

# Food Safety Training Manual



**Public Health**  
Prevent. Promote. Protect.

## Lake Region District Health Unit

Environmental Health Division

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[www.lrdhu.com](http://www.lrdhu.com)

*This reference is for use in the following counties:*

*Ramsey, Benson, Eddy, Pierce, Rolette, Towner, and Cavalier Counties*

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# Part 1: Introduction to Food Safety

## FOOD SAFETY TODAY AND EVERYDAY

### Why is it Important?

According to the Centers for Disease Control and Prevention, each year 1 in 6 Americans (48 million people) get sick from unsafe food and up to 3,000 of those people that become sick will die from their illness. The people most likely to get sick from unsafe food are the very old (older than 65), the very young (under 5), and those who have a weakened immune system (e.g. pregnant, diabetic, cancer, or having other diseases/medications). This group of people is called the **highly susceptible population**.

Thank you for taking an active role in keeping yourself and other people safe through learning more about food safety. Provided in this manual is information on ways you can contribute to serving safe foods both at home and at work. As a food handler you are the first line of defense in keeping the food safe.

### Objectives

This manual has been developed to provide you with the knowledge you need to help keep food safe. Once you have completed your reading you should be able to:

1. Identify the hazards which can cause foodborne illness.
2. Understand the importance of correct hand washing and your health.
3. Know safe food temperatures to avoid the Danger Zone.
4. Follow and understand general food safety rules.
5. Use this knowledge for safer food handling at work and at home.

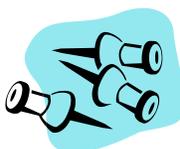
## FOODBORNE ILLNESS

Almost everyone at some point in their life has experienced the symptoms of **foodborne illness** which is often referred to as the stomach flu or food poisoning. The symptoms can include diarrhea, vomiting, fever, headache, stomach aches, and fatigue. Anyone can become sick from foods which are handled unsafely whether it is from a restaurant or eaten at home.

### The Hazards

Foodborne illness is caused by eating **contaminated** foods or beverages. Foods can become unsafe by things you cannot see, smell or taste. There are three main types foodborne hazard: Physical, Chemical, and Biological.

1. **Physical** – Caused when a foreign object enters the food and is eaten causing injury.
  - Broken glass, jewelry, band-aids, staples, stick pins, or fingernails.
  - How to prevent:
    - Wash fruits and vegetables carefully.
    - Watch closely as foods are prepared.
    - Do not keep items which could fall into food near any preparation areas.



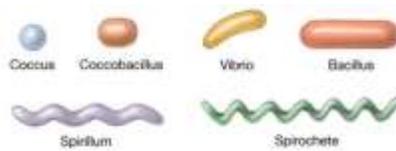
2. **Chemical** – Occurs when a chemical enters the food and is ingested.

- Cleaning agents, **sanitizer**, pesticides, certain metals, or unapproved food containers.
- How to prevent:
  - All chemicals should be stored away from or below any foods or food-contact surfaces.
  - All containers of chemicals must be clearly labeled.
  - No unnecessary chemicals should be stored on site.
  - Only approved containers should be used for food storage.
  - Protect food while chemicals are being used for cleaning.



3. **Biological** – Germs which cannot be seen without a microscope. **This is the most common cause of food borne illness.**

- *Parasites* – normally tiny worms which can live in fresh fish and meat or one cell organisms. (ex. Giardia or roundworms)  
*Viruses* – very small germs and it only takes a few to make a person sick. Often spread through poor or no handwashing. (ex. Norovirus or hepatitis A)  
*Bacteria* – germs which can grow in food and produce toxins if time, temperature, and cleanliness rules are not followed. (ex. E. coli or Salmonella)
- How to prevent:
  - Store foods at the correct temperatures.
  - Cook all foods to proper temperatures.
  - Use approved sources of water.
  - Do not work while sick.
  - Wash hands correctly.
  - Use gloves or utensils when handling **ready-to-eat foods** (foods which will not be cooked after you are handling them before being eaten).
  - Wash, rinse, and sanitize all equipment.



*Foods that can allow bacteria to easily grow are called **Potentially Hazardous Foods**. These foods must be kept hot or cold to keep them safe as they have the moisture and protein that the germs need to grow.*

**Potentially Hazardous Foods include:**

- Animal Products – all meat, poultry, seafood, fish, eggs, dairy products
- Cooked Starches – cooked rice, pasta, beans, potatoes
- Fruits and Vegetables – cooked vegetables or fruit, cut melons, cut tomatoes, cut leafy greens (lettuces), sprouts, tofu, garlic and oil mixtures

## Part 2: Preventing Foodborne Illness



### PERSON IN CHARGE

To help prevent foodborne disease, there are laws which govern food handling. All licensed foodservice facilities must have a designated **Person in Charge (PIC)** who is familiar with these laws. This information can be found in:

- North Dakota Century Code Chapter 23-09, Food Establishments, Lodging Establishments and Assisted Living Facilities
- Chapter 33-33-04 of the North Dakota Administrative Code dealing with sanitary requirements for food establishments
- Both can be found here: [www.lrdhu.com](http://www.lrdhu.com)

The facility must be operated in line with the requirements of the above-mentioned statute and rules. This person or their designee must be present and in charge during all hours of operation. This is the person responsible for knowing the food sanitation rules and procedures within the establishment and provides information for all other staff needed to perform their jobs. The PIC is usually an owner, manager, or supervisor, however it can be anyone who can demonstrate knowledge of the requirements above and has been given the authority to oversee the other employees or staff. A designated PIC must be on site all hours of operation.

These rules are in place to try and keep food safe. These rules can be grouped into three basic concepts to be followed:

- 1. Good Health and Personal Hygiene**
- 2. Temperature Control of Food**
- 3. Prevent Cross Contamination**



### GOOD HEALTH

A food handler should never work while sick. A sick person can spread illness by touching food, dishes, counters, utensils, other surfaces, other people or by coughing and sneezing. The following guidelines should always be followed to determine if an employee should be excluded from certain duties or not be allowed to work.

1. Symptoms of vomiting or diarrhea.
  - If at work:
    - Stop work immediately.
    - Report to management.
    - Go home and return no sooner than 24 hours after the last vomiting or diarrhea symptoms have ended.
  - If the symptoms occur before you arrive at work:
    - Notify the manager by telephone.
    - Do not report to work until at least 24 hours have passed after the last vomiting or diarrhea symptoms have ended.

2. If you are not feeling well and your skin or eyes turn yellow:
  - Report the symptoms to the manager immediately and seek medical attention. The manager shall notify Lake Region District Health Unit.
  - Do not return to work until after receiving clearance from a health practitioner.
3. Infected wound or cut on hand or arm:
  - Report the wound or cut to the manager.
  - Properly clean and cover the area with a waterproof bandage and a single-use glove (for hand wounds), before returning to work.
4. Sore throat with fever:
  - Report the illness to the manager.
  - Manager should limit your activities to reduce the risk of transmission. You should not work with exposed food, clean equipment, utensils, linens, or unwrapped single-service articles.
  - If you work in an establishment serving a highly susceptible population (i.e. hospital, nursing home, or preschool) then you should stop work until a health practitioner has cleared you to return.



## GOOD PERSONAL HYGIENE

Good personal hygiene practices are an essential part of providing safe food and keeping yourself healthy.

### Handwashing

Clean hands are the most important food safety tool. You cannot see germs so even if your hands look clean they could be contaminated. Be aware of what your hands are touching at all times in order to recognize when they may have become dirty and use the following guidelines. **Washing your hands often is the most important thing you can do to keep yourself healthy and the food you prepare safe.**

#### When to Wash:

1. Upon arriving at work.
2. Immediately before any food preparation which includes working with any food, clean equipment or utensils, and unwrapped single-service articles.
3. After touching any part of your body or uniform.
4. Before putting on gloves to handle food and between glove changes.
5. Before and after touching any raw foods or switching tasks.
6. After using the bathroom.
7. After handling any dirty equipment, dishes, or utensils.
8. After taking a break, smoking, eating, or drinking.
9. After any other activity which may contaminate your hands such as sweeping the floor, taking out the garbage, using any chemicals, coughing or sneezing.

## 5 EASY STEPS TO PROPER HANDWASHING



1. Use a designated handsink which should not be used for any other purpose. It must have hot and cold running water, soap, and paper towels available.



2. Thoroughly wet hands and exposed arms.



3. Apply soap and scrub for at least 20 seconds (sing Happy Birthday twice) making sure to get all fingers, fingertips (especially under fingernails), areas between the fingers, hands, and arms.



4. Completely rinse hands and arms under clean running warm water.



5. Thoroughly dry hands and arms with disposable paper towels or an air dryer. **Common cloth dish towels should never be used to dry hands.**

### Common Mistakes of Hand Hygiene to Avoid:

- Directly touching ready-to-eat foods with your bare hand is prohibited. Ready-to-eat foods are foods which will not be cooked prior to serving such as sandwiches, salads, fresh fruit, bread, or any cooked foods. If you are not cooking or heating a food after handling it then gloves, tongs, wax paper, or another utensil **MUST** be used.
- Hand sanitizers **CANNOT** be used in place of handwashing. Sanitizer will not get rid of or kill as many germs as handwashing and can only be used after hands have been thoroughly washed and dried as an additional measure.
- Gloves can also spread germs. Hands should be washed and dried thoroughly before putting on gloves as well as whenever gloves are changed. Gloves need to be changed often and **ALWAYS** when switching tasks.
- Handwashing must be done in a designated sink and **NOT** in a 3 compartment sink, preparation sink, or mop sink. As well, handwashing sinks should not be used for **ANY** other task (discarding drinks, washing vegetables, etc.).
- Handsinks should **ALWAYS** be available and have a supply of hand soap and paper towels.

## Personal Cleanliness

If you work with food you must always be aware of how your own personal habits can affect food safety. The following guidelines should be followed:



1. An appropriate level of bathing as well as clean clothing or uniform is required.
2. Fingernails should be trimmed and maintained without fingernail polish or artificial fingernails.
3. Jewelry should not be worn while preparing food.
4. Tobacco should not be used in any form during food preparation, service, or in any area which could contaminate equipment or food.
5. Food and drink should only be consumed in areas designated for employee dining. Employees can drink from a closed beverage container as long as a cover and straw is used and it is not stored over preparation areas.
6. Hair restraints should be worn to avoid contact with exposed food or sanitized equipment.
7. Personal items (coats, bags, medication) must be stored in a designated area away from food, dishes, or other supplies.

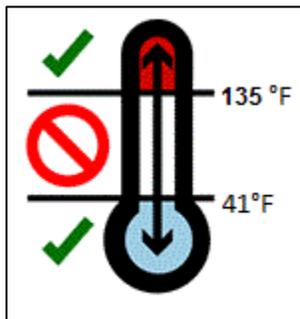


## TEMPERATURE CONTROL OF FOOD

Temperature control is the best way to kill harmful germs through cooking and to stop their growth by keeping foods hot or cold.

### The Danger Zone

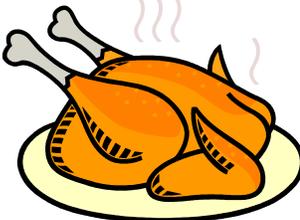
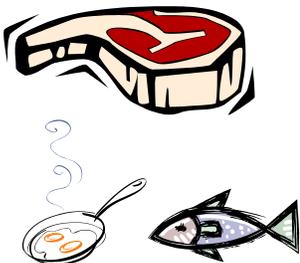
Potentially hazardous food must be maintained above 135°F or less than 41°F at all times. This means that food held in a cooler or refrigerator should be below 41°F and food that is cooked and being held hot for serving must be kept above 135°F. The temperature range between these two numbers is considered the **danger zone** where germs can grow, multiply quickly and produce toxins which can make people sick. All potentially hazardous foods should spend as little time as possible in the temperature danger zone during thawing, preparation, reheating, and cooling. Food may only be in the temperature danger zone for a maximum of two hours while being prepared. If a food is left in the danger zone for more than 2 hours it cannot be reheated or cooled for hot or cold holding and must be eaten within the next 2 hours or thrown away.



**Thawing:** Foods must never be left to thaw at room temperature (on the counter). When this is done, the outer part of the food will thaw quickly and may remain in the danger zone for too long while the center continues to thaw. The following three methods can be safely used to thaw food.

1. Inside the refrigerator at 41°F or below. Be sure to place the item in a container and store below any other foods which could become contaminated from drips.
2. Under running water of 70°F or below. If this method is used; no part of the food can be above 41°F for any part of the thawing or preparation process for more than 4 hours.
3. In the microwave oven, only if the food is immediately cooked to the recommended temperature following the thawing.

**Cooking:** All foods must be cooked to a specific internal temperature as measured by a thermometer. Different types of foods have different requirements.

<b>Cooking Temperatures</b>		
<ul style="list-style-type: none"> <li>• Poultry (chicken and turkey)</li> <li>• Stuffing or stuffed food</li> <li>• Casseroles</li> <li>• Reheated leftovers for hot holding</li> <li>• All raw animal foods cooked in a microwave</li> </ul>		<p>165°F (for 15 seconds)</p>
<ul style="list-style-type: none"> <li>• Ground meats (burgers, sausage)</li> <li>• Ground fish</li> <li>• Mechanically tenderized or injected meats</li> <li>• Eggs which are not for immediate service</li> </ul>		<p>155°F (for 15 seconds)</p>
<ul style="list-style-type: none"> <li>• Non-ground or whole muscle meats (beef and pork)</li> <li>• Seafood (fish)</li> <li>• Eggs for immediate service</li> </ul>		<p>145°F (for 15 seconds)</p>
<ul style="list-style-type: none"> <li>• Fruits and vegetables for hot holding</li> <li>• Commercially cooked foods being reheated (such as hot dogs or canned soups)</li> </ul>		<p>135°F</p>
<p>Additional cooking requirements apply to whole meat roasts (corned beef, pork roasts, ham, etc.). Please see the Food Code or contact your local health department for information.</p>		

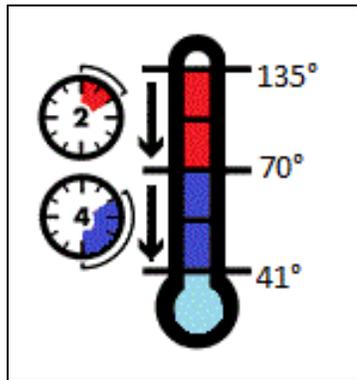
**Consumer Advisory:** An advisory is required if customers are offered or allowed to order any raw animal products not cooked to the temperatures listed in the chart above. If any items are served not cooked to the exact listed temperatures (e.g., rare hamburgers, over-easy eggs, and/or rare steaks) then those items need be identified and a safety reminder provided either on the menu or by another approved written method. Example below:

### Consumer Advisories

Thoroughly cooking foods of animal origin such as beef, eggs, fish, lamb, pork, poultry or shellfish reduces the risk of foodborne illness. Individuals with certain health conditions may be at higher risk if these foods are consumed raw or undercooked. Consult your physician or public health official for further information.

**Cooling:** Cooling is often the riskiest step in food preparation. Food must be cooled quickly to avoid being in the temperature danger zone for too long. Therefore it is best to prepare foods fresh daily by cooking and holding hot only the food that will be served that day. When it is necessary to cool foods for reheating later you must follow the **cooling curve** to avoid germ growth in the food:

1. 135° F → 70°F within 2 hours (average of 1/2° per minute)
2. 70° F → 41° F within the following 4 hours (average of 1/10° per minute)



To achieve this rapid temperature change, the cooked food must be immediately cooled using one of the following methods based upon the type of food.

- Separate or cut the food into smaller or thinner portions and place into shallow pans;
- Stir the food in a container placed in an ice water bath;
- Use rapid cooling equipment (blast or tumble chiller or ice paddles);
- Use metal containers to allow easier heat transfer;
- Add ice as an ingredient;
- Leave food partially covered or uncovered in cooler until 41°F is reached.

**Reheating:** Foods that have been cooked and refrigerated and are being prepared for immediate service in response to a customer order may be reheated to any temperature. However, if a food is cooked, cooled, and reheated with the intention to hot hold that item for any length of time then that item must be reheated to 165°F within 2 hours. A cold food placed into a steam table will not reheat this quickly. A microwave, stovetop or oven should be used to reheat food for hot holding.

- 41°F → 165°F within 2 hours

**Hot Holding:** After food has been cooked or reheated to the required temperature it must be held at 135°F or higher to avoid the danger zone and germ growth. Steam tables and other warmers should be turned on prior to placing food in them in order for them to be hot enough to keep food this temperature. Foods should also be frequently stirred and have a cover on them to maintain temperature.

**Cold Holding:** Always keep cold food at 41°F or below and protect it with covers when not serving. If using ice to keep foods cold, be sure that the ice comes up to the level of the food in the pan. Food must be at 41°F or colder when being placed on a salad bar or ice.

Potentially hazardous foods that have been cooked or prepared (e.g. meats, salads, cooked vegetables) must be eaten or discarded within 7 days. A food that is prepared and not eaten the same day must be marked with a date. This can be either the day it was prepared or the day it must be thrown if not used by. The day the food is prepared counts as day 1 of the 7 total days (e.g. chicken salad prepared on Monday and stored at 41°F or below will need to be eaten or thrown away by the following Sunday).

**Date Marking –**  
Potentially hazardous foods prepared on-site, held for more than 24 hours, and refrigerated must be labeled with the date prepared or the date to throw away.



## Thermometers

Accurate thermometers are necessary for safe food preparation and storage. All facilities must have enough thermometers on site for food temperatures to be checked. This includes metal stem thermometers for measuring the internal temperature of foods being cooked, cooled, or reheated, as well as thermometers to measure the temperatures of refrigerators.

- Each refrigerator should have a thermometer inside where it is easy to see when the door is opened. The thermometer should be checked regularly and should always read 41°F or colder.
- Metal stem thermometers should be used to check the internal temperatures of foods when being cooked, cooled, and reheated. These can be either dial or digital thermometers, although the digital thermometers are better for measuring temperatures in thin foods as they give a quicker reading. The dial thermometer works well for thick foods. For both types of thermometers the stem must be inserted into the thickest part of the food and the reading allowed to stop changing before the temperature is taken.



Dial Thermometer – best used for thick foods such as roasts as must be left in place for about 20 seconds for reading.



Digital Thermometer – better for measuring temperatures in thin foods such as hamburger patties as quicker.

- Thermometers must be cleaned and sanitized in between uses.
- Accuracy of thermometers should be checked regularly. This can be done by placing the thermometer's sensor in a cup full of crushed ice which is then filled up with water. The thermometer should read 32°F. If the thermometer does not it may need adjusting or replacement.



## PREVENTING CROSS CONTAMINATION

**Cross contamination** can happen when germs from raw food or contaminated surfaces gets onto foods.

### Tips to Avoid Germ Transfer

- Always wash hands before food preparation and especially after handling raw meat.
- Wash rinse and sanitize all surfaces every time you finish a task and between preparing different foods.
- Prepare raw meat in a designated area and on separate surfaces (e.g. cutting boards) which are separate from where other foods are being prepared. Also store wipe cloths used around raw meat separate from other wipe cloths.
- Never store foods which will not be cooked before serving in the same container or use the same utensils as were used for raw meat, fish, or poultry.
- All foods should be covered during storage and in labeled containers.
- Store scoops, tongs, or other utensils with the handle extended out of the food.
- Foods which will not be cooked before being eaten must be protected from drips from foods above. Store raw meat on lower shelves in refrigerator and in the order of cooking temperature to avoid contamination of foods below (e.g. poultry which must be cooked to 165°F must always be stored below all other meats and foods).



Top shelves store items which will not be cooked before being eaten or items such as vegetables which will be cooked to 135°F.

Seafood, fish, eggs minimum cooking temperature of 145°F.

**Raw whole meats minimum cooking temperature of 145°F.**

Raw ground meats minimum cooking temperature of 155°F.

**Raw poultry minimum cooking temperature of 165°F.**

## Cleaning and Sanitizing

Cleaning and sanitizing are different steps. Cleaning or washing; uses soap and water to get rid of dirt, debris, and left over food. Sanitizing is the step to follow cleaning which uses chemicals or heat to kill germs. Sanitizing without first washing is not effective as the dirt and debris on a surface will not allow the chemical or heat to do its job. Washing without following with a sanitizing step leaves germs on surfaces. Therefore both steps are needed. All surfaces which may come into contact with food are required to be washed, rinsed, and sanitized in that order.

All other areas, such as walls and floors, which do not have direct contact with food must also be kept clean. Keeping these other areas and surfaces clean will reduce cross contamination of food, prevent pests, and help prevent accidents.

**Washing Dishes:** Dishes, utensils, and other food contact surfaces can be washed and sanitized by using a machine or by hand. Whichever methods is used the basic steps are the same:

1. Makes sure the sink or machine is clean and sanitized before starting.
2. Scrape all left over food into the garbage.
3. Wash dishes in hot, soapy water. If doing by hand this is done in the first compartment of the sink.
4. Rinse dishes with clean, hot water. By hand this step is done in the second compartment of the sink.
5. Sanitize by soaking the dishes in warm water with the sanitizer mixed to the concentration listed on the label or in sanitizing temperature water. By hand this is done in the third compartment of the sink.
6. Air dry. A towel should never be used to dry dishes or to set dishes upon to dry as it can put germs back on the dish.

**Mechanical (Machine) Washing:** A dishwashing machine will automatically follow the wash, rinse, and sanitize steps; however, it must be checked often to make sure the correct temperature and chemical concentration are being met. Generally, wash water must be at least 120°F, chemical sanitizing concentration should be 50 ppm to 100 ppm, and heat sanitizing must reach 165°F at the surface of the dishes. Some machines will require different temperatures and concentrations as determined by the manufacturer's guidelines.

## Manual Washing Steps:



**Spray or scrape off all food leftovers**

**Wash:**

- Hot soapy water no less than 110°F

**Rinse:**

- Free of detergent with clean water

**Sanitize with Chemical for 1 minute (use label directions ):**

- 75°F or > with Chlorine 50 – 100 ppm
- 75°F or > with Quaternary Ammonium 200 ppm

**Or Sanitize with Heat:**

- 171°F for 30 seconds.

**Air dry, do not use towels or place on towels to dry.**

**Wiping Cloths:** Wet cloths can be used to sanitize work areas that have been cleaned and rinsed. The cloths should always be stored in sanitizer when not actually being used. The sanitizer should be mixed following the directions on the label and should be changed and remixed often as the dirt, grease, and food particles which get picked up by the cloths make the sanitizer lose its effectiveness.

- Store cloths in clean sanitizer between uses. The sanitizer should be warm water and sanitizer WITHOUT soap added as the soap will prevent the sanitizer from working properly.
- Use different cloths and buckets for storing cloths used on areas for raw meat preparation and other areas.
- Use different cloths and buckets for food contact surfaces and non-food contact surfaces.
- Clean and rinse dirty cloths before putting them back in the sanitizer bucket.
- Use test strips to check that concentration of sanitizer is correct. Chlorine concentration should be 100 to 200 ppm and Quaternary Ammonium products generally at 200 ppm concentration.

## Part 3: Conclusion

Food safety is important every day and everywhere. The more you know about how to protect yourself and your customers from foodborne illness, the more you can do to stay healthy and prevent illnesses. More detailed information regarding the requirements of the food regulation can be found here:

[www.lrdhu.com](http://www.lrdhu.com)

or by contacting Lake Region District Health Unit:

Environmental Health Division  
524 4<sup>th</sup> Avenue NE – Unit 9  
Devils Lake, ND 58301  
701-662-7035

## Summary of Major Risk Factors

- ❖ **Poor Personal Hygiene** – handwashing, glove use, trimmed fingernails, clean clothing, no jewelry, restrained hair.
- ❖ **Employee Health** – vomiting, diarrhea (excluded for 24 hrs after last episode).
- ❖ **Improper Holding Temperatures** – hot foods hot (135° or above) and cold foods cold (41° or below), thawing, cooling curve and reheating.
- ❖ **Inadequate Cooking** – (poultry 165°, ground meat 155°, fish & eggs 145°).
- ❖ **Contaminated Equipment** – wash, rinse, sanitize and keep raw meat away from other foods.
- ❖ **Food From Unsafe Source** – mark of inspection on meat and poultry, no home canned or cooked goods.

## Glossary

**Cold Holding** – Food is kept cold to prevent germ growth by using a refrigerator or ice to maintain it at or below 41°F.

**Contaminated** – made dangerous, dirty or impure by adding something harmful or unsuitable to it.

**Cooling Curve** – Process of taking a hot food and making it a cold food. Cooling must occur within 6 hours with the temperature dropping from 135°F to 70°F within the first 2 hours and from 70°F to 41°F within the remaining 4 hours.

**Cross Contamination** – When germs from one item are passed to another food item, usually raw food to ready-to-eat food.

**Danger Zone** – When the temperature of food is between 41°F and 135°F which allows germs to grow quickly.

**Date Marking** – Potentially hazardous foods which are prepared and will be refrigerated for more than 24 hours before being consumed must be marked with the date of preparation or the date by which to discard.

**Foodborne Illness** – Sickness caused by germs or toxins in food, also called food poisoning.

**Highly Susceptible Population** - means a group of persons who are more likely than other people to experience foodborne disease because they have weakened immune systems.

**Hot Holding** – Food that is kept hot after it has been properly cooked or reheated. Food must be maintained at a temperature of 135°F or hotter.

**ppm** – Parts per million. A way of expressing the concentration of a diluted substance, one ppm is equal to 1 mg/L.

**Person In Charge** – means the individual present in a food establishment who is responsible for the operation at the time of inspection.

**Potentially Hazardous Food** – Foods which are moist and protein rich and will support germ growth when the temperature is in the danger zone.

**Ready-to-Eat** – Foods which do not require any additional preparation or processing before they can or will be eaten.

**Sanitizer** – a substance used to kill germs on surfaces.