NASSAU COUNTY

# Food Managers Training Course Manual

NASSAU COUNTY DEPARTMENT OF HEALTH

**3rd Edition**

# Office of Food Protection
# Nassau County Department of Health
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# NASSAU COUNTY DEPARTMENT OF HEALTH
# FOOD PROTECTION SERVICES

While enforcing New York State Sanitary Code and the Nassau County Public Health Ordinance, the Department protects the public's health when conducting the following services:

**Inspections**:
The Department's sanitarians inspect areas of food preparation, service and storage in all types of food establishments, including restaurants, delis, schools, nutrition sites, bakeries, bars, ice cream shops, and a multitude of temporary events such as fairs, festivals, carnivals, fund-raisers, etc. After the inspection is completed, the sanitarian leaves a written inspection report that details all the violations observed with the owner, manager or other person in charge. If any imminent Public Health Hazards (violations that might cause people to become ill from eating the food) are found, they must be corrected at the time of the inspection.

**Food Preparation Safety Surveys**:
The sanitarian may also interview food service personnel such as the cook(s), wait staff, bartenders, etc. and conduct a Hazard Analysis Critical Control Point (HACCP) Monitoring Procedure Report about a specific menu item of interest. The information on this report can then guide the staff to safely prepare foods that might otherwise cause foodborne illness or intoxication.

**Investigation of Alleged Foodborne Illness and Complaints**
The Sanitarian will conduct an investigation to determine if consuming particular food(s) or beverage(s) caused illness, and what, if any, preventative measure(s) should be started. Department sanitarians also investigate general sanitation complaints.

**Provide Training (Food Managers Training Course)**
The Department conducts ten-hour Food Managers Training Courses for persons who operate, own, manage, or are key personnel who oversee the preparation of foods or beverages, in a food service establishment. A certified person is required to be in each high-risk food establishment during all hours of food preparation and operation. If the establishment is open for more than 12 hours per day, then a second manager must be certified. The Food Managers Certificate is valid for 3 years and is renewable through our renewal class. It is the manager's responsibility to contact the Department and arrange for recertification. If the manager fails to renew the certificate after three years, they are required to take the 10-hour course again. The person taking the renewal class must be the same person the certificate was issued to. The certificate is not transferable to any other person and cannot be duplicated. Like the Food Establishment Permit, the Food Managers Certificate must be posted in public view. The Food Managers Class is now offered in Spanish. Handout material is available in other languages upon request.

The purpose of the Food Managers Certification Program is to aid the food service establishment operator in improving sanitary practices. The ultimate goal is to safeguard the consumer through the reduction and/or elimination of those practices and equipment that lead to foodborne illness or intoxication (poisoning).
The objective of the Food Managers Certification Program is to provide the information necessary to meet the above stated purpose of preventing foodborne illness. Therefore, the goals of this program include having the operator:

1. Become aware of the magnitude of foodborne illness.
2. Become knowledgeable of different types of agents that frequently cause foodborne illness outbreaks.
3. Understand the factors that contribute to such outbreaks.
4. Learn and use those procedures that will help prevent future foodborne illness.

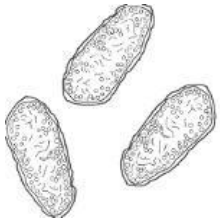
The awesome responsibility of protecting the dining public begins with gaining the knowledge to do so. By applying the principles learned in this program, the food service manager will be able to achieve the basic goal of protecting the public.

## SESSION ONE

### Foodborne Illness

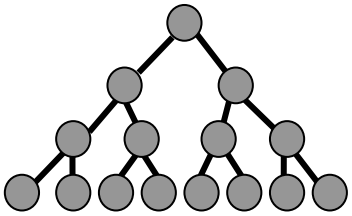
Despite significant advances made in food protection, incidents of foodborne illness are still a serious problem in this country. Tens of millions of Americans suffer from food-borne infections and intoxications each year which lead to hundreds of thousands of hospitalizations and thousands of deaths. The estimated economic impact nationally is in the billions of dollars of medical expenses and lost work hours annually. Although most foodborne illnesses are not officially reported to the local Health Department, national statistics indicate that retail food service establishments lead the list of places where incidences of foodborne illness occur.
There are four main types of agents that cause foodborne illness: bacteria, viruses, chemicals and parasites. In addition, adulterated food may be caused by a foreign object (jewelry, pushpins, pieces of glass, insects, fingernails). Bacteria and viruses have been identified as the leading causes of foodborne illness in the United States. Toxic chemicals in our foods make headlines from time to time. Finally, parasites in meat, fish, vegetables and fruit continue to be a public health problem. Each agent is significant in causing foodborne illness, intoxication or other harm and should not be taken lightly.
It is important to understand the sequence of events that lead to an illness. These events are: the food (food, beverages or ice) is contaminated with a harmful agent, then the product is consumed and an illness or intoxication occurs. A foodborne illness can be prevented if contamination is controlled and safe food is served. Do not allow contamination and/or growth to take place. Remember:

**WHEN IN DOUBT, THROW IT OUT!!!!!**



**Bacteria** are small single cells of living matter. Their average size is 1/25,000 of an inch long. Many are so small that one million could fit on the head of a pin. They take in food through the walls of the cell, give off waste and are masters of reproduction. Many bacteria are useful to us. It is estimated that a typical person has ten times more bacterial cells than human cells. It is also estimated that 500 to 1000 species of bacteria live in the human gut and a roughly similar number on the skin.

Bacteria on food can be divided into two groups: spoilage and pathogenic. Spoilage bacteria often produce a change in appearance, odor, taste or texture. Pathogenic bacteria, which can cause human disease, are completely undetectable with the human senses.



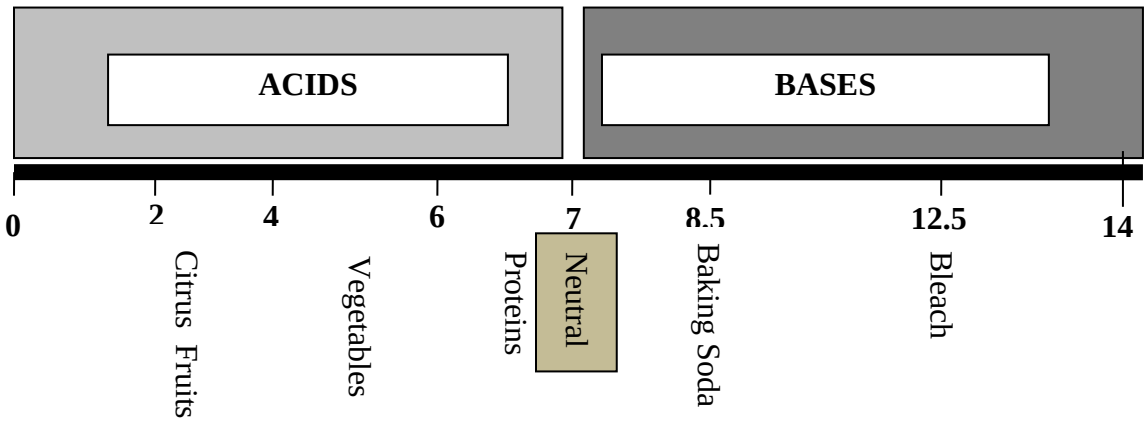
Bacteria multiply by a simple division of the cell into two cells. This division, called **binary fission**, occurs every 15 to 20 minutes under ideal conditions. In essence, one bacterium could potentially produce 530 million after 30 divisions, in just 7 ½ hours. One thumbprint transfers 1,000 bacteria- the cumulative result is staggering. In a short time, they could cover the surface of the earth. Fortunately, many bacteria die quickly because conditions in the environment are not favorable to continue uninhibited growth.
Some other adaptations allow pathogenic bacteria to thrive and contribute to human illness. Spores are bacterial organisms that have released their moisture to form a capsule or protective shell that can withstand extreme environmental conditions. The spore is heat resistant and can survive normal cooking temperatures. Some can survive boiling for 6 hours!! The ingestion of a large number of spores can cause a toxic type of foodborne illness.

Some pathogenic bacteria can produce liquid wastes or toxins, which can cause illness in people. Two types of toxins may be present in food: Heat Labile Toxins which are destroyed in the cooking process and Heat Stable Toxins which are NOT destroyed in the cooking process even after hours at boiling temperatures.

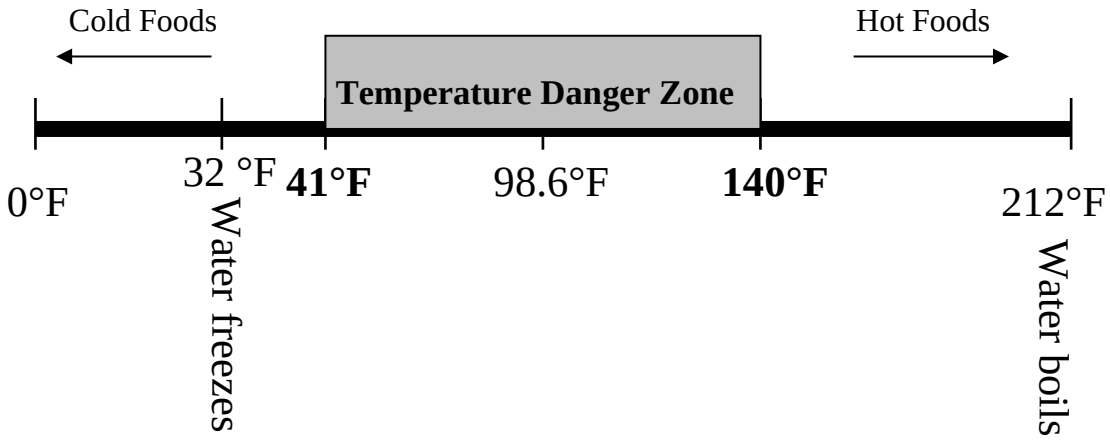
Due to their ability to reproduce so efficiently, it is important to understand the factors that affect bacterial growth. (**FATTOM**)

**F – Food** - Animal and plant protein foods and starchy foods supply necessary nutrients. Previously referred to as "potentially hazardous foods", the term (TCS) "Time/Temperature Control for Safety" includes in whole or in part the following items: milk, milk products, eggs, meat, poultry, fish, shellfish, edible crustacean, cooked rice, cooked potato, cooked pasta, cut tomatoes, or other ingredients, including synthetic ingredients, capable of supporting growth of infections or toxigenic microorganisms.

**A- Acidity** – pH is used to measure the amount of acidity or alkalinity in a food. Most foods that we eat are acidic. Pathogenic bacteria will grow when the pH is between 4.6 and 7. The most desirable range of pH for pathogenic bacteria is between 6 and 7, which happens to be the range of pH for most TCS foods.




**T- Temperature** – Pathogenic bacteria thrive at a certain range of temperature which is referred to as the **Temperature Danger Zone**. All TCS foods held or served must be either under 41° F or above 140° F in Nassau County as per NYS Sanitary Code Chapter 1, Subpart 14-1.




**T – Time** – After adjusting for all other growth factors and approximately two hours have passed, most bacteria begin to rapidly grow, doubling every 15-20 minutes.

**O- Oxygen** – Most bacteria prefer an environment rich in oxygen, and are referred to as aerobic bacteria. A small group prefers a low oxygen environment and is called anaerobic bacteria. A third group of bacteria capable of switching between these environments are called facultative anaerobic bacteria. Because of the danger associated with bacteria that thrive in low oxygen environments, operators may not reduce the oxygen environment of a product without express permission from New York State Department of Agriculture and Markets or New York State Health Department. This first requires a plan developed by an approved food scientist. It includes the processes of home canning, sous vide and vacuum packaging.

**M- Moisture** – Harmful bacteria require water to grow. The water activity value of a food ($a_w$) must be greater than 0.85 in order to provide a good environment for reproduction.

Ways to Protect Against Foodborne Illness:

Rapid Cooling- TCS foods must be cooled properly to prevent the growth of bacteria. The code requires the cooling to include the reduction of temperature from **140° F to 70°F within 2 hours or less and then from 70° to 41° F in an additional 4 hours or less**. This can be accomplished by the following methods:

1- Reducing volume in shallow pans no greater than 4" deep
2- Cutting large roasts into pieces no larger than 6 lbs. each
3- Creating an ice/water bath in the food prep sink (50% ice/50% water) and immersing the food container to be cooled, stirring occasionally.

In each of these procedures it is important to leave the product uncovered until it is completely cooled (below the temperature danger zone).

**Steam Tables/Salad Bars**
Whether holding food hot or cold, it is important to keep the foods out of the temperature danger zone. Foods held in the steam table must be maintained at 140°F or above. Foods held at a salad bar or deli case must be maintained at 41°F or less. The steam table should never be used for reheating foods, only maintaining them at 140°F or above.

**Defrosting**
There are three acceptable ways to thaw or defrost a product. TCS foods must be thawed in a refrigerator (41°F or less) or under cold running water (70° or less) or in a microwave. If opting for the microwave procedure, the food must continue directly into cooking.

**HACCP**- Hazard Analysis Critical Control Point - is a system of monitoring methods of food preparation. The food is evaluated for potential microbiological hazards and the preparation is studied to identify those points at which danger exists. From this information, controls or monitoring points are established for the safe processing. HACCP has been adapted by the food industry worldwide to help ensure the production of safe wholesome food.

## SESSION TWO

**Cross Contamination** occurs when bacteria or viruses are transferred from one food or surface to another. They are virtually hitchhikers as they cannot travel on their own. Therefore, it is important to evaluate food service establishments in terms of how both living and non-living factors affect the transmission of these organisms.

**Non-Living Transmitting Agents**

**Raw Food**- Care must be taken when storing foods. Cross contamination can be avoided by storing ready to eat foods or food that will have no further heat treatment above raw animal products. Attention should be paid to minimum cooking temperatures of animal products in storage as well. For instance, salmon (minimally cook to 140°) should be stored above ground beef (minimally cook to 158° F).

**Water**- No food or beverage should be stored under waste lines. Ice to be consumed or used for cold storage of packaged beverages must be made from potable water, handled in a sanitary manner, sorted in a continuously draining sink, cooler, or bin and protected from contamination.

**Equipment** should be washed, rinsed and sanitized. If an item is too large or heavy to be moved to the three compartment sink or disassembled, this process should occur in place. It is important to use the proper concentration of sanitizer in order to kill pathogens.

Housekeeping is everyone's job and should be organized by use of a Master Cleaning Schedule to assure that each employee is aware of their cleaning responsibilities and can be held accountable to complete them.

All **food containers** should be stored at least 6" above the floor on clean surfaces in a manner to avoid splash and contamination. Raw or prepared foods should never be stored directly on refrigerator shelves. When food is stored in an outside walk-in box, building or structure, there must be effective overhead protection for the food "in transit" to the kitchen.

NSF

**Utensils** must be used appropriately and stored in a clean sanitary manner. Dipper wells using running water are required for frozen desserts scoops. Employees should only be touching the handles of silverware or the lower half of glasses and outer edges of plates and bowls. Storage of eating utensils at wait stations or self-service areas, should be stored with only the handles exposed.

Employee **clothing** must be clean and worn in the kitchen only including footwear. Street clothes are prohibited. When aprons get soiled, they should be replaced.

**Air** within the establishment can also transmit pathogens. Ventilation units as well as fan housing units within refrigeration units should be maintained to eliminate mold and mildew growth.

**Wiping cloths** and sponges must be stored in an approved chemical sanitizer between uses. The strength of the solution is based upon the chemical being used.

| | |
|---|---|
| Chlorine bleach | 150 ppm |
| Iodine | 25 ppm |
| Quaternary Ammonia | 400 ppm |

It is necessary to have the appropriate test kit for the chemical used.

**Money** has not been found to statistically impact the transmission of pathogens to date in food service. For this reason, current federal, state and county food codes do not specifically address cross contamination with money. While it is not a violation to handle money with the same gloves that handle ready to eat foods, it is not recommended by the Department. As this is continually being studied, potential changes in procedure might occur.

# Living Transmitting Agents-Vectors

**FLIES**

The most abundant non-biting insect, the common housefly presents a great threat to human health.

**Facts**

- Can lay up to 2700 eggs in 30 days
- Within one day maggots hatch from egg (become adults in 7-10 days)
- Eggs laid in dead and decaying animal and vegetable material, food intended for your customers and your staff, garbage, and human and animal fecal manure.
- Life span is approximately 30 days
- Diseases they carry: salmonella, dysentery, intestinal worms

How do they spread disease?

1. Eat by regurgitation thereby spreading their vomit on the food they intend to eat
2. Hairy, sticky legs
3. Defecation

**Control**

Keep them out

1. Provide screens for windows and doors
2. Keep doors closed
3. Maintain garbage and dumpsters by bagging garbage, keeping dumpsters clean and closed; try to move dumpster away from rear kitchen door

Once inside

1. Fly paper or tapes – **but not** over food or food surfaces
2. Electric fly traps aka insect light traps (designed to retain insect within the device)
3. Extermination – only handled by NYS DEC licensed applicator with 7F certification.

**COCKROACHES**

**FACTS:**

- Foods they like: all foods but they prefer starchy foods, rice, grains, cereal, as well as glue in cardboard boxes, wallpaper paste
- Conditions they prefer: warm, moist, dark areas
- Breeding habits: eggs laid in capsules, one capsule laid every 20-25 days, each capsule contains 18-48 eggs
- Adults can live up to one year

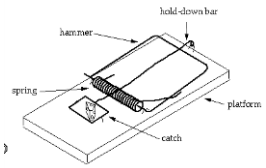
**CONTROL:**

- Inspect supplies, discard cardboard
- Keep food in insect proof NSF containers
- Eliminate cracks and crevices
- Repair plumbing leaks
- Use glue boards to monitor
- Professional Extermination – only a certified applicator may use pesticides!!

## MICE

**FACTS:**

- Small, nocturnal
- Nest in walls, cabinets, areas of clutter
- Mainly eat whole grains
- Signs include gnawing, droppings; communicates through urine
- Breed a new litter almost every month
  - 6-10/litter
  - 10-12 litters/year
- Range = 10-30 ft




**CONTROL:**

- Keep establishment clean
- Eliminate breeding areas
- Use spring traps, glue boards
- Eliminate food, water, shelter sources. Keep food in rodent proof containers.
- Fit doors to eliminate gaps – the size of a dime allows for mouse entry
- Professional Extermination

## RATS

**FACTS:**

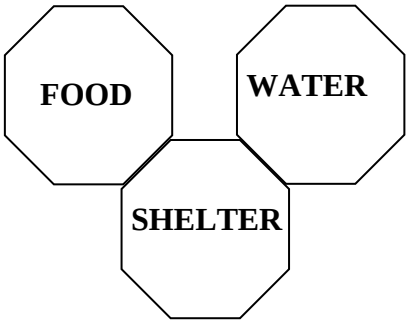
- Eat everything including meat
- Nocturnal, burrowers
- Can climb, swim, jump
- Can plan, communicates through droppings
- Range = 100-150 ft.
- Signs include gnawing, droppings, burrows, rub marks (sebum), tracks

**CONTROL:**

- Maintain garbage in sanitary manner
- Sanitation
- Traps: snap traps/ glue boards
- Fit doors to eliminate gaps – the size of a quarter allows for rat entry
- Properly seal all gaps around openings to exterior (pipe or utility openings)
- Professional Extermination – only licensed exterminator may apply rodenticides.

**Integrated Pest Management**

Professional pest control operators understand that all pests seek the following:



If you can eliminate these items for the pests, you will not have pests. Have your exterminator provide you with a report that informs you of structural and sanitation issues in your establishment that contribute to an infestation. Identify the source of food, water and shelter and then eliminate them. Remember, only a certified pest control operator may apply pesticides. No pesticides may be stored in the establishment or used by the operator unless the operator is certified.

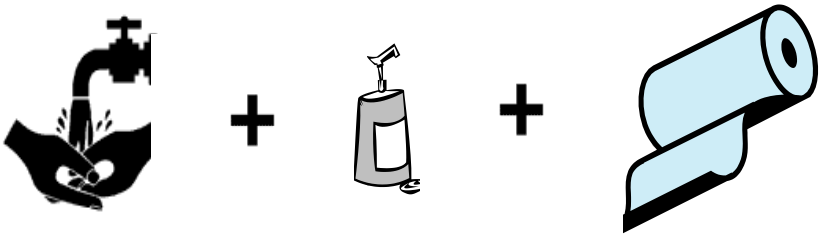
## Contamination from Employees

## Personal Hygiene

Employees are a major source of contamination and foodborne illness within your establishment. It is imperative to educate your staff regarding hygiene.

- Clothing – Wear clean garments and footwear, uniform or apron. Do not work in "street clothes"
- Hair must be properly restrained in such a way to prevent contamination of the food. Acceptable choices include, clean hat, cap, hairnet, "do-rag", bandana. Shoulder length or longer hair should be pulled back in a clip, braid, or pinned up.
- Fingernails should be short, clean and free of objects that could detach (fake nails, embellishments)
- Excessive jewelry should be eliminated including dangling necklaces, earrings, bracelets
- Eating by employees in the food prep areas is prohibited

## Hand washing



**<u>Question</u>:**

**What is the number one activity that can prevent illness to you, coworkers, customers, family and friends??**

**Answer:**

**Proper Hand washing**

Hand washing sinks in the establishment must be convenient, accessible and in plain sight. There is a strong association between inadequate handwashing and the transmission of foodborne illness, therefore, all handwashing sinks must be always accessible, working and properly stocked.

Most importantly, handwash sinks must be used regularly!!! **LEAD BY EXAMPLE!!!**

Establish times with employees for handwashing:

**Before:** starting work
Putting gloves on

**After**:

| | | |
|---|---|---|
| Using the toilet | Eating/Drinking | Smoking |
| Coughing/Sneezing | Handling raw foods | Touching yourself |
| Taking gloves off | Taking out garbage | Mopping/Sweeping |
| Using cellphone | | |

In other words: **Frequently!!!**

Technique for proper handwashing:

1. Use warm water and liquid hand soap
2. Briskly rub hands together to include backs of hands, wrists, in between fingers, fingernails. (for 20-30 seconds)
3. Use single service towels for drying.

Handwashing sinks must be convenient, accessible in plain sight and not more than fifteen feet from any food prep/service area. They must be equipped with an adequate supply of soap and paper towels. Hot and cold water must be supplied through either a tempered mixing valve or a single lever faucet. Signs must be posted at all handwash sinks identifying them. Public restrooms must be provided if the establishment seats 20 or more patrons.

**Employee Health and Disease Control**

Workers ill with vomiting, diarrhea, infected cuts, burns, or other disease capable of being transmitted through food preparation or service may not work in a food establishment until those symptoms have resolved. It is very important to establish a sick worker policy with employees so that they know to report any of the above mentioned illness to the management. It is then the responsibility of the management to exclude such worker.
If an employee is diagnosed with a foodborne illness, it is also required that the management contact the Health Department. That worker may return to work only after receiving clearance by providing written medical documentation and permission from the Nassau County Department. of Health. Monitoring the health of employees is one of the most important things a manager can do to prevent foodborne illness outbreaks.

## SESSION THREE

Despite significant advances made in food protection, incidence of foodborne illness is still a serious problem in this country. Tens of millions of Americans suffer from foodborne infections and intoxications each year. The estimated economic impact nationally is in the billions of dollars of medical expenses and lost work hours annually. There are hundreds of thousands of hospitalizations and thousands of deaths attributed to foodborne illness. Although most of these illnesses are not officially reported to a Health Department, national statistics indicate that retail food service establishments lead the list of places where they occur.

There are a number of common foodborne illnesses that often cause outbreaks in food establishments. In order to understand the causes of foodborne illness you should have knowledge of the sequence of events that lead to an illness. The food (food, beverage, or ice) is contaminated with a harmful agent, then the product is consumed and an illness or intoxication occurs. Foodborne illness can be prevented if contamination is controlled and safe food is served. Do not allow contamination and/or growth to take place. Remember: **When in doubt, throw it out!!!**

**Terms related to Foodborne Illness**

**Bacteria**- are single cell microorganisms that can only be seen under a microscope. Pathogenic bacteria cause foodborne illness. They cannot be seen, smelled or tasted. Bacteria, which are actively living and/or growing, are said to be in the vegetative state. Pathogenic bacteria in this condition are “heat sensitive” and will mostly be killed at proper cooking temperatures.

**Spores** – are bacterial organisms that have released their moisture to form a capsule or protective shell that can withstand extreme environmental conditions. The spore is Heat

Resistant and can survive the normal cooking temperatures including boiling for many hours. The ingestion of large numbers of spores can cause a toxic type of foodborne illness.

**Toxins** - are liquid wastes produced by pathogenic bacteria that cause illness in people. Two types of toxins may be present in food. The first is a heat labile toxin which is destroyed in the cooking process. The second is a heat stable toxin which is not destroyed in the cooking process even after hours at boiling temperatures.

**Viruses** are sub-microscopic organisms that do not grow in or on foods but are hitchhikers in that they are in or on the contaminated food or beverage and when ingested by humans, grow in the digestive tract causing a foodborne illness.

**Staphylococcus aureus**

- Found on the hands of 20% of healthy people
- Found in noses of 30-50% of healthy people
- Found in the throat, on hair, skin, in feces of man and animals
- Can exist in both aerobic or anaerobic environment
- High sugar/salt does NOT inhibit growth
- Produces a heat stable toxin NOT destroyed by cooking

Staphylococcus transmission occurs when a food worker uses his/her bare hands or a contaminated glove to touch ready-to-eat foods such as cold cuts, processed foods, or cooked foods and then the contaminated food is left in the temperature danger zone. This allows for rapid growth of the bacteria and subsequent production of its heat stable toxin. Symptoms include profuse vomiting and stomach cramps usually within 1-8 hours after eating the contaminated food.

**Clostridium botulinum**

- Grows in anaerobic environment
- Forms heat resistant spores
- Produces lethal Neurotoxin

Clostridium botulinum is a spore forming bacterium that is naturally occurring in water, soil and air. When the right conditions occur, the spore turns into a living bacterium and produces a lethal toxin. The most common foods that are associated with botulism poisonings are improperly canned “low acid” foods, fresh garlic in oil, smoked fish, improperly cured and stored meats/sausages, fresh herbs in oil, baked and cooked potatoes, vacuum sealed foods and sautéed onions. To prevent botulism: store fresh garlic in oil at 41°F or colder, use only commercially canned foods, keep sautéed onions and cooked potatoes out of the temperature danger zone, buy smoked fish from licensed wholesalers and store at 38°F or colder.

Permission to can foods or reduce/modify oxygen in packaging foods must be obtained from New York State.

**Clostridium perfringens**

- Grows in an anaerobic environment
- Forms heat resistant spores
- Produces heat stable toxin which can survive hours of boiling
- Commonly found in soil dust and the intestinal tract and feces of man and animals

Clostridium perfringens is a pathogenic bacterium that frequently grows in large quantities of food, particularly meat products (that have been temperature abused). For example, stews, sauces, and gravies made in large quantities and then improperly cooled within the required time are especially at risk. Remember that when cooling, foods must move quickly through the temperature danger zone. A heat resistant spore not only can survive cooking, but also is stimulated by that very heat to germinate into an active stage where it can grow and multiply rapidly when the temperature decreases.

**Bacillus cereus**

- Forms heat resistant spores
- Produces two types of toxins
- Commonly found in grains, vegetables, grain products, particularly rice

Bacillus cereus is a spore forming, pathogenic bacterium that is commonly found in or on vegetables, grains, and grain products. Since they are virtually everywhere and therefore unavoidable in the foods we cook, it is important to monitor the temperature of these foods during cooking, cooling and reheating. Keep foods out of the temperature danger zone (41 °F to 140°F) as much as possible.

**Escherichia coli** (E. coli 0157:H7)

- Lives in the intestinal tract of healthy cattle, pigs, deer, rabbits, sheep
- Can be a contaminant in any produce including field greens, raw seed sprouts, unpasteurized juices
- Can exist in both aerobic or anaerobic environment
- Particularly lethal to young children and elderly

There are many species of E. coli that do not cause illness but E.coli 0157:H7 has emerged as a very dangerous pathogen causing severe human disease and death. In otherwise healthy adults, an E.coli 0157:H7 infection can result in severe bloody diarrhea and abdominal cramps. In young children and the elderly or those with other medical issues, it can initially cause profuse, bloody diarrhea which is then followed by a

complication called hemolytic uremic syndrome (HUS) which results in kidney failure. HUS is a life threatening condition that usually requires blood transfusions, kidney dialysis and hospitalization.

During the slaughter process, solid pieces of meat can become contaminated with E.coli 0157:H7. Proper cooking kills the bacteria. When meat is ground, the process moves the outside surface of the meat to distribute throughout the product. It is for this reason, that ground beef products (e.g., hamburgers, meatloaf, lasagna) must be cooked to a minimum internal temperature of 158°F. New York State Sanitary Code allows for cooking ground beef to a lower temperature only if it is requested by an individual customer. Rare and medium rare ground meat products carry an increased risk of illness since less than 10 cells of E. coli 0157:H7 bacteria need to be ingested to cause illness.

Protect yourself and your customers during the handling and preparation of ground meat products by using an effective barrier system in your kitchen which includes single use gloves and other utensils. All prep tables, cutting boards, grinding equipment and utensils coming in contact with raw meat should be thoroughly washed, rinsed and sanitized between uses.

**Salmonella** (Salmonellosis)

- Source is intestinal tract and feces of infected animals and man
- Is a common contaminant of raw foods of animal origin (e.g. poultry, shell eggs, beef, pork) and fresh produce such as oranges, melons and tomatoes
- Can grow on or in most any food
- Can grow in the presence or absence of free oxygen

Salmonella can cause very serious illness in humans. For the very young or very old, it can be fatal. There are many species of salmonella that can cause illness (salmonellosis) in humans.

When infected animals are slaughtered and processed, the meat is subsequently contaminated with Salmonella. Often, animals are infected with Salmonella by the feed they eat or just from being in the farm environment. The infection spreads to other animals through contact, contact with feces, during transit and while the animals are held in pens. Salmonella is also commonly found on and in turtles, frogs and lizards.
Raw products of animal origin are the main vehicles by which Salmonella enters food service establishments and homes. When Salmonella contaminated foods are mishandled, undercooked or when cooked foods are re-contaminated after cooking, or "ready to eat" foods are cross contaminated, the bacteria are able to readily grow when the foods remain at unsafe temperatures. People who eat the contaminated food develop Salmonellosis which causes abdominal cramps, diarrhea, fever and vomiting which usually develops in approximately 12-36 hours but may not show up for up to 72 hours.

**Shigella** (Bacillary dysentery)

- Found in human feces
- Transmitted through fecal/oral route
- Ingestion of 5 to 10 bacteria can result in illness

Shigellosis is a bacterial intestinal infection that can cause nausea, abdominal cramps, bloody, mucous-laden diarrhea, vomiting, fever and toxemia. Outbreaks of shigellosis are usually caused by an infected worker who does not use effective barriers when handling ready to eat foods. Another common source of shigellosis is consumption of feces-contaminated fresh produce that is NOT thoroughly washed prior to preparation and/or consumption.

To reduce the risk of shigellosis, practice thorough, proper hand washing regularly, good personal hygiene, and use sanitary gloves and/or utensils when handling ready to eat foods. Thoroughly wash any produce that is to be eaten raw.
Remember the importance of excluding ill workers when diarrhea or nausea/vomiting is reported.

**Campylobacter**

- Found in poultry, cattle, pets, pigs, rodents, birds, and non-chlorinated water
- Common contaminant of undercooked meat and raw milk
- Most raw poultry is contaminated with campylobacter

As Campylobacter is thought to be the number one cause of bacterial diarrhea in the U.S., it is important to practice procedures that reduce the risk of transmission. Use only pasteurized milk and dairy products. Use chlorinated water from an approved source. Thoroughly cook all animal products, especially poultry to proper temperatures. Thoroughly sanitize all cutting boards, utensils and food contact surfaces after use particularly those in contact with raw animal products.

**Listeria**

- Found in soil, water, animals, and animal feed
- Common contaminant of unpasteurized milk, soft cheeses, vegetables, ready to eat meats (e.g. cold cuts, hot dogs)

Listeriosis can be a very serious illness for pregnant women or immune compromised people. The bacteria actually flourish in cold temperatures, so refrigerated foods are often the source. In order to prevent disease, it is important to thoroughly cook raw food, wash all fresh produce and separate uncooked meats from ready to eat foods. Avoid unpasteurized milk and foods made from unpasteurized milk. Wash hands properly and wash, rinse and sanitize utensils and food contact surfaces after handling or being in

contact with uncooked foods, especially raw animal products. Consume perishable and "ready to eat" foods as soon as possible.

**Yersinia**

- Raw pork products are the most common source of this bacteria but can also be found in ground beef, oysters, fish and unpasteurized milk
- Can grow in refrigerated temperatures

To reduce the risk of yersiniosis, all raw pork products should be safely handled and cooked to a minimum temperature of 150°F. Equipment used to handle or process raw pork must be thoroughly cleaned and sanitized after use.

All procedures that would prevent cross-contamination between raw pork products and "ready to eat" products should be used. Thoroughly wash hands after handling raw pork products.

**Vibrio cholera** (Cholera)

- Foods, beverages or water supplies contaminated with human feces or vomitus is common source
- Fresh and marine water organisms are often reservoirs for this bacteria

To reduce the risk of cholera, use water only from approved sources (i.e. public water, certified wells, commercially bottled). Make sure all foods and beverages are also from approved sources. Thoroughly wash all produce that is to be eaten raw. Shellfish must be accompanied by tags indicating approved source and these tags must be retained for 90 days, so that shellfish beds can be monitored for contamination. Exclude ill workers from the establishment. Practice good personal hygiene and use utensils effectively. Eliminate potential cross contamination between raw fish/shellfish and ready to eat foods.

## Viruses

According to statistics available from NY State, viruses are responsible for many outbreaks of foodborne illness. Years ago, many of these outbreaks remained a mystery because scientists were unable to identify and track these organisms. Today, techniques are available that allow for the confirmation of viral foodborne illness. A number of viruses commonly associated with food include Calicivirus, Norovirus and Hepatitis A.

- Viruses are smaller than bacteria (submicroscopic)
- Viruses do not grow or multiply in foods but can survive in foods for long periods of time
- Viruses can survive freezing and some are able to survive normal cooking temperatures.
- Very low numbers of viruses in food can cause illness. Although thousands may be excreted per gram of human waste, only ten virus particles are needed to cause human illness.

- Viral particles can be ingested or inhaled through coughing, sneezing or vomiting of people
- Viruses are most contagious prior to clinical symptoms. That is, the infected person is shedding the virus in large numbers in their stool, but may not feel ill or show any clinical symptoms.

Viruses are shed from the gastrointestinal and respiratory tracts one to two days before and during a viral infection and up to 2-3 weeks after symptoms begin, whether the person experiences symptoms or not. Unlike bacteria, viruses do not require specific foods for survival or large numbers to cause an illness. Viruses travel easily and transfer readily from ill food workers to food and then the victim. They are "hitchhikers" and can readily contaminate an entire kitchen, including utensils, door handles, faucet handles and cutting boards, etc.

**Hepatitis A** (Infectious Hepatitis)

- Incubation can be as early as 10 days up to 50 days.
- Virus lives in the intestinal tract and liver of people
- Clams, mussels, oysters are primary food source

This virus can be very easily transferred from infected food workers to foods. Therefore, this virus is of particular importance to food establishments. Food workers can have the virus for up to 6 weeks without showing any symptoms. Exposure to as few as 100 of these viruses can cause illness. Frequent, thorough hand washing and the use of effective barriers when handling foods is so important to prevent transmission. If contaminated human feces enter open salt or estuarine water, shellfish can easily become a reservoir for the virus. Shellfish must be accompanied by tags indicating approved source and these tags must be retained for 90 days, so that shellfish beds can be monitored for contamination.

To further reduce risk of this viral illness, exclude ill employees from the establishment. Practice frequent and thorough hand washing, especially after using the toilet. Use utensils and other barriers effectively. Prevent cross contamination of foods during storage, preparation and service. Thoroughly wash all produce prior to use.

**clams**

**mussels**

**oysters**


Perishable
Keep
Refrigerated

**Your Company Name**
Tel: 1-800-565-3043 Fax: 902-742-8066
14 Kirk Street, Yarmouth, N.S., Canada B5A 1S7

Cert. No.
NS-000-SS

Original Shipper's Certificate No. (if other than above): _____
Harvest Date: _____ Shipping Date: _____
Harvest Location: _____ Process Date: _____
Type of Shellfish: ❒ Soft Clams; ❒ Oysters; ❒ Mussels; ❒ _____
Quantity of Shellfish: _____ Bushels; _____ Lbs; _____

**THIS TAG IS REQUIRED TO BE ATTACHED UNTIL CONTAINER IS EMPTY, OR IS RETAGGED AND THEREAFTER KEPT ON FILE FOR 90 DAYS.**

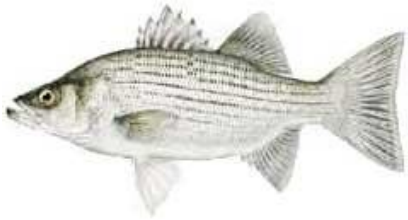
**To:**

| Reshipper's Cert. No. | Date Reshipped |
|---|---|
| | |
| | |

**Other important NYSDEC Laws to know**:

Wild striped Bass (not farm raised) must have a NYSDEC tag, which is attached through the gills and the mouth. The tag must remain with the carcass until all the fish is gone. Fines for untagged fish in a restaurant can start at $1000 for EACH fish. If untagged fish are found in a restaurant, the local health department is compelled to call the NYS Dept. of Environmental Conservation.

Lobsters (North American)- NYSDEC has minimum size requirements on these lobsters and also on their tails. If undersized lobsters are found, the local health department is compelled to notify the NYS Department of Environmental Conservation. Fines for this violation are substantial.



**Wild striped Bass**

**Intoxications/Poisonings**
Long Island is noted for its many fine seafood restaurants. There are some foodborne illnesses that are caused by naturally occurring chemical intoxications within the fish and shellfish.

Scombroid fish poisoning is actually a histamine poisoning. The histamine is produced by a microorganism that naturally occurs in the following fish: tuna, bluefish mackerel, mahi-mahi (dolphin fish) false albacore, bonito, striped bass, swordfish, "jack" fishes, salmon and escolar. From the time the fish is caught until the fish is eaten, this Scombroid toxin can be produced if there is temperature abuse of the fish. Therefore, the fisherman, the wholesalers, and the restaurateur must all store these fish at 41°F or less at all times to prevent Scombroid poisoning. It is important to understand that since this is a chemical poisoning, thorough cooking will not render the product safe to eat. Once the chemical is formed, it is not destroyed by heat. Once eaten, the intoxication occurs.

Symptoms occur quickly (from 5 minutes to 2 hours) and can include headache, burning mouth, nausea, diarrhea, dizziness, heart palpitations, facial swelling and a rash. To reduce the risk of Scombroid poisoning, use only reputable, licensed commercial suppliers. Check fish for freshness; reject those that show signs of decay. Make sure all fish is delivered cold and maintain temperatures at 41°F or less.

Ciguatera Fish Poisoning occurs from an intoxication associated with a wide variety of reef fish (grouper, skipjack, red snapper, mackerel, barracuda). The toxin is found in algae that live near certain tropical and subtropical coral reefs. When these large fish eat smaller fish that have eaten these algae, the toxin accumulates in the flesh and skin of the large fish. The toxin does not affect the fish. Ciguatera poisoning is not caused from improper handling but rather from fish harvested in areas where the toxin containing algae live. Neither cooking nor freezing destroys the toxin.

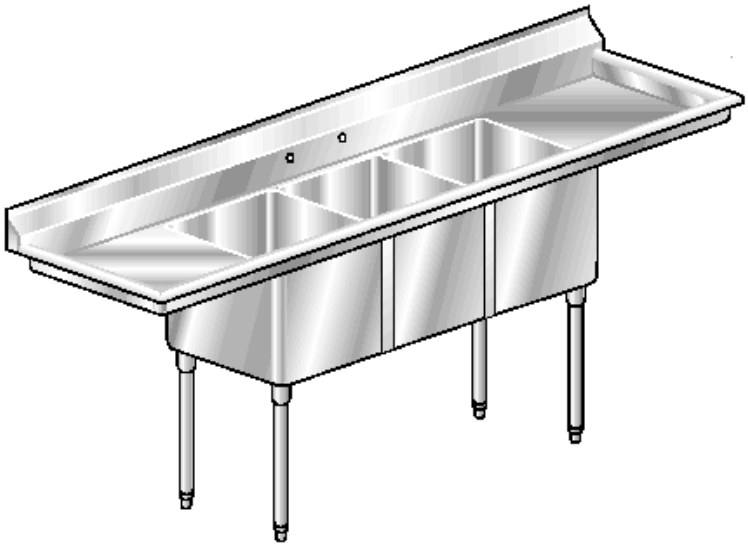
**Vibrio parahaemolyticus and Vibrio vulnificus**

Both of these bacteria are associated with shellfish harvested from coastal waters of the United States. While Vibrio parahaemolyticus can cause gastroenteritis and skin infection, vulnificus can result in severe and life threatening illness, particularly in immuno-compromised individuals. Thoroughly cook all seafood, especially oysters. (145°F minimally). Shellfish must be accompanied by tags indicating approved source and these tags must be retained for 90 days, so that shellfish beds can be monitored for contamination.

**Note: The New York State Health Department officially advises the public not to consume raw shellfish**.

## SESSION FOUR

## Plumbing



**3 -Compartment Sink**

**Approved Sanitizers**

| AGENT | CHLORINE | IODINE | QUATERNARY AMMONIA | HOT WATER |
|---|---|---|---|---|
| **TEMPERATURE** | 75°F | 75°F | 75°F | 170°F |
| **CONCENTRATION** | 100 PPM | 12-25 PPM | 200-400 PPM | |
| **CONTACT TIME** | 1 minute | 1 minute | 1 minute | 30 seconds |

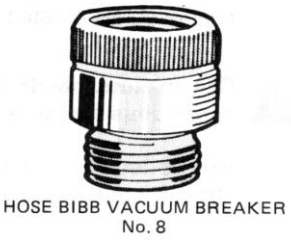
Sanitizing with hot water requires specialized equipment for heating and maintaining temperatures as well as equipment for handling sanitized items in heated water.

## Mechanical Dishwashing

Two types of machines are available for proper cleaning and sanitizing of serviceware and equipment:

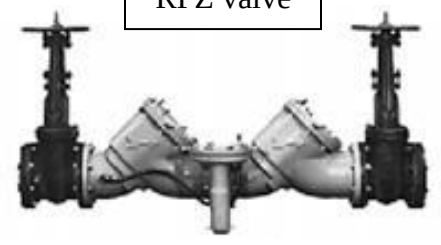
| | HIGH TEMPERATURE | LOW TEMPERATURE (CHEMICAL) |
|---|---|---|
| WASH | 140-160°F | 100-125°F |
| RINSE | 180°F | 100°F |

Plumbing shall be sized and installed properly. There can be no cross connections between the potable water supply and any non-potable water. A **cross-connection** is defined as any connection or structural arrangement between a potable water system and a non-potable source, liquid or otherwise, through which backflow can occur**. Backflow** is defined as the flow of water or other liquids, mixtures or substances into a potable water system from any source, other than the intended source. Devices, such as an RPZ valve, shall be installed to protect against backflow and back siphonage at all fixtures and equipment unless an air gap is provided (e.g. Watts #8). Any hose attached to a spigot or bib requires the installation of a vacuum breaker.

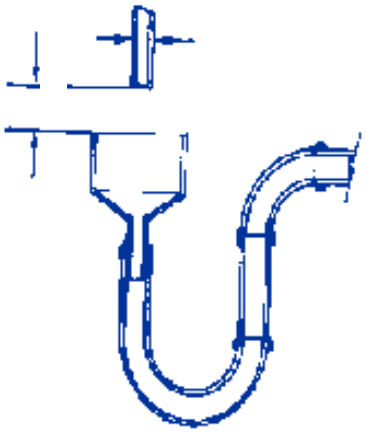


HOSE BIBB VACUUM BREAKER
No. 8

RPZ valve



Indirect waste lines are necessary to separate a potable system from a non-potable system. This is maintained by an air gap which should have a vertical distance between the supply pipe and the flood level rim of two times the diameter of the supply pipe, and never less than one inch.
Equipment that requires **indirect waste lines** include:



| | | |
|---|---|---|
| Ice Making Machines | Steam tables/cabinets | Refrigerators |
| Ice Storage Bins | Hot/Cold food storage devices | Potato peelers |
| Ice cream dipper wells | Food prep sinks | Cooking kettles |
| Refrigerator coils | Automatic Dishwashers | Walk-in coolers |

## Miscellaneous Information

Any new construction or substantial renovation at an establishment requires submittal of floor plans and plan review applications. A set up package can be obtained from the Department which explains the plan review process and includes applications needed.

Animals are prohibited in the food establishment except for service animals or patrol dogs accompanying police or security personnel.

Lights and light fixtures should be designed and maintained with shatterproof bulbs or with shields that adequately keep bulbs enclosed.

All cooking equipment should be hooded and mechanically vented to the outside.

Outside garbage and recycling areas must use covered, leak-proof and rodent-proof containers.

All floors, walls and ceiling surfaces should be smooth, non-absorbent and easily cleanable.

**Items that must be posted**:
Food Managers Certificate
Establishment Permit
Hand washing signs in all toilet facilities
No Smoking signs
First Aid for Choking Poster
CPR kit location sign

## Artificial Trans Fat Regulations

**Nutrition Facts**
Serving Size 1 cup (228g)
Servings Per Container 2

**Amount Per Serving**
**Calories** 260 Calories from Fat 120

| | % Daily Value* |
|---|---|
| **Total Fat** 13g | **20%** |
| Saturated Fat 5g | **25%** |
| *Trans* Fat 2g | |
| **Cholesterol** 30mg | **10%** |
| **Sodium** 660mg | **28%** |
| **Total Carbohydrate** 31g | **10%** |
| Dietary Fiber 0g | **0%** |
| Sugars 5g | |
| **Protein** 5g | |

Vitamin A 4% • Vitamin C 2%
Calcium 15% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:

| | Calories: | 2,000 | 2,500 |
|---|---|---|---|
| Total Fat | Less than | 65g | 80g |
| Sat Fat | Less than | 20g | 25g |
| Cholesterol | Less than | 300mg | 300mg |
| Sodium | Less than | 2,400mg | 2,400mg |
| Total Carbohydrate | | 300g | 375g |
| Dietary Fiber | | 25g | 30g |

Calories per gram:
Fat 9 * Carbohydrate 4 * Protein 4

Nassau County's Health Ordinance amendment phases out the use of artificial trans-fat in all food service establishments required to hold a Nassau County Health Department permit, including restaurants, caterers, mobile food-vending units and mobile food commissaries.

Artificial trans-fat is manufactured through a chemical process. It is found in partially hydrogenated vegetable oil. Foods that contain artificial trans-fat include margarines, shortenings, and fry oils, as well as many baked goods, mixes, and packaged foods.

Trans fat is the most dangerous type of dietary fat. It increases bad (LDL) cholesterol and lowers good (HDL) cholesterol. Trans fat has no known health benefits, and there is no harmless level of artificial trans-fat consumption.

**Beginning April 1, 2008**: You may not use partially hydrogenated vegetable oils, shortenings, or margarines for frying, pan-frying (sautéing), grilling, or as a spread unless you have product labels or other documents from the manufacturer showing that these ingredients contain less than 0.5 grams of trans fat per serving. You may continue to use trans-fat-containing oils and shortenings for deep frying cake batter and yeast dough.

## Cardiopulmonary Resuscitation (CPR) Equipment

New York State law requires the availability of cardiopulmonary resuscitation (CPR) masks and gloves to protect rescuers. The NYS Department of Health developed regulations in response to this law. These regulations require the operators of certain public places to have CPR equipment available in an accessible area to ensure that patrons and/or staff can access it for use and bring it to the victim within 3 minutes of onset of an incident.

There regulations require you to provide the following equipment and patron notice at your facility:

Equipment

- Two FDA-approved adult exhaled air resuscitation masks
- Two FDA-approved pediatric (child) exhaled air resuscitation masks
- Four pairs of disposable gloves
- Sign indicating location of the equipment

This law pertains to certain public places, defined as restaurants, bars, theaters and health clubs. If the facility is large or has barriers, additional sets of resuscitation equipment may be needed to meet the 3-minute requirement. Signs are available from the Nassau County Health Department.

# Appendix

## Calibrating a Thermometer

There are two steps to check the accuracy of a food thermometer. Use both steps.

ICE WATER - Fill at least a 5-7 oz. cup with finely crushed ice. Add clean tap water to the top of the ice and stir well. Immerse the food thermometer stem a minimum of 2 inches into the mixture. The thermometer should read 32° F. Having to adjust the thermometer more than 2°, voids the use of the thermometer; replace it.

BOILING WATER – To use the boiling water method, bring a pot of clean tap water to a full rolling boil. Immerse the stem of the food thermometer in the boiling water a minimum of 2 inches. The thermometer should read 212° F. If the ice water method or the boil method is off by more than 2°, replace the thermometer.

**Calibration should be recorded weekly and immediately following any impact event such as dropping the thermometer on the floor**.

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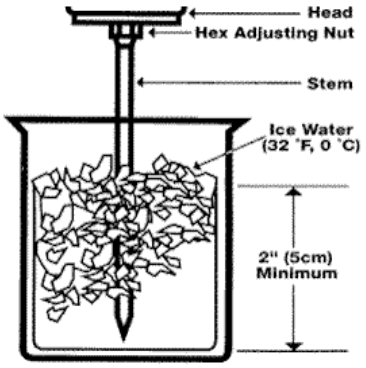


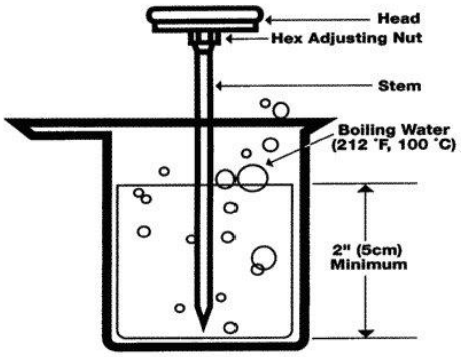

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