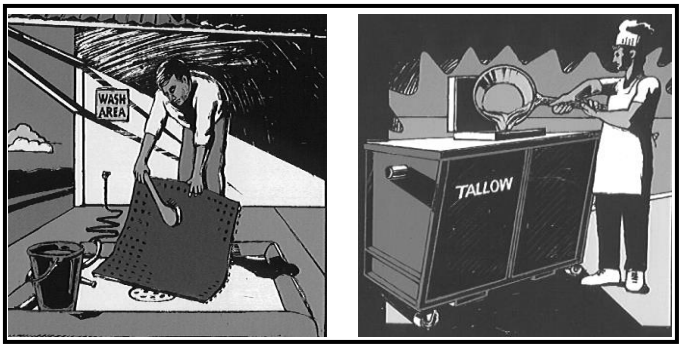
**ACTIVITY:** Food Service and Handling

# IC – 07




CITY OF KNOXVILLE

## Targeted Constituents

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|---|---|---|---|---|
| ● Significant Benefit | ◗ Partial Benefit | ○ Low or Unknown Benefit | | |
| ○ Sediment | ○ Heavy Metals | ○ Floatable Materials | ● Oxygen Demanding Substances | |
| ● Nutrients | ◗ Toxic Materials | ● Oil & Grease | ● Bacteria & Viruses | ○ Construction Wastes |

**Description**

Prevent or reduce the discharge of pollutants to storm drainage systems and to natural streams from businesses or industries that deal with food or food byproducts. Food and food byproducts damage natural streams by promoting harmful pathogens and depleting the dissolved oxygen.

**Approach**

There are many types of commercial and industrial establishments that are involved in the processing and handling of food. Some common examples are restaurants, grocery stores, convenience stores, fruit stands, meat packing plants, bakeries, etc. Due to the shear number of establishments that concern food, this BMP has the potential to make a huge impact on stormwater quality. Effective employee training is essential.

The City of Knoxville has separate sanitary sewer systems and storm drainage systems. Storm drains located outdoors are intended to channel rainwater runoff directly to the nearest stream to prevent ponding and flooding. Anything that leaks or is washed into the storm drainage system goes untreated into natural streams.

**Illegal Discharges or Dumping**

Disposal of food or food byproducts into the storm drainage system or natural streams is a direct violation of the City of Knoxville Stormwater and Street Ordinance, posted on the Knoxville Engineering Department website. Refer to IC-01 (Non-Stormwater Discharges to Storm Drains). Report illegal dumping to the storm drains or local waterways to the Water Quality Hotline at 215-4147.

It is a common misperception that disposal of food and food byproducts into the storm drainage system is not a problem, because these products are generally considered to be biodegradable. This assumption is wrong because contaminated or spoiled food is an extreme danger to both humans and animals. Harmful bacteria and viruses can pollute natural streams and creeks, making humans and animals sick. Decaying food uses dissolved oxygen in natural streams, depleting oxygen levels and causing fishkills. Food contributes to nutrients in downstream rivers and lakes, which can lead to excessive aquatic vegetation, eutrophication and other environmental problems.

**Illicit Connections**

Many restaurants and other smaller businesses may not know whether a particular drain leads to the storm drain system or the sanitary sewer system. Contact the property owner for plans indicating which pipes are connected to storm drains or to sanitary sewer. If plans are not available, then contact the City of Knoxville Engineering Department or the Knoxville Utilities Board (KUB) for assistance.

All drains inside of a building or under a covered structure must be connected to the sanitary sewer. All drains outside a building and exposed to rainfall should be connected to the storm drain system. This common-sense approach was not generally in effect for older buildings and neighborhoods, so it is important to verify that each pipe connects to the proper drain. Even newer buildings may not be configured in the correct way, due to shortcuts or assumptions on the behalf of a building contractor. Smoke testing or dye tracing can be used to identify sanitary sewer lines.

**Methods**

***Dumpsters***

Dumpsters are a major source of stormwater pollution throughout the City of Knoxville. As a result, city inspectors are often called to investigate leaking dumpsters. Restaurants, grocery stores, and other businesses that deal with food handling and services must take extra care in dealing with waste and dumpsters, due to the potential for rodents, insects, other animals, diseases, etc. Restaurants, grocery stores, and other food handling businesses must include regular dumpster inspection and maintenance as part of the daily checklists. See IC-10 (Dumpsters) for additional information and guidelines on using and maintaining dumpsters. New facilities should include special curbed areas to reduce stormwater pollution.

- Locate the dumpster away from storm drainage inlets and channels. In addition to being accessible for the dumpster waste contractor trucks, the dumpster must be easily accessible to employees. Consider placing the dumpster in a shaded area. New dumpster pads should incorporate curbed/diked areas to redirect stormwater.
- Keep loading areas and surrounding parking lot clean. Pick up trash and litter as needed (at least daily). Sweep areas clean using a broom and dustpan; do not use a pressure washer or a leaf blower to collect litter.
- Never place leaky bags or liquid waste into the dumpster. Drain liquids into an indoor drain that leads to the sanitary sewer system. Use a dry method, such as absorbents or kitty litter, to absorb liquid wastes and spills. Sweep up promptly.
- Keep dumpster lids and hatches closed to keep out rainwater. Insist on a fully functional dumpster with adequate lids and doors. Verify that the drain plug at the bottom of a dumpster is securely in place to prevent discharges. Call the dumpster leasing company to replace faulty equipment or fittings.
- Keep dumpster secured to prevent illegal dumping. A lockable enclosure may be needed if the dumpster is not behind a secured fence or otherwise protected.
- Do not put used fats, oils and grease into a dumpster. These substances never wash away completely; the dumpster will become a source of odors, disease vectors and stormwater pollution.

***Fats, Oils and Grease***

Fats, oils and grease (also known by the acronym FOG) are destructive to natural creeks and streams, and should not be discharged onto the ground or any surface which drains toward the city storm drainage system, ditches, swales or culverts.

Fats, oils and grease are also very harmful to the sanitary sewer system. KUB closely regulates any business or establishment with the potential to generate large amounts of grease. When grease is washed into a sanitary sewer drain, it is likely to congeal on the cool internal surfaces of sanitary sewer lines. Eventually a grease

blockage will occur; the sewage may back up into a business or residence. Manholes and laterals may need to be cleaned out; however, the problem will reoccur unless the problem source of grease is located and then eliminated. The use of solvents, detergents and enzymes does not eliminate the problem of clogging grease. Grease and oils may congeal further down the line, particularly as the temperature decreases downstream.

The Tennessee Department of Environment and Conservation (TDEC) has published a useful report entitled "Tennessee Oil and Grease Control Guidance Document" (reference 197). Topics include: food disposal, grease traps, grease interceptors, grease recycling, garbage grinders, sewage blockages, definitions, etc.

A report entitled "KUB Grease Control Program" is included within Appendix C of reference 197. KUB relies on a combination of source control and field inspection programs to reduce grease impacts. Sizing guidelines and design standards are given in the report. KUB instructs the property owner to document inspections and maintenance, and requires that grease pumping and disposal must be performed by authorized haulers using waste manifest certifications.

The following general guidelines are recommended:

- Train employees to handle fats, oils and grease correctly. Include written materials as well as verbal training. Post signs at grease disposal locations in order to encourage proper disposal.
- Minimize the use of fats, oils and grease in the cooking process. If possible, use grease and oil multiple times when cooking similar foods to reduce the amount generated.
- When possible, recycle used grease and oils in a special container. Do not pour grease and oils into a dumpster, or dispose outside on surfaces which drain to city stormwater drainage systems or to natural creeks.
- Clean grease traps, grease interceptors and similar equipment frequently in order to prevent sanitary sewer system backups. Follow KUB requirements for inspections, maintenance and documentation.

***Food Storage***

Some businesses, such as fast-food restaurants and fruit stands, keep food products in sheds or outside in containers. Storage of food is closely regulated by local and state officials. In addition, storage of flammable materials and hazardous materials must comply with local building and fire codes. The following guidelines outline the basic points of preventing food or food byproducts from contaminating stormwater runoff:

- Keep storage away from exposure to rainfall and weather. Locate storage in an area where leaks and spills will not reach storm drain.
- Maintain storage containers in good condition. Use original containers if possible. Properly label all storage containers.

***Cleaning Procedures***

A major source of pollution from restaurants and grocery stores is that indoor equipment (such as pots, pans, grills, cooking hoods, etc) are often cleaned and scrubbed outside in the parking lot. Restaurants, grocery stores, and all facilities that deal with food must have an indoor area with a floor drain connected to the sanitary sewer system, specifically for the purpose of cleaning equipment and

supplies.

- Verify that the requirements and guidelines of IC-11, Kitchen Exhaust Cleaning, are being followed for grease removal from ventilation systems.
- Clean floor mats, air filters, air vents, hoods, meat trays, garbage cans and other equipment indoors in a mop sink or near a floor drain connected to the sanitary sewer system. Do not dump hazardous waste liquids down the storm drain.
- Buy the least-toxic cleaning products available; look for the words "non-toxic", "free of ammonia, phosphates, dye or perfumes," or "biodegradable". Avoid products containing chlorinated compounds, petroleum-based substances, phenols, and formaldehyde. Use environmentally friendly products whenever possible.
- Do not allow oil and grease to spill onto the ground during transport to the proper grease disposal bin.
- Recycle food containers wherever possible, such as paper, cardboard, plastic, or metal. Clean food containers thoroughly before placing in a recycling container.

***Response to Spills and Leaks***

Pollution prevention plans are recommended that include cleanup procedures for different types of spills, schedule of employee training, and cleanup materials which are properly labeled and in an easily accessible area. Post the pollution prevention plan in a central area and discuss with employees as needed.

- Report any discharges to the City of Knoxville Water Quality Hotline at 215-4147 as soon as possible.
- Use dry methods for cleanup (absorbent rags or granular materials such as kitty litter). Sweep up and dispose of absorbent in the proper trash receptacle.
- Protect storm drains with special covers or berms as necessary. Never wash any spilled material into the municipal storm drain system.

**Maintenance**

- Inspection and maintenance of dumpsters should occur on a daily basis.
- Storm drain berms and covers should be inspected regularly for necessary repair and replacement.
- Catch basins, detention facilities, or drainage structures need to be maintained and periodically cleaned out, particularly after significant rainfall events.

**Related BMPs**

The following list of BMPs are also helpful for kitchens, restaurants, food handling services and businesses:

AM-01 Employee Training
IC-01 Non-Stormwater Discharges to Storm Drain
IC-08 Power or Pressure Washing
IC-10 Dumpsters
IC-11 Kitchen Exhaust Cleaning

**Limitations**

- Some restaurants or convenience stores may have space limitations that hamper efforts to clean equipment indoors. Structural or plumbing modifications may be necessary to create an indoor cleaning area with sanitary sewer connections.

**References**

**31, 33, 34, 35, 99, 103, 138, 193, 197** (see BMP Manual Chapter 10 for list)