Food Service Managers

Food Safety Home Study Booklet

Environmental Health and Protection
Food Safety

www.louisvilleky.gov/Health

DEPARTMENT OF
PUBLIC HEALTH
AND WELLNESS

Table of Contents

Table of Contents

Continued

Introduction

A successful business is one that serves safe and delicious food to its customers. The mission of the Louisville Metro Department of Public Health and Wellness' Food Safety Program is to prevent foodborne illness. The Food Safety Team is here to assist you in achieving great success within your food service establishment.

As a Certified Food Manager, it is extremely important that you educate your employees and/or co-workers to ensure they follow safe food handling practices and proper personal hygiene to reduce the risk of a foodborne illness.

This study booklet and the following certification course is designed to give food service workers a better understanding of food safety. The KY State Food Code includes the 2005 FDA Food Code and the Kentucky Food Drug and Cosmetic Act. There are certain regulations that must be met to in order to operate a food service in Louisville Metro. Per LMCO Chapter 118, Certified Food Manager Ordinance, a certified food manager must be present during all hours of operation of a permitted food service establishment. Please refer to our website for the full version of the KY State Food Code at www.louisvilleky.gov /health/environmental/foodhygiene.

Save this guide…refer to it…share it….and finally use it as a teaching aide for all within your establishment.

Thank you and good luck!

Food Safety Training at Your Site

Establishments can request a staff member from the Food Safety Program come to their facility and provide training on Food Safety best practices. Our goal is to assist an operator with the education of their food service workers, and improve our community's understanding and implementation of food safety practices. A Food Hygiene representative will review the requirements of the food code as it applies to your business, and highlight the critical violations that represent the highest risk factors that cause foodborne illness. This service is free of charge and lasts approximately 1 hour. Please call 574-6650 today to schedule your Food Safety In-Service.

Person in Charge (PIC)

At least 1 person with adequate food safety knowledge must be present and designated as the person in charge (PIC) during all hours of operation. The Person in Charge has the duty and responsibility to make sure that he or she has a manager control system in place for safe food practices that apply to the specific job, namely:

- Oversee the food service operation
- Educate their food service workers of food safety knowledge gained from this course
- Make sure safe food is served to their customers
- Exclude (remove from the facility) or restrict (limit) employees when necessary
- Ensure proper hand washing procedures are in place
- Ensure food temperatures are in the acceptable range
- Apply proper cooling procedures
- Put into operation a process for proper cleaning and sanitizing of equipment and utensils
- Confirm food received is safe
- Restricting (limit) access of non-food handling personnel

The Safe Food Handler

Proper hand washing is the number one way to prevent disease. A safe food handler starts with clean hands. Without clean hands, everything the food handler touches will be contaminated. This includes putting on a pair of clean gloves. Food service workers must thoroughly wash their hands and the exposed portions of their arms with soap and warm water. Here are a few examples of when to wash your hands:

- Before starting work
- During work
- After handling raw meats
- Before starting to work with food, utensils, or equipment
- During food preparation, as needed
- When switching between raw foods and ready-to-eat foods
- After handling soiled utensils and equipment
- After coughing, sneezing, using a tissue, or using tobacco products
- After eating and drinking.
- After touching bare human body parts
- After handling animals.
- After using the toilet or changing a diaper (wash hands at a hand sink in the restroom; and again when returning to the kitchen to handle food)
- As often as necessary to keep them clean

Proper Hand Washing

Wash hands in the hand sink for 20 seconds. Use soap under warm running water at 100^0F and a disposable paper towel to dry hands. **Use a barrier (paper towel, elbow, etc.) to turn off the faucet. This will prevent re-contamination of your hands.** Don't forget when leaving the restroom to also use a barrier (open the restroom door using the paper towel).

Remember:

- Hand sinks are for hand washing only and must be easy to get to at all times. Hands should not be washed in any other sink but the designated hand washing sink.
- Hand sanitizer must not be used in place of hand washing.
- Hand washing signs are required to be posted at all hand sinks, including the restroom

Ready to eat foods (RTE) *are foods that are served without further washing or cooking (apples, cooked hamburgers, tacos, sushi, etc.).* **There must be no bare hand contact with RTE foods.** When handling ready to eat foods, food service workers must use barriers such as:

- Tongs (place vegetables on a salad or garnish drinks using tongs)
- Scoops (use of a scoop with a handle to get some sugar or salt)
- Deli papers (use of deli papers to grab pastries)
- Single-use gloves (garnishing a sandwich with lettuce and tomato)

Remember that gloves are used to protect the food from contamination, not to protect your hands from the food. Gloves must be worn if the food service worker has colored finger nail polish, long fingernails, open cuts, sores or bandages on their hands while working with food.

*****Gloves do not take the place of hand washing. Food service workers must wash their hands, before putting on gloves, when changing duties and after removing their gloves.**

Food service workers may eat food and drink liquids (with a lid and straw) in designated areas only. The designated area is to be away from food, food prep surfaces, equipment, clean utensils or other items to prevent contamination. **A food service worker must wash their hands after eating, drinking or smoking.**

If an individual must operate a mechanical dishwasher alone, that employee must wash his/her hands after handling dirty dishes and before handling clean, sanitized dishes/utensils. An employee who busses dishes (including servers) must be careful to wash his/her hands before handling food and clean dishes/utensils.

Food service workers shall keep their fingernails clean and trimmed. They may not wear fingernail polish or artificial nails when working with exposed food unless gloves are worn. Jewelry can hide germs that cause foodborne illness and make it hard to wash hands. Jewelry can also fall into food. While preparing food, workers must remove watches, rings, bracelets and all other jewelry on their arms or hands (with the exception of a wedding band).

The outer clothing of all food service workers shall be clean. Hair restraints are intended to keep hands out of hair and hair out of food. Hair must be effectively restrained whenever you are working around food or food preparation areas. Hairnets, hats, scarves, or similar hair coverings are required for all food service workers (including management) in food preparation areas.

Potentially Hazardous Food (PHF) and SafeTemperatures

What are potentially hazardous foods (PHF)? Potentially hazardous foods (PHF) are foods that are required to be cooked to a certain temperature then kept cold at 41° F or less or hot at 135°F or higher to help control illness- causing organisms. In other words, **PHF's are foods that need to be kept hot or cold.** Some examples of PHF are:

- Cut melons (i.e. watermelon, cantaloupe, honeydew…etc.)
- Cooked meats (i.e. chicken, lamb, pork, hamburgers…etc.)
- Deli meats
- Cooked vegetables
- Cooked pasta
- Cooked rice
- Baked potatoes
- Grade A Dairy (i.e. some cheeses, milk, yogurt, sour cream…etc.)
- Sushi
- Bean sprouts

Cooking Temperatures

PHF's which require cold holding must have an internal temperature of 41°F or below. PHF's that require hot holding must have an internal temperature of 135°F or above. **You must cook meats to their proper cooking temperatures before holding at 135°F (see diagram for cooking temperatures).** How do you know how hot or cold food items are being held? Y**ou must have a calibrated metal stem thermometer** to check internal temperatures. Do not go by the thermometer on the equipment or trust the heating dials on the heating unit. The temperature may read 140°F, but if the internal temperature of the food is only 130°F, it is considered a critical violation.

Left over foods that require re-heating (such as chili's and soups) must be rapidly heated to an internal temperature of 165°F for 15 seconds. **Reminder:** Date mark all left over ready-to eat (RTE) potentially hazardous foods that are held longer than 24 hours.

Cooking temperatures of food vary. All foods on the below chart need to meet the specific internal temperature for at least 15 seconds to kill the unwanted pathogens that cause foodborne illness.

Cooking Temperatures

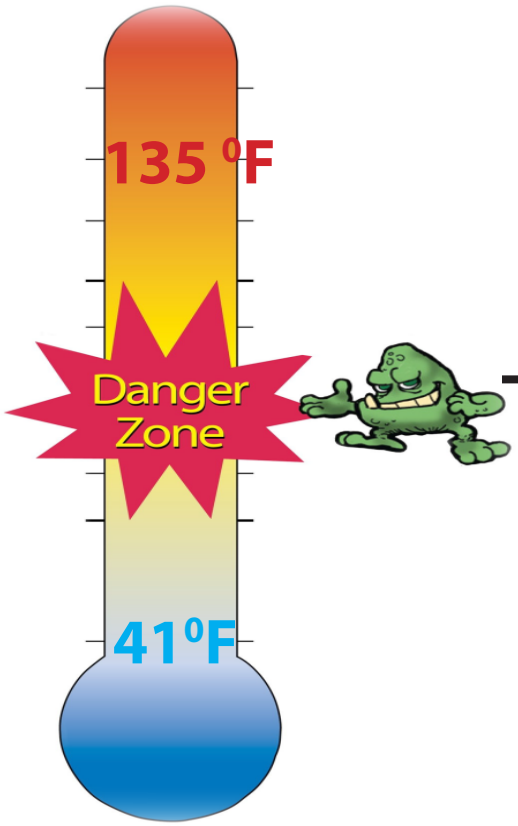
Vegetables	135°F for 15 seconds
Pork, Fish, and Eggs	145°F for 15 seconds
Ground beef, injected meats, and commercially raised game animals have to be cooked	155°F for 15 seconds
Poultry (chicken), wild game animals, stuffed fish, meat, pasta, casseroles	165°F for 15 seconds
Reheating of PHF (leftovers)	165°F for 15 seconds within 2 hours

Holding Temperatures

Hot Holding	135°F
Cold Holding	• 41°F or below for up to 7 day • Between 41°F and 45°F for up to 4 days (until 2015)

Danger Zone

Hot foods must be held at 135°F or higher and cold foods held at 41°F or below. The range between these temperatures is considered the **danger zone**. Remember that bacteria likes to grow in a warm, moist environment (a pan of cooked rice, chicken left out, sliced melon not held at 41°F or below). A PHF should never be exposed to the danger zone for long periods of time, it should only be exposed during preparation, cooling and reheating.



HOT HOLDING

All hot foods must be held at 135°F or higher. Foods must be cooked or re-heated to proper temperature and then held hot at 135°F.

**Hot holding occurs in steam tables, warmers, insulated carriers, etc.*

Do not hold foods in the

Temperature Danger Zone

Bacteria grow rapidly at these temperatures

COLD HOLDING

All cold foods must be held at 41°F or lower.
Foods are required to be received and held at proper temperatures.

**Cold holding occurs in refrigerators, in ice or in insulated carriers etc.*

Cooling Foods

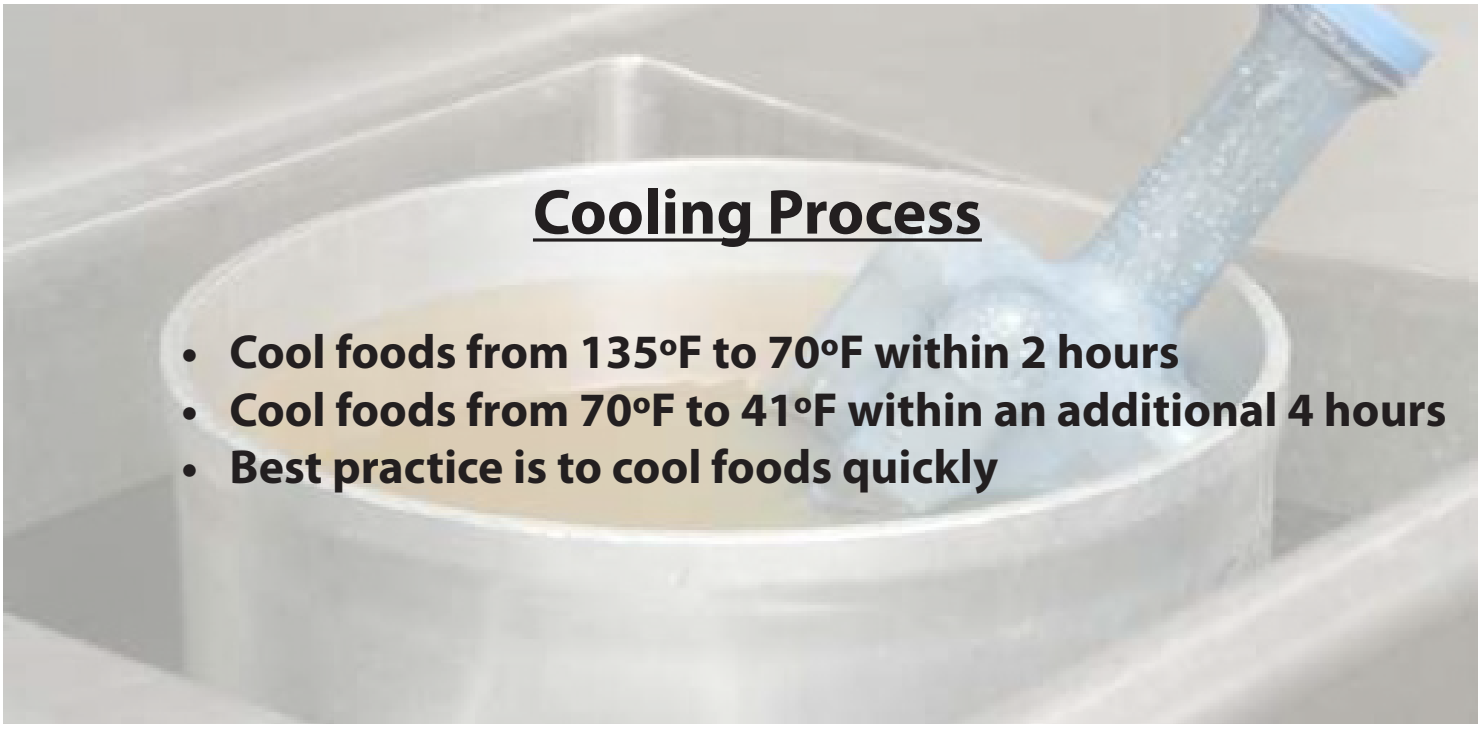
It is very important to quickly cool food. The longer the food sits in the danger zone (above 41°F and below 135°F) the more bacteria will grow. **Cooling foods properly for later use is just as important as cooking foods to the correct temperature. If cooling is not done correctly it can cause somebody to become ill.** Cooling foods requires time and attention from the food handler. Food must be cooled from 135°F to 70 °F within 2 hours. If the food does not cool down to 70 °F within 2 hours you must reheat the food back to 165°F to kill any illness causing organisms and properly re-cool. Once the food has reached 70 °F you have an additional four hours to reach 41°F. This makes a total of six hours to properly cool food items. The following picture shows the correct cooling procedure. If the food does not reach 41°F within the four hour parameter it must be discarded. There are several ways to cool food, but only one way to know for certain if the food is being properly cooled, that is with a calibrated metal stem thermometer.

Some different ways to cool food include:

- Cooling wands – a stirring utensil that contains ice (fill with water and freeze)
- Shallow pans (2 inches or less in depth)
- Ice baths – Use a deep pan filled with ice and water. Submerge a shallow pan of food product into the ice water (the shallow pan needs to be in the ice and not just on top of the ice)
- Using rapid cooling equipment, such as blast chillers

Food items which are cooling should not be covered (covers trap heat in and we want the heat out!). Remember to stir food items frequently to help the cooling process. Large quantities of food should not be cooled in a walk-in until cooled down from the cook temperature to 135°F. This is because the cooling food can raise the air temperature in the walk-in. **Foods should never be cooled at room temperature.**

***Once a food item has been cooked and served, it may be reheated once and then must be discarded. Foods from a buffet may not be cooled and reheated (must be discarded).**



Approved Sources, Records, Condition, and Spoilage

Source

The ***source*** *is where the food comes from*. The purchasing and proper receiving of food is a very important part of a facility's operation. This is the initial point the food enters the facility. Proper procedures need to be in place to confirm the food is safely received from the distributor before processing begins.

All food served in a retail food service establishment must be prepared on site **(food prepared in a private home is not allowed)**. All meat and fish must come from an approved source and the meat must be USDA inspected. No home canned foods are allowed on the premises of a retail food service establishment.

Labeling

Labeling *– a way to identify the substance inside of a container*. Correct labeling is essential for informing the public and keeping food safe.

Requirements:

- Food removed from original container and moved to another must be labeled with contents
- All food packaging requires a source label containing ingredients, store name, address, and any allergens
- All food packaging must be labeled in English as the primary language
- Foods containing specific allergens must be labeled to identify each when present in any amount (tree nuts, peanuts, soy, milk and dairy, fish/shellfish, eggs, wheat and sulfites)

State Labeling Information & Requirements (859) 236-8159

Records

Keeping records of temperatures, receipts, shell tags and other procedures are very important to your establishment and provide evidence that procedures are being executed correctly. Records are just a way of documenting and preserving information.

- Date marking: All ready-to-eat (RTE- foods served without further washing or cooking, apples, cooked hamburgers, tacos, sushi, etc.) potentially hazardous food (PHF- are foods that need to be kept hot or cold) prepared on-site and held in refrigeration units for more than 24 hours must be marked with either the date the food is prepared or the date the food is to be discarded. Either method of date marking is acceptable. However, facilities must use the same date marking method on all food items requiring a date mark. Facilities can keep date marked food items held at:
    1. 41°F or below for up to 7 days
    2. Between 41°F and 45°F for up to 4 days (45°F accepted for existing in place equipment, such as a reach-in, until 2015)

- **Day #1 is the day of preparation; when the food is removed from the container; or the day and time in which frozen food items are thawed.** If prepared foods are frozen, time will stop and start again once it is removed from of its frozen state (thawed). For instance, if a deli salad is prepared on day #1 then frozen on day #3, when it comes out of the freezer time resumes again with day #3.
- Molluscan shellfish (frozen or fresh oysters, clams, mussels and scallops) must have tags and/or acceptable records showing where they are harvested and by whom. Shell stock tags (or the recording system) for shellfish must be kept 90 days from date of harvest. Prepackaged raw meat, eggs, or poultry must be labeled with safe handling instructions.
- Grade A dairy products cannot be used or sold past the expiration date. All Grade A dairy must be pasteurized.

Purchasing and Receiving of Safe Food

The following is a list of procedures to ensure safe food is received from the distributor before processing begins:

- Always purchase food from an approved source **(A home kitchen is not an approved source)**
- Check food for damage or spoilage upon receipt
- Inspect raw/packaged food for damage by pests at time of delivery
- Check frozen food for signs of thawing and refreezing (i.e. ice crystals)
- Check temperatures of frozen foods if the product feels soft
- Check canned goods for signs of rust, sharp dents or dents that are on the rimmed seals or side seams; do not accept any cans that show these signs. Bulging, leaking, or crushed cans must be discarded. **Never use home canned foods**
- Refrigerated foods must be checked for proper temperatures (41˚F or below); do not accept foods if they are not at proper temperature. Raw eggs may be accepted at 45˚F or below

Condition

All packaged foods must be in good condition, whole and undamaged. **Food in dented, swollen, rusted or bulging cans <u>cannot</u> be used or sold in a food service establishment.** Imperfect cans may allow microorganisms (germs) to enter which may cause foodborne illness or other health hazards.

Adulterated/Spoilage

Adulterated food is most often defined as contaminated, unsafe or unwholesome food. Simply put, foods that are molded, spoiled or have been contaminated for any reason to be immediately discarded. Also, frozen, Grade A milk is considered adulterated.

Dishwashing

Dishwashing refers to the washing, rinsing and sanitizing of equipment, utensils and dishes using a mechanical or manual method.

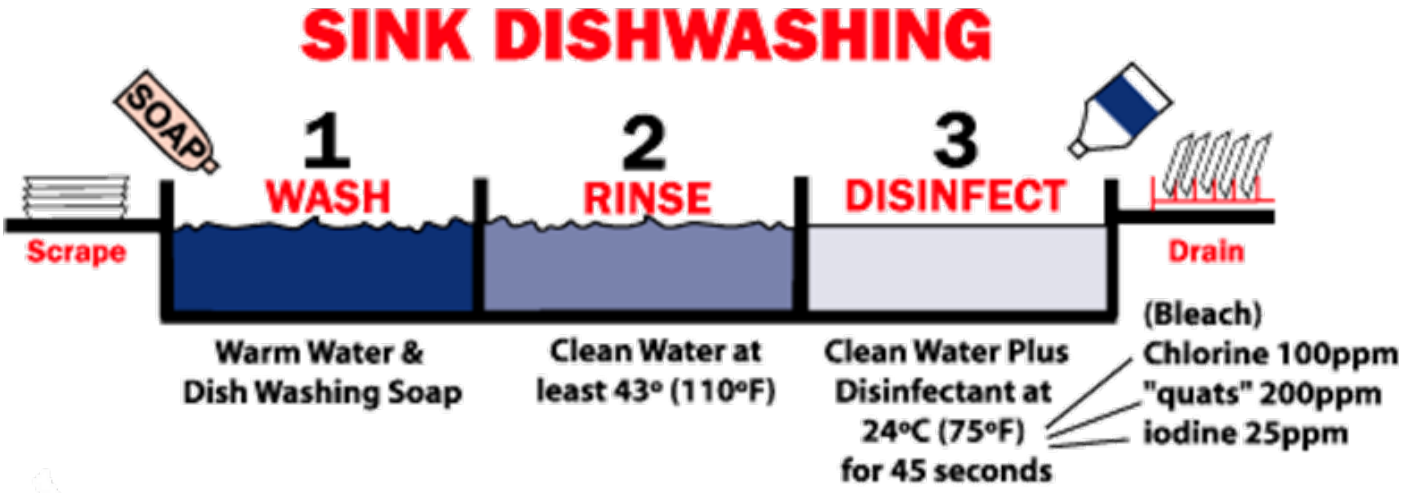
Sanitizing uses chemicals or heat to kill microorganisms (germs) that can cause foodborne illnesses. Cleaning and sanitizing are not the same. Cleaning uses soap and water to remove dirt from equipment and floor surfaces. It is important to remember that surfaces may look clean but still have microorganisms on them.

Test strips are required to make sure the concentration of the sanitizer is correct. There are different test strips for a Chlorine sanitizer and a Quaternary Ammonia (QUAT) sanitizer.

Dishwashing Methods

Mechanical Dishwashing	
Heat sanitization	Chemical sanitization
• Final rinse temp between 180°F and 194°F	• Chlorine solution strength between 50 and 100ppm
• Frequently (every 2-3 hours) verify with heat strip or holding thermometer.	• Frequently (ever 2-3 hours) verify concentration with a chlorine strip.

Manual Dishwashing
• Pre-scrape and presoak dishes • Wash with soap and warm water • Rinse with clean water • Sanitize with QUAT (200-400ppm) or Chlorine (50-100ppm)



Clean and sanitize all in-use food contact surfaces a minimum of every 4 hours or as needed. *A food contact surface is defined as any surface which food normally comes into contact (knife, cutting board etc.)*

Food (Ice) Contact Surfaces

All food (ice) contact surfaces shall be hard, smooth, and easily cleanable and in good repair. It is important to have well-kept food contact surfaces because of possible physical hazards, which can contaminate food and bacteria growth in the damaged portion. Specific examples of physical hazards could be pieces of metal, pitted Teflon and/or any other debris that could make somebody sick and/or cause harm if consumed. *A* **food contact surface** *is defined as any surface that comes into direct contact with food.* **All food contact surfaces need to be hard, smooth, and easily cleanable.**

Examples of **food contact surfaces** are:

- Utensils (knifes, spoons, forks, etc.)
- Can openers
- Cutting boards
- Pots and pans
- Slicers and dicers

Examples of some **non-approved food contact surfaces** are:

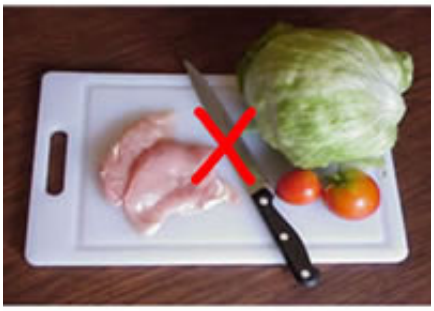
- Surfaces lined with cardboard
- Surfaces lined with foil
- Untreated/unsealed wood

Examples of food contact surfaces that need to be repaired or replaced:

- Can-opener blades in disrepair which cause metal shavings to contaminate food items.
- Paint brushes being used as pastry brushes.
- Duct tape being used to repair food contact surface (not hard, smooth, and easily cleanable and cannot be sanitized).
- Multi-use food contact surfaces that are not smooth, free of breaks, open seams, cracks, chips, etc. (i.e. plastic containers that are microwaved or reheated and shows evidence of bubbling; containers that have chips/cracks that could lead to potential physical hazards).
- Cutting boards in major disrepair (white cutting board that look black, deep scratches or grooves).
- In use utensils (i.e. chipped knifes, melted spatulas, frying baskets, etc.)

Examples of food contact surfaces that you must NOT use:

- Pitted or chipped Teflon (carcinogenic)
- Uncovered Glass thermometers (possible mercury spill if it breaks)
- Re-using toxic containers (cleaning supplies, pesticide bottles) or using garbage bags with pesticides to store food
- Plastic shopping bags for food storage
- Non-food grade containers such as trash cans



Cross-contamination

Cross contamination *is the transfer of germs from one area to another area*. **A common cause of foodborne illness is *cross contamination***. Harmful substances or microorganisms may be introduced into foods by cross-contamination. **The number one way cross contamination occurs is from the food service worker to the food**.

Examples of cross-contamination:
- Equipment not cleaned and sanitized between working with raw food and ready-to-eat foods
- Food improperly stored in the walk-in
- Contaminating cooked food with drippings from raw foods
- Ready-to-eat food touching improperly cleaned and sanitized cutting boards, utensils or plates, thermometers or other non-sanitary food contactsurfaces
- Failure to wash hands before touching ready-to-eat foods, after handling raw foods, soiled clothing or other contaminated items
- Not storing raw foods away from cooked or ready-to-eat foods when in storage or during periods of preparation

For example, raw chicken is prepared on a cutting board. The cutting board is not immediately cleaned and sanitized. If RTE food items (sushi, appetizers, cold sandwiches, or the now cooked chicken) are placed on the contaminated cutting board, cross contamination has occurred which can lead to foodborne illness. **Food contact surfaces such as cutting boards must be washed-rinsed and sanitized between different types of food.** Make sure to use the right chemical test kits to test the solution strength of the sanitizer. Make sure food contact surfaces are in good repair (not chipped, pitted or grooved); this will allow for ease of cleaning and proper sanitizing.

Examples of food contact surfaces which need to be cleaned a minimum of every four hours:
- Knives
- Cutting boards
- Dicers
- Slicers

Food storage is very important to prevent cross contamination. RTE foods are to be stored away from raw unwashed food and raw meats to prevent contamination. Food should be stored in order of cook temperature. Ready to eat food is on top followed by food with the lowest cook temperature all the way to food with the highest cook temperature. See the following storage chart.

Use proper hand washing procedures to prevent

Cross Contamination

TOP of Refrigerator

Ready to eat food	41°F
Vegetables	135°F
Pork, Fish, and eggs	145°F
Ground beef, injected meats, and commercially raised game animals have to be cooked	155°F
Poultry (chicken), wild game animals, stuffed fish, meat, pasta, casseroles	165°F

BOTTOM of Refrigerator

Foodborne illness causing organisms need several hours to adapt to new surroundings before rapidly reproducing themselves in the new environment.

It is extremely important to properly clean and sanitize room temperature food preparation surfaces and utensils at least every four hours, or after use, to prevent bacterial growth.

When cleaning slicers and other **clean-in-place equipment** *(equipment that cannot be immersed in water)* swab or spray with sanitizer at the upper limits of the sanitizer's concentration (chlorine at 200 ppm or quaternary ammonia (QUAT) at 400ppm). Follow manufacturer recommendations for clean in-place equipment such as soft serve ice cream dispensers, mixers, etc.

Using a black light we are able to see germs. The pink and white coloring above show what germs are still on your hands when you do not wash hands properly.

Wiping Cloths

Keep wiping cloths in a labeled container of sanitizer. Wiping cloths should be stored in sanitizer solution to prevent the growth of bacteria. Wiping cloths are a quick and easy method to sanitize surfaces, however dirty wiping cloths are often the cause of cross contamination and foodborne illness because of the warm, moist environment. Follow these requirements to ensure wiping cloths are safe for use.

- Store cloths used for raw foods, RTE foods and non-food contact surfaces in separate labeled buckets
- If using chlorine, keep the solution between 100-200 ppm
- If using Quaternary Ammonia (QUAT), keep the solution between 200-400ppm
- Check the wiping cloth sanitizer solution frequently with a test kit to make sure the proper concentration is correct. Every time you use the wiping cloth, the concentration of the solution changes and eventually will no longer sanitize food contact surfaces
- Do not store containers of sanitizer directly on the floor. Use a tray, bus tub or another other easily cleanable barrier so the bottom of the bucket is not in contact with the floor
- Store sanitizer buckets in convenient locations where they cannot be spilled or contaminate food products.

Potentially Hazardous Food not Re-served

What does it mean to re-serve PHF-potentially hazardous food? ***Re-serving PHF's*** *is defined as reserving hot holding foods multiple times, buffet items, family style foods, and/or returned foods.* Foods that are served in this manner can only be served once and then must be discarded. If somebody returns food for whatever reason, that food cannot be resold (however, food can be reheated for the same customer!).

- Buffet foods – hot held buffet foods must be discarded after use
- Family style – food served in large containers and passed around table
- After possession by consumer – do not take food off the table and resell (bread, dips, salsa…etc.). Remember over the counter or out the door; returned food cannot be resold.

Personnel with Infections Restricted and Proper Reporting

When an employee becomes ill, they must report their illness to the person in charge. There are several symptoms that exclude (temporarily remove) employees from being able to work in a food establishment. The chart explains which symptoms cause an employee to be excluded or restricted.

Highly Susceptible Populations (HSP)

Highly Susceptible Population (HSP) are people that may have a weaker immune system due to age or health and are more likely to get sick from food that is contaminated.

HSP'S include:

- Children 6 years of age or younger
- Adults over the age of 65
- Pregnant women
- Individuals who are immuno-compromised (due to having other illnesses and result of certain medications)

Facilities such as hospitals, childcare centers, preschools, nursing homes and adult care homes providing care for sick or elderly have additional food safety requirements.

HSP facility guidelines:

- Use only pasteurized foods
- No re-use of single service condiments
- No use of unpasteurized eggs, milk, or juice
- Raw seed sprouts or raw/partially cooked animal foods are not allowed
- No bare hand contact
- No use of time as a public health control

Illness Causing Organisms:

Bacteria - are living organisms composed of a single cell. **Bacteria** may cause 2 types of foodborne illness:

1. **Intoxication**: Some bacteria may produce a toxic waste, which is harmful to humans. Toxin production occurs when bacteria are allowed to grow to high numbers. Many of these toxins can survive the cooking and freezing process even though the bacteria have been killed.

2. **Infection**: Some bacteria are harmful and cause illness when consumed. They use food as a medium for growth and for transportation to the human body. These bacteria grow very rapidly in a warm, moist environment.

Bacteria have little requirements for growth; these include food, water and proper temperature.

Bacteria can survive in a broad range of temperatures, but usually grow between 41^{0}F and 135^{0}F, the Danger Zone. The longer bacteria spend in this temperature range, the faster they multiply. For example, after eight hours, you could have seventeen million bacteria in a food product.

Bacteria can be found on food products, human body parts (hands, nose, pimples, burns, boils and cuts) and on equipment (i.e. cutting boards, slicers and can openers). Bacteria are even found on food service worker's aprons and the wiping cloths used to clean **food contact surfaces**.

Viruses- Hepatitis A is an example of a virus. Someone can have a virus and not know it. When a food worker with a virus does not wash their hands well after using the toilet, the virus can get on the food workers hands and then into the food. This is one reason why the food code requires that **all food workers must wash their hands and use a barrier when handling ready-to eat food.** Generally viruses are spread tough improper hygienic practices such as hand washing.

Parasites are tiny worms or bugs that live in fish and meat. If they are frozen at a specific temperature long enough or cooked long enough, parasites will be destroyed.

Fungi – Are organisms which feed on organic matter such as vegetables and animals. Mold and Yeast are examples of Fungi.

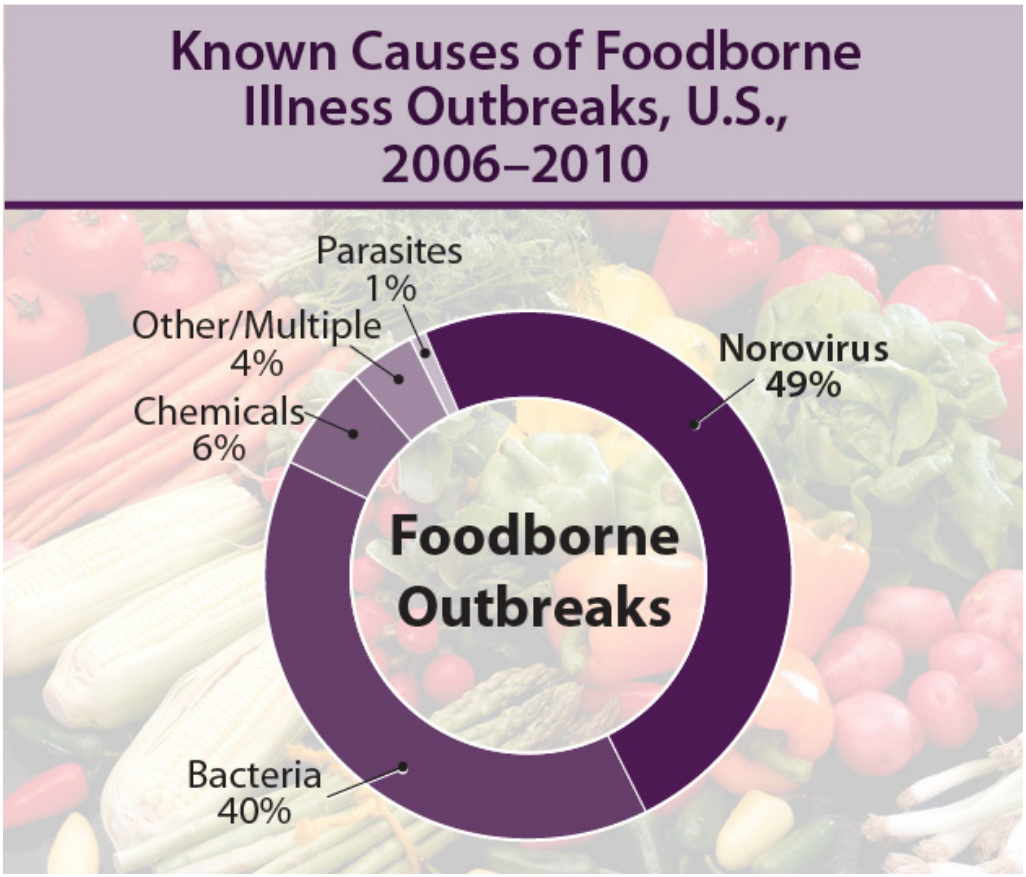
***Unlike parasites, bacteria and viruses are not always killed by freezing. They will survive and start growing again under the right conditions. It is important to understand when a food is contaminated with bacteria or viruses, the food will usually smell fine, look safe and taste good but can still make someone very sick.**

Foodborne Illness and Outbreaks

Foodborne illness, also known as food poisoning, is caused by eating food or drinking beverages contaminated with bacteria, toxin created by bacteria or viruses. Harmful chemicals can also cause foodborne illnesses if they have contaminated the food during harvesting, processing and/or preparing. Improper handling or the lack of refrigerated foods may cause many outbreaks of foodborne illness. High protein food, such as poultry, beef, cooked rice; dairy products and pork are most frequently involved in foodborne illness. However, the 1989 Hepatitis A outbreak in Louisville showed that even produce could be dangerous. This outbreak was one of the first of its type ever documented. A heavily contaminated shipment of lettuce (and possibly tomatoes) was delivered to many produce vendors. They in turn delivered the produce to nearly 400 restaurants. Clearly, traditional methods of washing produce were not adequate. Three people associated with the outbreak died and hundreds became ill (various lawsuits resulted from the outbreak). Therefore, it is very important that produce be washed to remove contaminates before preparation under continuously running, well drained water.

In the United States, the Centers for Disease Control estimates that about 48 million Americans become sick and up to 3,000 people die each year from unsafe food. Following the food safety practices in this study booklet can help you prevent the most common causes of foodborne illness and keep your customers happy and healthy.

A foodborne illness outbreak is defined as an *incidence of illness that involves two or more unrelated people who have eaten a common food.* Two people can eat the same food and be affected differently due to age, immune system, and an individual's health status.



Source: www.cdc.com/norovirus/trends-outbreaks-figure-3.html

The following Foodborne illness chart shows foods that are associated with illness, start times, symptoms, how they are spread in the kitchen and other important information. Some other foodborne illnesses included in the chart worth noting are Botulism, Clostridium Perfringens, Staphylococcal (Staph) and Campylobactor.

Organism	Start time	Signs and Symptoms	Food Source	Kitchen Procedures Helping Spread of Illness	Corrective Action
Campylobacter jejuni	2-5 days	Diarrhea, cramps, fever, vomiting	Raw undercooked poultry, unpasteurized milk, contaminated water	Improper hand washing, cross contamination, Ill food handlers	Proper food storage, exclude ill workers, good hand washing
Bacillus cereus	10-16hrs	Abdominal cramps watery diarrhea, nausea	Rice, Meats, stews, gravies, vanilla sauce (left overs)	Improper cooling	Rapid cooling, cold food maintenance
Clostridium botulinum	12-72hrs	Vomiting, diarrhea, blurred vision, double vision, difficulty in swallowing, muscle weakness. can result in respiratory failure and death	Improperly canned foods, fermented fish, baked potatoes in aluminum foil	Use of bulging can goods, use of home canned goods, improper hot holding	Discards bulging cans, obtain food from an approved sources, pope temperature maintenance
Clostridium perfringens	8-16hrs	Intense abdominal cramps, watery diarrhea	Meats, poultry, gravy, dried/precooked foods, time/temperature abused foods	Improper cooling, inadequate reheating	Rapid cooling, cold food maintenance
*E. coli 0157:H7	1-8 days	Severe (often bloody) diarrhea, abdominal pain and vomiting.	Undercooked beef (especially hamburger) unpasteurized milk/juice, raw fruits and vegetables, and contaminated water	Cross-contamination, ill food handlers, improper temperatures, improper hand washing	Proper Food Storage, exclude ill food handlers, good hand washing
*Hepatitis A	28 days average	Diarrhea, dark urine, jaundice, and flu-like symptoms	Raw produce, contaminated drinking water, uncooked foods and cooked foods that are not reheated shellfish from contaminated waters	Ill Food handlers, Improper hand washing, Raw or inadequate cooking of shellfish	Exclude ill Food handlers, proper hand washing, adequate cooking
Listeria monocytogenes	9-48hrs for gastrointestinal symptoms, 2-6 weeks for invasive disease	Fever, muscle aches, and nausea or diarrhea. Pregnant women may have mild flu like illness, can lead to premature delivery or still birth.	Unpasteurized milk, soft cheeses made with unpasteurized milk, ready to eat deli meats	Improper hand washing, use n food past he date mark.	Proper hand washing, consistent date mark system.
*Norovirus (stomach flu) #1 Foodborne Illness	12-48hrs	Nausea, vomiting, abdominal cramping, diarrhea, fever, headache	Raw produce, contaminated drinking water, uncooked foods shellfish from contaminated waters	Improper hand washing, ill food handlers	Exclude ill food handlers Good hand washing Adequate cooking
*Salmonella	6-48hrs	Diarrhea, fever, abdominal cramps, vomiting	Eggs, poultry, meat, unpasteurized milk/juice cheese, contaminated raw fruits/vegetables	Cross-contamination, improper hand washing	Proper food storage and preparation, Good hand washing
*Staphylococcus aureus	1-6hrs	Sudden onset of sever nausea and vomiting.	Unrefrigerated or improperly refrigerated meats, potato and egg salads, cream pastries	Improper hand washing and improper heating and cooling	Good hand washing, proper temperature maintenance, cover infected wounds

Employee Health

A food employee is required to report the date of onset of symptoms/illness or diagnosis to the person in charge. The information regarding the employees' health and activities, as they relate to diseases that are transmissible through food, should be used when deciding whether to restrict or exclude the employee from the facility.

Exclude - employee may not work in the facility

Reportable Symptoms	Action within retail food establishment	Return to Work Criteria for Food Employees	Local Health Department Approval
Vomiting	Exclude - not able to work in the facility	Symptom free for at least 24 hours or provide medical documentation that states the symptom is from a noninfectious condition	No, if not diagnosed as one of the SHENS
Diarrhea	Exclude - not able to work in the facility	Symptom free for at least 24 hours or provide medical documentation that states the symptom is from a noninfectious condition	No, if not diagnosed as one of the SHENS
Jaundice-yellowing of the skin and/or eyes	Exclude not able to work in the facility ; call manager; Notify Health Department	Medical documentation that food employee is free of hepatitis A virus or other fecal-orally transmitted infection	Yes
Sore Throat with Fever	Restrict not able to handle food	Medical documentation stating received antibiotic therapy for more than 24 hours; one negative throat culture; or is free from infection from Streptococcus pyogenes	No
*Infected Wound or Boil	Restrict – not able to handle food	*After the skin, infected wound, cut or pustule boil is properly covered	No

Restrict - the employee may not handle food but can perform other duties such as cleaning
It is a critical violation if an employee has any one of these symptoms or diagnosis and does not report the illness to the PIC. Refer to the charts below for reportable symptoms and reportable diagnosis information.

Diagnosis (SHENS)	Reportable	Excludable	Notification
Salmonella	X	X	E->PIC–>RA
Hepatitis A Virus	X	X	E->PIC–>RA
Escherichia coli (E coli)	X	X	E->PIC–>RA
Norovirus (stomach virus)	X	X	E->PIC–>RA
Shigella	X	X	E->PIC–>RA

E=Employee PIC= Person in Charge RA= Regulatory Authority

If an employee has one of the five excludable diseases (Salmonella, Hepatitis A, E-Coli, Norovirus and Shigella) the food facility must inform the health department prior to the employee returning to work.

Most foodborne illness outbreaks are preventable by proper hand washing.

Hazard Analysis of Critical Control Points (HACCP)

HACCP is a method of identifying, evaluating, and controlling food safety hazards. Food safety hazards are biological, chemical, or physical agents that are likely to cause an illness or injury if there are no controls (i.e. temperature). A HACCP program is designed to make sure hazards are prevented, eliminated, or reduced to an acceptable level before food reaches the consumer; it represents the preventive nature of "active managerial control."

The seven principles of HACCP include:

Principle 1: Conduct a hazard analysis
Principle 2: Determine the critical control points (CCPs)
Principle 3: Establish critical limits
Principle 4: Establish monitoring procedures
Principle 5: Establish corrective actions
Principle 6: Establish verification procedures
Principle 7: Establish record-keeping and documentation procedures.

A HACCP Plan may be required if a facility conducts one of the following processes:

- Smoking food as a method of food preservation rather than as a method of flavor improvement
- Curing food
- Using food additives or adding components such as vinegar to make food non-potentially hazardous
- Packaging food using a reduced oxygen packaging (ROP) such as vacuum packaging
- Operating a molluscan shellfish life-support system display tank used to store and display shellfish offered for human consumption
- Custom processing animals that are for personal use as food and not for sale or service in a food establishment
- Preparing food by another method that is determined by the regulatory authority to require a variance
- Sprouting seed or beans

The U.S. Centers for Disease Control and Prevention says that hand washing is the single most important means of preventing the spread of infections, such as foodborne illness.

Chemical and Physical Hazards

There are 2 other food hazards that can make a person ill. They include chemical and physical hazards.
A **chemical hazard** is a *toxic substance that can cause foodborne illness if the chemical gets in the food.*

Toxic Materials

Toxic Materials are chemicals that can make a person ill if consumed, absorbed through skin, or inhaled. Storing chemicals and poisonous materials in a designated area with correct labeling will reduce the risk of contamination or injury.

These items are examples of what can be poisonous or toxic:
- Detergents
- Sanitizers
- Polishes and cleaners
- Insecticides (including food grade)
- Rodenticides/mouse or rat control (including food grade)
- First aid supplies and personal medication

Storage, labeling & use:
- Store toxics away from food, food prep areas, equipment, and single service supply
- Label all toxics with the common name
- Use only restaurant approved chemicals in food areas

Chemicals can get into food by:
- Mislabeling toxics
- Misusing toxics
- Storing toxics next to food or single service items
- Not allowing equipment to air dry before use (including utensils and cutting boards)
- Reusing chemical containers for food storage.
- Chlorine solution over 200ppm; Quaternary ammonia solution over 400ppm

To prevent potential chemical contamination, chemicals should be labeled correctly in English (another language is okay, but English has to be present as well) and stored in an area away from food and/or single service. Sanitizer must be kept at proper concentrations and all equipment properly air dried to prevent chemical contamination.

Physical hazards are *objects that should not be found in food because they may cause injury or illness if ingested.*
Some examples of physical hazards include:
- Broken glass (why we require shielded lights)
- Metal shavings (can openers)
- Styrofoam (Styrofoam cups used as scoops)
- Plastic (chipped containers)

To prevent physical hazards equipment should be in good condition without any chips, cracks, or missing pieces. These items should be removed from your establishment immediately.

Insect and Rodent Control

Insects and rodents carry diseases and can contaminate food and food-contact surfaces.

Utilize these measures to minimize their presence:

- Protect outer openings, make sure all openings are sealed properly
- Keep outer doors closed, repair screens, maintain tight-fitting doors and properly use air curtains.
- Eliminate nesting conditions by keeping facility clean and clutter free.
- Exterminate regularly to prevent pests (Licensed provider required for applying chemical pesticides).
- Carefully inspect shipments and deliveries.
- Live animals are not allowed in facility except for certified service animals.

Water source – safe, hot and cold

Water is important in food preparation. All water used in a commercial kitchen must be from an approved source (i.e. Louisville Water Company). There must be plenty of water available for use at all times which must reach a minimum of 100°F. Water heaters or other methods of hot water generation must be enough to meet the demands of the kitchen during all hours of operation.

Sewage and Waste Disposal

Sewage is defined by a leak in a waste pipe (i.e. under sinks, restrooms,), a clogged drain that leaks on the floor, septic tank that is over flowing, overflowing grease trap, or exposed sewage in the parking lot. Exposed waste or sewage is not allowed in a facility and results in immediate closure and a failing inspection and grade. Some tips to remember about sewage:

- Waste and sewage must be disposed of safely including proper disposal of mop water into a mop/utility sink (not in the parking lot, outside drain or storm sewers or in the grass).
- Sewage backing up into a facility is an imminent health hazard and the facility should voluntarily close (call health department if you are not sure what to do). Facilities which voluntarily close will not receive a failing inspection and grade!
- A sewage/waste backup must be eliminated and the facility carefully cleaned and sanitized before inspection for re-opening.
- An approved contractor should clean grease traps on a regular basis.

Cross Connection and Backflow

*A **cross connection** is a connection between the drinking water system and the non-drinking water system A backflow can occur when contaminated water can be siphoned back into clean water supply due to unprotected cross connections.*

Backflow prevention:

- Use of an air gap (i.e. hose not connected to a faucet or indirect plumbing)
- Do not leave hoses connected to sinks with no back flow prevention device.
- Nozzles of spray hoses should hang above the rim of the sink.
- Installing a vacuum breaker on the faucet helps prevent backflow from occurring (automatically drops physical barrier in faucet when there is a loss of water pressure in the line).

Consumer Advisory

An advisory regarding eating raw or undercooked products is to be posted for public viewing. Examples of raw or undercooked products include but are not limited to the following:

- Steak cooked rare to medium well
- Hamburgers cooked rare to medium well
- Sushi
- Raw Oysters
- Unpasteurized Eggs

Consumers must be told of the risk by way of a disclosure (asterisk by food item on the menu, placard, table tents or other form of written public display) and an advisory (written statement on menu, placard, table tents or other form of written public display).

For Example:

***Advisory: Consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness.**

Points to Remember:

DO

- Only work when you are healthy and stay home if you are sick
- Wash your hands often using proper hand washing procedures Wash hands before putting on and after removing gloves
- Most foodborne outbreaks are caused by foods not kept at proper temperature and cross contamination
- Ready-to-eat (RTE) foods must have a barrier between the food and hands
- Keep cold foods at or below 41º F
- Keep hot foods at or above 135º F
- Reheat food rapidly to 165º F/15 sec within 2 hours
- Cool hot food as quickly as possible (135°F to 70°F within 2 hours and 70°F to 41°F in four hours)
- Store personal food and drink items in an approved and designated area. Drink items must also have a lid and a straw
- Keep food preparation areas and utensils clean and sanitized
- Keep fingernails trimmed and clean (no polish)
- Properly label and store toxic chemicals
- Wash, rinse, sanitize and air dry surfaces, utensils and equipment
- Keep insects, rodents and other animals out of the facility by sealing outer openings and keeping the doors shut
- Check food items upon delivery for dented cans, refrigeration/freezing, expiration dates and adulterated packaging
- Properly thaw potentially hazardous food (see thawing section for details)
- Date mark all left over potentially hazardous foods
- Do not reuse single service items
- All food grade containers must be in good shape and without cracks or chips
- Food contact surfaces need to be hard, smooth and easily cleanable

Do Not

- Do not wash your hands in a 3-compartment sink or mop sink.
- Do not change tasks or jobs without washing hands.
- Do not eat or drink in undesignated areas.
- Do not cough or sneeze in or around food prep areas.
- Do not store or prep food items in the mop sink or hand sinks.
- Do not operate a facility without hot water.
- Do not block hand sinks with utensils, food or equipment.
- Do not keep a hose connected to the mop sink faucet (or any faucet) unless a backflow prevention device is attached.
- Do not forget to tell your manager if you suddenly feel sick or have been ill.
- Do not forget there must always be a certified food manager and/or PIC on site when the facility is in operation (only certified food managers meet LMCO Chapter 118 Certified food manager ordinance)
- Do not use the same cutting board for raw meats and ready to eat foods
- Do not re-serve returned foods (may reserve item to same customer)

Inspections

A routine inspection is conducted twice a year or as needed for each permitted food service establishment in Louisville Metro. The inspection form is based on scientific studies conducted by the Food and Drug Administration (FDA) to determine what issues may cause foodborne illness. The violations marked on the inspection sheet are issues that lead to foodborne illness. Inspections can include both critical and minor violations. Minor violations account for 1 or 2 point deductions. Critical violations account for 3, 4, or 5 point deductions, have a higher risk for causing foodborne illness when present in food service establishments and cause the facility to fail their inspection. However, the presence of numerous minor violations can also raise the possibility for foodborne illness. There are 38 possible violations with 17 of them designated as critical violations.

Temporary Food Operations

When preparing and selling food from a temporary location or event (festival, park, or roadside stand), it must be done in a safe and approved manner.

Requirements:

- **A temporary food service permit is required for operation**
- A ware wash station to properly wash, rinse and sanitize dishes must be set up
- Hand wash station is required and must be set up with soap and paper towels
- Proper cold and hot holding equipment available (cooler, grill, etc.)
- Calibrated metal stem thermometer (0°F to 220°F) to check internal temperature of foods
- Test strips to measure concentration of sanitizer
- **All food must be prepared on site at the temporary permit location.**
- Commissary may be required for certain operations.
- May not be at same location for more than 14 consecutive days.

*****Catering licenses still require the purchase of a temporary permit when selling food at an event that is open to the public.**

Plan Review Procedure

Prior to opening a facility and beginning operation, or if additional plumbing, equipment, and fixture changes are made to pre-existing establishments, plans must be submitted for review to ensure current codes and regulations have been met. Plans must be approved before work is started at the facility.

Steps:

- Obtain application from Metro Development office at 444 S. 5th Street or our website
- Submit plans as outlined on application including floor plan, plumbing riser diagram showing all fixtures and connections to equipment, and plumbing in floor
- Seven copies of plans must be submitted (Master licensed plumber required for pulling permit for all work)
- All food service facilities must have hand sinks, mop sink, and 3 compartment sink (mechanical ware washer is optional)
- Contact Metropolitan Sewer District (MSD) for grease trap approval (Sanitary sewers must be separated from kitchen waste sewers)

Plan Review 574-6598 Plumbing 429-4441 MSD 540-6974

Imminent Health Hazards

There are some critical violations that are considered an ***imminent health hazard*** *(a significant threat or danger to health that requires immediate correction or termination of an operation to prevent injury).*

These issues are a threat to public safety and the facility should cease (stop) operation until the problem is corrected. **A restaurant should stop serving food to the public if the facility has:**

- No electrical power
- No running water
- Rodents or insects infestation
- Sewage is present in a food preparation, storage, transport or service areas
- Sewage exposure limits hand-washing, ware-washing or the ability to utilize the restroom.

When the Department of Public Health comes across conditions listed above, it will immediately close the facility (if the facility has not already stopped operation) until the issue has been corrected and the Department of Public Health conducts an inspection. In addition, when a facility receives a score of 59 or below the Department of Public Health will close the facility until critical violations have been corrected and the Department of Public Health considers it safe to operate and re-open.

It is better for a facility to recognize serious issues and close temporarily on their own than it is to have the Health Department shut a facility's doors.

Conclusion

REMEMBER that the Louisville Metro Department of Public Health and Wellness is here not just to inspect and regulate, but to educate as well. Whenever serious or even minor conditions exist, or if questions of any kind arise, please call the Health Department at 574-6650 for recommendations or visit our website at: www.louisvilleky.gov/health/environmental/foodhygiene.

Food service facilities and the Health Department are partners and team members in the role of providing safe food to the Louisville Metro community.

Class Information and Location

Scheduling Certified Food Manager Class

The class schedule may vary depending on class demand. Please call Martha Gregory and Associates, Inc. at 502-458-0841 or visit www.mganda.com/jcsc for a listing of class schedules and to register for a class. Participants will be contacted in the event the class you requested has been canceled or is full.

Phone registrations will receive a phone call confirmation. If registering by phone please speak clearly and spell your name. Remember to give your full name including the middle initial, the last four digits of your social security number, place of employment, date of class you are requesting and a daytime telephone number.

Internet registrations will be prompted to print a confirmation at the end of the internet registration.

Class Locations:

Please check your confirmation to ensure which location you need to report to. Majority of the classes will be held at Martha Gregory and Associates

1. **Martha Gregory and Associates** – Call to schedule class at this location
   3010 Taylor Springs Drive
   Louisville, KY 40220
   (502) 458-0841

*It is a two-story, dark brown, brick office building located south of the intersection of Taylorsville Road and McMahan Blvd. There is a NO FOOD or BEVERAGE policy at the 3010 Taylor Springs Drive location ONLY.

2. The Louisville Metro Department of Public Health and Wellness (LMPHW)
   400 E. Gray St.
   Louisville, KY 40202
   502-574-6650

*Classes will be held at the LMPHW location a minimum of four times per year.

Directions to Martha Gregory and Associates:

From Watterson Expressway (264):

Take the Taylorsville Road south exit. Continue south on Taylorsville Road through the Breckenridge Lane intersection. After passing the intersection, travel through (4) traffic lights. The last light will be at McMahan Blvd. Continue through the light and watch for the first street on the right. Take Taylor Springs Drive (driveway) down past the first building (on left). Turn right into the parking lot; follow the parking lot to the second building. Enter the building from the parking lot and follow the signs down the stairs to the assigned classroom.

From East (Hurstbourne Lane) on Taylorsville Road heading North toward Hikes Point:

Travel through the light at Lowe Road and past the Fire Station. Take a left at the next street (Taylor Springs Dr.) and then follow the parking lot to the second building. Enter the building from the parking lot and follow the signs down the stairs to the assigned classroom.

From Browns Lane:

Turn left on Taylorsville Road. Turn right at the first street (Taylorsville Springs Dr.), and then follow the parking lot to the second building. Follow the signs down stairs to the assigned classroom.

Class Details:

Sign in is 30 minutes prior to the start of the class. The class consists of 2 hours of review and 1 hour to take the exam. The exam has 50 questions. **You must earn a 70 or above to pass.**

A picture ID such as a state issued driver's license or other state issued ID will be required at the time you sign in.

No Shows: Person(s) who do not show up for a scheduled class must re-pay the $35 fee before rescheduling a class

Cancellation: A scheduled class must be canceled at least 24 hours prior to the start of that class or participant will forfeit the $35.00 fee and not be permitted to re-schedule until that fee is re-paid. Call 502-458-0841 to cancel.

Retests: Person(s) who fail the test, and need to retake the exam, must first pay a $15 fee and retest within 60 days of initial test date.

Renewals: Certificates are valid for 3 years. The course must be completed again once your certificate expires. To ensure compliance, applications for recertification should be mailed at least 30 days before the expiration date.

Expiration of Registration Fee: Registration fee expires after 90 days (date received application & registration fee). After the 90 days, applicants must repay the $35 fee, and re-register with the Health Department in order to schedule a class.

Other Languages: The study guide and test is also offered in Spanish and Chinese (mandarin), Vietnamese and Korean.

If you schedule a class and do not attend the class (no show), or if you cancel your class less than 24 hours before the start of your class, you will lose your registration fee and must re-register before you can schedule another class.

Glossary

1. **Allergen** - a normal substance that causes an acute defensive reaction in a person's immune system.

2. **Atmospheric vacuum breaker** - a backflow prevention device used in plumbing to prevent backflow of non-potable liquids into the drinking water system.

3. **Cleaning** - physical removal of soil from a surface.

4. **Clean in-place equipment** - equipment that is stationary and cannot be immersed in water. This type of equipment must be disassembled then cleaned and sanitized by a spray or swab method at the proper concentration.

5. **Cross-contamination** - transference of disease causing organisms by the improper cleaning and or sanitizing of surfaces.

6. **Disclosure** - portion of a consumer advisory for raw or undercooked products which is an asterisk by the food item on the menu, placard, table tent or other form of written public display.

7. **Foodborne illness** - a disease that is carried or transmitted by human beings to food.

8. **Food contact surface** - any surface with which food comes into direct contact.

9. **HACCP** - Hazard Analysis of Critical Control Points- systematic approach to identifying, evaluating, and controlling food safety hazards.

10. **Highly Susceptible Populations (HSP)** - include schools, daycares or similar facilities with children age 9 or less as well as hospitals and assisted living facilities and other such facilities providing care for sick or elderly persons.

11. **Hygienic practice** - any human behavior or activity that affects food safety.

12. **Microorganisms** - (germs) a tiny organism such as a virus, protozoan, or bacterium that can only be seen under a microscope

13. **Molluscan Shellfish** - frozen or fresh oysters, clams, mussels, scallops

14. **Non-food contact surface** - any surface with which food does not come into direct contact.

15. **Person in charge (PIC)** - any person that can demonstrate adequate food safety knowledge and is capable of organizing employees and assigning duties.

16. **Potentially hazardous food (PHF)** - food that is required to be kept hot or cold to prevent the growth of bacteria. Food which consists in whole or in part of the following: milk or dairy products, egg or egg products, meat or meat products, poultry or poultry products, fish or fish products, shellfish or shellfish products, cooked rice or any other ingredient in a form capable of supporting rapid and progressive growth of illness causing bacteria.

17. **Ready-to-eat foods (RTE)** - foods ready for someone to eat without further cooking or cleaning.

18. **Reminder** - portion of a consumer advisory for raw or undercooked products which is a written statement on menu, placard, table tents or other form of written public display (i.e. *Reminder: Consuming raw or undercooked meats, poultry, seafood, shellfish, or eggs may increase your risk of foodborne illness.).

19. **Sanitizing** - reduction in number of disease-causing organisms to a safe level.

20. **SHENS** - The five excludable illnesses that include: Shigella, Hepatitis A, E. Coli O157:H7, Norovirus and Salmonella.

21. **TPHC**- time as a public health control (without using the control of temperature as a means to protect

Food Service Manager's Study Guide published March 2014

WWW.LOUISVILLEKY.GOV
LOUISVILLE METRO PUBLIC HEALTH AND WELLNESS 400 EAST GRAY STREET LOUISVILLE, KENTUCKY 40202 502.574.6520