Managing Food Materials

This fact sheet is provided to encourage businesses such as food service providers, processors, distributors, and merchandisers to eliminate waste and recover/recycle food materials. Food waste can produce several environmental impacts. For example, food materials discharged to a wastewater treatment plan will contribute to increased levels of BOD (biological oxygen demand), COD (chemical oxygen demand), TSS (total suspended solids), and O/G (oil and grease). Examples of these food materials include preparation wastes, uneaten portions, grease, batter waste, dairy products, beverages containing sugar, and dressings. Also, food materials discarded into the solid waste stream contribute to odor and methane generation at disposal facilities and to increased BOD and COD levels in landfill leachate.

Food materials are excellent candidates for reduction, recovery and reuse. Reducing materings at their source, coupled with recovery, reuse and recycling prevents pollution and reduces, and in some cases eliminates, treatment and disposal costs. A successful waste reduction program can result in cost savings and possible generation of revenues. These activities also contribute to a positive public image for the company, benefits to the community, and protection of the environment.

Reduction at the start: ordering and inventory controls

Perhaps the most effective method for reducing waste is to prevent it in the first place. Proper control of raw goods, final products, and the waste streams associated with food preparation is an important source reduction technique. Improved ordering and inventory control significantly affect the three major sources of waste resulting from improper inventory control: excess, out of date, and obsolete raw goods. Below are options for reduction at the start.

Order bulk supplies.

Terminate useless packaging form the vendor

Refuse samples that will become waste

Work with suppliers to return shipping materials and packaging

Purchase reusable items

Purchase durable items such as air hand dryers that are designed to reduce waste

Purchase only the amount of raw goods needed for a set period of time. This practice will help eliminate out of date and excess goods and products.

Develop a review and approval procedure for all raw goods and products purchased. The primary purchaser can regulate the quantity of materials purchased by other personnel to reduce excess and out of date inventory.

Clearly label all materials. Labels can indicate contents, storage and handling, and expiration dates.

Donations, sales, and composting of food material

Food preparation businesses seeking to reduce food waste should look for opportunities to work closely with potential rescuers such as food donor programs. After donating edible food to reusers, food businesses may work with facilities such as grease renderers, animal food manufacturers, local farmers, or composters who can collect food materials and use them in their operations. Composting is also an option for managing solid food waste.

Segregate food wastes for beneficial uses

To increase their recyclable potential, food materials should be clean and free of trash such as paper, glass, and plastic. Also, depending upon the requirements of recyclers, solid food wastes should be separated from liquid food wastes to enhance their recyclability.

Excess edible food should be kept separate from waste food and routed to a local food bank or food donor program. North Carolina's model "Good Samaritan Law" was enacted in 1989 and revised in 1991. This law protects any good faith donor from civil or criminal liability unless injury is caused by gross negligence, recklessness, or intentional misconduct of the donor. The local health department can provide handling and storage procedures applicable to your area. Currently more than four million pounds of food materials are donated each year to North Carolina food rescue programs alone.

Solid food waste should be segregated from waste oils and greases. Hog, cattle, and poultry producers are interested in collecting food waste to use as animal feed. Dairy and bread waste may be fed to hogs without further handling, but other food waste or mixed food waste must be cooked before being fed to hogs. Farmers who use other or mixed food materials much be licensed garbage feeders.

Waste oils and grease

Free grease is that used for or generated by cooking and has not been mixed with water. It is generated from pots, pans, grills, and deep fat fryers and comes from butter, lard, vegetable fats and oils, meats, nuts and cereals. Free grease should be kept out of the drains and handled separately. Rendering facilities may purchase free grease and meat wastes and provide storage and collection. The market price depends upon factors such as volume, quality, and hauling distances. The rendering services will process free grease by sampling it for pesticides and other chemicals and filtering and volatizing impurities before reselling it, where prices may range from one to three cents per pound. If the volume of the wastes generated from one restaurant or cafeteria is too small for the rendering facility, businesses should explore the feasibility of setting up a cooperative collection among similar businesses.

Trap grease is that collected in a grease trap. Because fats coat, congeal, and accumulate on pipes and pumps and sometimes obstruct sewer lines, some food service establishments may be required by their local government to maintain grease traps. Some rendering services and local septage haulers will service or pump out these traps for a fee, and some services may reduce the pumping fee if the restaurant is a free grease customer.

Dry cleanup to keep wastes out of the drain

Food preparation facilities should develop dry cleanup procedures to the greatest possible extent. Some municipalities will charge (surcharge) for any discharge of BOD, COD, TSS, and O/G above a certain level. Dry cleanup procedures will reduce the amount of food waste that enters the drains and, thus, help reduce the possible surcharges.

The “first pass” in equipment and utensil cleaning should be made with scrapers, squeegees, or absorbents to prevent the bulk of food materials from going down the drain. Studies have shown that for a fast food restaurant, 93% of the oil and grease discharged to the wastewater treatment plant is generated from ware washing. For a full service restaurant, 75% of the oil and grease discharged to the wastewater treatment plan is generated from the pot sink. Waste collected on this “first pass” could be set aside for rendering or, possibly, composting.

Spills. Dry cleanup can be applied also to spills in the kitchen. Spills of dry ingredients should be swept up or vacuumed to prevent them from being washed down the drain.

Garbage disposals. Businesses that use garbage disposals to dispose of food waste are simply transferring disposal from a landfill to a wastewater treatment plant. Disposal of food waste via the sewer system is more costly than landfill disposal and acts as a disincentive to reduce generation of food waste or to separate food for donations, rendering, animal feed, or composting.

Maintaining grease traps

Food preparation facilities that discharge to a municipal sewer should contact the local wastewater treatment plan (WWTP) for any requirements concerning the need for interceptors and grease trap management. The most important management procedure for grease traps is that a company representative be present during any cleaning, pumping, or skimming performed by a contractor. This safeguard permits management to respond appropriately to any questions about the services performed.

Pump out schedules should be properly established and strictly followed to prevent overflows, down stream blockages, excessive oil and grease, and BOD loading to wastewater. It is important that these pump outs are complete, i.e., the grease caps removed, the sides scraped or hosed down, and the trap refilled with water. The contractor should indicate whether the trap is refilled with clean water or water from the trap.

A food preparation facility should never “hot flush” (continuously run hot water) the grease trap as the heated, liquefied grease will be flushed down the sewer. While hot flushing may divert the need for pumping, the facility is liable for any costs associated with clogs caused by the flushing.

Skimming services are available to skim grease traps on a regular basis. These facilities will reprocess the grease collected and notify owners when complete grease trap pump outs are necessary.

Bioaugmentation, the addition of selected microorganisms (primarily bacteria) to the trap for improved operation, should be evaluated for each case. The bioaugmentation process is basically a passive treatment system to facilitate grease digestion and control buildup of the grease cap. The effectiveness of bioaugmentation is determined by a variety of factors including retention time in the trap, temperature of the wastewater, strength of the wastewater, and contact surface area. Some information indicates that for completely effective bioaugmentation, a retention time of one to five days is needed; however, a typical grease trap is designed for only one day of hydraulic retention. Since these parameters vary with location, an evaluation of each case should be made. The local WWTP should be contacted before any additives are used.

Alternative grease trap designs. Some grease trap systems are designed to periodically heat the trap to de-solidify grease so that it can be automatically skimmed and collected. The high-quality grease collected from these systems may have high reuse potential. These grease traps, which may also be smaller than standard traps, can be located under a specific device above ground (i.e., the pot sink).

Composting Food Wastes

Compost Facilities. Businesses interested in diverting wastes to composting could open their own compost facility or investigate the possibility of using local government or private compost facilities already in operation. North Carolina has a compost demonstration program for individuals interested in composting.

Facility Waste Reduction Program

Management Commitment. The most critical step to successful waste reduction is commitment by the owner(s)/managers of a facility to a waste management plan. A detailed waste reduction program should be developed that outlines policies and procedures for dealing with waste and assigns individual responsibilities for all waste related activities.

Employees will be aware of the degree of the commitment by management and will rise or fall to the level that is expected or allowed. It is, therefore, important to have realistic goals that can be achieved, recognized, and rewarded.

Employee training is a significant component of a waste reduction program, and all employees from managers to the clean-up crew should be included. The training sessions, which should be repeated on a regular basis, should teach waste awareness, the impact of various food wastes on the wastewater stream, proper waste handling methods, and the importance of keeping non-food garbage out of food waste containers.