMENT of ENERGY</i>	
Pollution Prevention Information Clearinghouse	http://epic.er.doe.gov/epic
<i>PACIFIC NORTHWEST LABORATORIES</i>	
Green Guide	http://bbs.pnl.gov:2080/esp/greenguide
Pollution Prevention Resource Center	http://pprc.pnl.gov/pprc

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Derr, Donn A.; Dhillon, Pritam S. (April 1997). "Keeping the Options Open: The Economics of Recycling Food Residuals." *BIOCYCLE*, pages 55-56.

Massachusetts Water Resources Authority. *Water Conservation Bulletin 5, Restaurants*. From: Massachusetts Water Resources Authority, Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

Massachusetts Water Resources Authority. *Water Conservation Bulletin 3 Beverage/Food Processing Industry*. From: Massachusetts Water Resources Authority, Charlestown Navy Yard, 100 First Avenue, Boston, MA 02129.

Minnesota Technical Assistance Program, University of Minnesota, Fact Sheets:

- *Commercial Food Production; Source Reduction and Management Alternatives*.
- *Commercial Food Wastes; Composting and Landspreading*.

New York State Department of Environmental Conservation (1997) *Waste Reduction at New York State Supermarkets*. From: NYS Department of Environmental Conservation, Division of Solid and Hazardous Materials, Bureau of Waste Reduction and Recycling, 50 Wolf Road, Albany, NY 12233-7253.

North Carolina Department of Environment and Natural Resources (October 1999). *A Fact Sheet for Managing Food Materials*. North Carolina Department of Environment and Natural Resources, Division of Pollution Prevention and Environmental Assistance, 1639 Mail Service Center, Raleigh, NC 27699-1639.

Richardson, Stephanie, North Carolina Pollution Prevention Program. *Pollution Prevention Pays for the Food Processing Industry*.

Richardson, Stephanie, North Carolina Pollution Prevention Program. *Waste Reduction in Food Processing - A People Management Issue*.

Shober, Robert T., Campbell Soup Company, Camden, NJ (1998 Food Processing Waste Conference). *Water Conservation - Waste Load Reduction in Food Processing Facilities*.

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U.S. Environmental Protection Agency (September 1996). *Managing Food Scraps as Animal Feed*, #EPA530-F-96-037.

Appendix

Toxicity Characteristic Leaching Procedure (TCLP)

The following are substances covered by the TCLP. The concentrations are not total amounts of the chemical in the waste, but concentrations in the TCLP leachate after the specific test is carried out.

Waste Code	Substance	CAS Number	TCLP Concentration Limit (mg/l)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D006	Cadmium	7440-43-9	1.0
D007	Chromium	7440-47-3	5.0
D008	Lead	7439-92-1	5.0
D009	Mercury	7439-97-6	0.2
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D012	Endrin	72-20-8	0.02
D013	Lindane	58-89-9	0.4
D014	Methoxychlor	72-43-5	10.0
D015	Toxaphene	8001-35-2	0.5
D016	2,4-Dichlorophenoxyacetic acid	94-75-7	10.0
D017	2,4,5-Trichlorophenoxypro pionic acid	93-72-1	1.0
D018	Benzene	71-43-2	0.50
D019	Carbon Tetrachloride	56-23-5	0.50
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D023	o-Cresol	95-48-7	200.0*
D024	m-Cresol	108-39-4	200.0*
D025	p-Cresol	106-44-5	200.0*
D026	Cresol	-----	200.0*
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.50

D029	1,1-Dichloroethylene	75-35-4	0.70
D030	2,4-Dinitrotoluene	121-14-2	0.13**
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	0.13**
D033	Hexachloro-1,3-Butadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-5-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	5.0**
D039	Tetrachloroethylene	127-18-4	0.7
D040	Trichloroethylene	79-01-06	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D043	Vinyl Chloride	75-01-4	0.20

* If o-, m- and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200.0 mg/l.

** Quantitation limit is greater than the calculated regulatory level. The quantitation limit, therefore, becomes the regulatory level.

Please refer to 6 NYCRR Part 371 of the NYSDEC regulations for an official listing of the Toxicity Characteristic Leaching Procedure concentrations.

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