Congratulations you are enrolled in a Food Safety Manager Certification course.
Jurisdictions that require the FSM Certification also require 16 hours of training time. We have prepared this study guide for you to review prior to class so that your learning experience will be as enjoyable as possible. A lot of information is covered in the course and we have included a summary of the information in this study guide.
You can also find a lot of information on our website under http://www.marylandfoodhandler.com/food-safety-definitions.php

If this is your first time taking training course AND you are taking a one day training, you MUST study this guide before attending class. You MUST also bring the completed study questions with you to class and present to instructor. You will NOT receive a 16 hour training letter otherwise and any Pass Protection paid for will not be honored and no refunds will be issued.

We recommend you print this guide and bring it to class with you.
The Code, Agencies and the Law

- The FDA writes the Model Food Code
- Individual states write the law usually based on the recommendations of the FDA
- Local Jurisdictions are generally the ones enforcing the law
- Often States will make the recommendations stricter, for example the State of Md requires a HACCP plan for every operation. Not just facilities that need particular variances. Then the local jurisdictions can write other laws, for instance there are 5 counties in MD that require a certified food handler on duty at all times. Then to go one step further, some franchises may have requirements beyond local law, for instance holding temperatures to be greater than the required 135 degrees.
- The USDA inspects meat, poultry and eggs. Also, manufacturers that ship across state lines.

- Why should you care about food safety? The biggest reason is to protect the public safety. However there are other factors to consider. Here are some top reasons to be concerned:
  - Loss of customers and sales
  - Loss of reputation
  - Negative media exposure
  - Lowered staff morale
  - Lawsuits and legal fees
  - Staff missing work
  - Increased Insurance premiums
  - Staff retraining.
- The biggest challenges to food safety are:
  - Time and Money – Taking time to train staff
  - Language and Culture
  - Literacy and education
  - Pathogens also known as micro-organisms are being found on food that was once considered safe
  - Unapproved suppliers – using a supplier that is not approved can create a break in the food safety chain.
  - Staff turnover
  - High-risk customers –
    - Elderly
    - Children 0-4 years of age
    - People with compromised immune system
- When 2 or more people are confirmed ill from the same foodborne illness it is considered an outbreak!
Our biggest enemy in food safety:

Bacteria are a single celled micro-organism and double ever 20 minutes in the right conditions. Just remember FAT TOM is bacterias friend and our enemy. If FAT TOM is happy our food is at a greater risk of bacterial growth.

****FAT TOM APPLIES TO BACTERIA ONLY NOT ALL PATHOGENS****

- **F – Food** - TCS foods are FAT TOM favorites.
  - Milk and dairy products
  - Eggs
  - Meat; Beef, Pork, Lamb
  - Poultry
  - Fish
  - Crustaceans & Shellfish
  - Baked Potatoes, especially those wrapped in foil
  - Heat Treated plant food including cooked rice, beans & vegetables.
  - Tofu, other soy protein and synthetic ingredients
  - Sprouts and sprout seeds
  - Sliced Melons, Cut tomatoes and cut leafy greens
  - Untreated garlic / oil mixtures

- **A – Acidity**
  - 4.6 – 7.5 is the range that FAT TOM likes.
  - Bacteria will not grow below 4.6
  - Can add enough acid (vinegar) to food so it is no longer TCS

- **T – Temperature**
  - FAT TOM is happy between 41 and 135 degrees aka (temperature danger zone or TDZ).
  - From 70° - 120° FAT TOM is happiest.
  - 70° is a critical temperature to remember. It is when bacteria cells are multiplying fastest.

- **T – Time**
  - Time Food left in the TDZ for more than 4 hours is generally discarded.
  - There are only 2 exceptions to that rule.
  - Applies to food contact surfaces in constant use.

- **O – Oxygen**
  - Generally a high oxygen environment except Botulism

- **M –Moisture** - They also need moisture to survive.
  - Water has a water activity value of 1
  - You can alter moisture so that food no longer needs temperature control.
Potential Contaminants to Food

Contamination is the presence of harmful substances in food. Something is in the food that shouldn't be there that can make humans sick. ***Previously called Hazards***

Deliberate contamination can be a problem as well. Follow the FDA's ALERT system to help identify where your operation can be at risk.

Assure you products are from safe source
Look for security flaws
Employees and only authorized individuals should have access to your facility
Reports should be kept on your food defense efforts
Threat Know what you will do in the event of a breach or threat.

There are three Potential Contaminants  *(Previously called Hazards)*:

- **Physical**
  - Hair, dirt, bandages, fingernails, jewelry, broken glass, bandages, shavings from a can lid, etc..
  - Natural items such as bones in a boneless fillet and fruit pit

- **Chemical**
  - Cleaners, sanitizers, polishes & lubricants
  - Toxic metals used with in high acidity foods. Lead, Copper & Zinc. Lead is found in Pewter and Zinc in galvanized metals. Use only food grade metal and plastic to store food.
  - When transferring chemicals to smaller container you must use proper labeling. Name of chemical and concentration is required.
  - The only way to know how to use a chemical is to read the directions.
  - Must have MSDS (material safety data sheet) for each chemical. These tell you how to properly handle, first aide care and emergency clean up

- **Biological (Pathogens – Micro Organisms)**
  - Bacteria
  - Viruses
  - Parasites
  - Fungi

Biological Toxins.
- Seafood Toxin
- Mushroom Toxins
- Plant Toxins
Biological Contamination

- Symptoms of foodborne illness depend on the illness however typically they include:
  - Diarrhea
  - Vomiting
  - Fever
  - Nausea
  - Abdominal Cramps
  - Jaundice

The “Big 6” - there are 6 pathogens that have been identified to be extremely contagious or can cause serious medical problems. For this reason they MUST be reported to the local authority.

- Hepatitis A
- Norovirus
- Shiga toxin-producing E.coli
- Salmonella Typhi
- Non-Typhoidal Salmonella
- Shigella spp.
Potential types of Biological Contamination

- **Viruses**
  - Can survive in cooler and freezer temperatures.
  - Can't grow ON food but grow in person after eaten.
  - Can be found in both food and water.
  - Transferred from person to person, people to food or people to food contact surface.
  - Can not be destroyed during normal cooking processes.
  - Either virus must be reported to the proper regulatory agency when discovered.
  - Commonly associated with Shellfish from contaminated water and RTE Food
  - Handwashing #1 defense for both viruses.
  - Hepatitis A – found in feces of people infected by it. Hand washing is the best defense. Jaundice is later symptom. Long incubation period, 30-50 days.
  - Norovirus gastroenteritis – Found in feces, only a small amount can make you sick. Short incubation period, 18-36 hours.

- **Bacteria**
  - Controlled by keeping food in correct temperature, bacteria double every 20 minutes under the correct conditions and can change into a spore when living conditions are not good. Some can become toxins that can not be destroyed.
  - Shiga toxin-producing E.coli - found in intestines of cattle. Causes bloody diarrhea.
  - Common foods: ground beef & contaminated produce.
  - Salmonella Typhi – commonly linked with Ready to Eat food and beverages.
  - Shigella spp. – Found in feces. Causes bloody diarrhea. Linked to salads made with TCS ingredients & foods in contact with contaminated water. Keep flies out of operation.
  - Staphylococcal aureus – Food that is directly handled by infected person – found in hair, nose, throat & infected cuts. 30-50% of healthy humans have in their nose and 25% on skin. (NOT one of the Big 5)

- **Parasites**
  - Cannot grow on food, they live inside of a host, like a fish.
  - Fish for Sushi must be frozen by manufacturer and certificate of freezing is provided. Save certificate for 90 days. Found in feces of both animals and people.
  - Contaminate both food and water. Produce is affected.

- **Fungi**
  - Discard all moldy food, unless mold is a natural part of the food, like in a blue veined cheese or Brie.
  - Yeasts – must discard affected food product. Commonly has a vinegar or strong alcohol smell.
Biological Toxins

- Biological Toxins
  - Seafood Toxins – all have poisoning in the name of the illness. Can not be destroyed by freezing, cooking, smoking or curing.
  - Mushroom Toxins - found in certain wild mushrooms.
  - Plant Toxins - fool's parsley, wild turnips, honey created from toxic plant nectar & undercooked kidney beans
Food Allergens

- Common food allergens (90% of allergic reactions are from these foods)
  - Milk & dairy
  - Eggs & egg products
  - Fish
  - Shellfish including Crustaceans
  - Wheat
  - Soy and soy products
  - Peanuts
  - Tree nuts like pecans, walnuts and almonds

- Allergic reactions are an undesirable response from our immune system.

- Symptoms include:
  - itching,
  - tightening throat,
  - wheezing,
  - Hives,
  - swelling,
  - cramps,
  - vomiting or diarrhea,
  - loss of consciousness,
  - and death and can occur immediately or several hours later.

- Prevention is key.
  - Staff should know what is in each dish,
  - be honest with customer,
  - have a system in place for handling customers with food allergies.
  - Clean and sanitize all food contact surfaces before preparing an order for a customer that has an allergy.

- Do not use same oil, batter or breading for foods that can cause allergic reactions without informing all customers.

- Avoid cross contamination when working with any of these foods.

- Have rules within organization and be honest with customer. It is okay to tell customer you can not guarantee food will be free from a particular allergen.
How does food become unsafe?

- The CDC has identified 5 common mistakes made by food-handlers. They are:
  - Practicing poor personal hygiene
  - Failing to cook food correctly
  - Holding food at incorrect temperatures
  - Using contaminated equipment
  - Purchasing food from unsafe sources

- Other than Purchasing from unsafe sources, the above all relate back to 4 factors:
  - Poor personal hygiene
    - Hardest to control and number one reason for foodborne illness in this country.
    - You can not watch staff all day long.
  - Cross contamination
    - Occurs when microorganisms are transferred from one surface to another.
    - Foods with two different cooking temperatures coming in contact with one another
  - Poor Cleaning and Sanitizing –
    - Not using proper processes for cleaning and sanitizing.
    - Not cleaning and sanitizing when needed.
  - Time temperature abuse
    - Easiest to control can go behind employee and check log books.
How food becomes unsafe:
The #1 Reason is Poor Personal Hygiene

- Proper hand-washing.
  - Wet hands in 100° or warmer water
  - Apply Soap
  - Scrub for 10-15 seconds cleaning top of hands, between fingers and under nails
  - Rinse in running water
  - Dry with a single use paper towel or air dryer
- If a handwashing station with hot and cold running water is not available, you are not serving food.
- Handsinks should be convenient to access. They should be located in the cooking and prep areas, service area and dishwashing area.
- Handwashing sinks are for handwashing only.
- Foodhandlers should have short fingernail length, no nail polish & no fake nails.
- Hand antiseptics must be approved by FDA and only used after proper handwashing and never as a replacement.
- When do you wash your hands?
  - Before you start work then after all the following activities.
  - Using the restroom
  - Handling raw meat, poultry, and seafood (before and after)
  - Touching the hair, face, or body
  - Sneezing, coughing, or using a tissue
  - Eating, drinking, smoking, chewing gum or tobacco
  - Handling chemicals that might affect food safety
  - Taking out garbage
  - Clearing tables or busing dirty dishes
  - Touching clothing or aprons
  - Handling money
  - Leaving and returning to the kitchen/prep area.
  - Handling service animals or aquatic animals
  - Touching anything else that may contaminate hands
How food becomes unsafe:
The #1 Reason is Poor Personal Hygiene

- **Proper glove use**
  - Single use gloves are for a single task.
  - Should be changed when,
    - Torn or dirty
    - Before beginning a different task
    - After an interruption
    - After handling raw meat, poultry and seafood and before handling ready to eat food.

- **Should be used when handling ready-to-eat food**
  - Except when washing produce
  - Except when handling ready-to-eat ingredients for a dish that will be cooked
  - You may change gloves without handwashing if not changing tasks and hands are not contaminated.

- **Bare-hand contact with ready-to-eat food is allowed if:**
  - The food is an ingredient in a dish that does not contain raw meat, seafood, or poultry and the dish will be cooked to at least 145°F (63°C)
  - The food is an ingredient in a dish containing raw meat, seafood, or poultry and the dish will be cooked to the required minimum internal temperature of the raw item(s)
  - NEVER handle ready-to-eat food with bare hands when you primarily serve a high-risk population
How food becomes unsafe:
The #1 Reason is Poor Personal Hygiene

• Attire and Actions
  □ Food handlers should have hair restraints, clean clothing and clean aprons.
  □ Aprons should always be removed before exiting kitchen.
  □ A plain metal band is the only allowed jewelry. Medical alert bracelets can be worn on the waist band or made into necklace type.
  □ No eating, smoking, chewing gum or tobacco in food areas.
  □ May be able to drink in food preparation area using covered container with straw.
  □ If uniforms are required it is best put on after arriving at work in a separate dressing area. (not restroom)

• Employee Illness
  □ A foodhandler that has a sore throat and fever is restricted from working around food.
  □ If serving a high risk population then they must be excluded. A doctors note must be provided before returning to work around food.
  □ A foodhandler that has vomiting or diarrhea must be excluded for at least 24 hours.
  □ Remove worker and call regulatory agency if foodhandler has vomiting or diarrhea and has been diagnosed with:
    - Norovirus.
    - Shiga toxin producing E. Coli,
    - NON Typhoidal Salmonella
    - Shigella spp.
  □ Remove worker and call regulatory agency if foodhandler has been diagnosed with:
    - Hepatitis A
    - Salmonella Typhi,
  □ Jaundice must be reported and foodhandler must be removed from workplace if they have jaundice for 7 days or less.
How food becomes unsafe: 
Cross Contamination

- **Food Handler Mistakes**
  - When foods that have different cooking temperatures are allowed to come in contact with each other.
  - Ready to eat foods are a big concern – Raw chicken juice touches lettuce that is going to be placed on a sandwich.
  - Improper hand-washing between tasks.
  - When food contact surfaces are not properly cleaned and sanitized between uses.

- **Storage Errors**
  - Food above drips on food below.
  - Store food top to bottom in the following order. It helps to think about the minimum internal cooking temp for these foods as they correspond with position in storage. Minimum cooking temperatures for these foods are in ( ).
    - Ready to eat (not at all or 135°)
    - Seafood (145° for 15 seconds)
    - Roasts of beef, pork or lamb (145° for 4 minutes) Steaks & Chops (145° for 15 seconds.)
    - Ground meat & ground fish (155°)
    - Whole or ground poultry (165°)
  - Frozen Raw meat, poultry and seafood can be stored with or above RTE if commercially packaged

- **Prevention**
  - Have a good work flow. Food enters the back of the house, goes to prep room, moves forward to cooking stations, then served at the front of the house.
  - If you can not separate tasks by space as in above, use time. For example, do not prepare raw meats at the same time someone else is preparing salads.
How food becomes unsafe:
Improper Cleaning and Sanitizing

- Handling Cleaners and Sanitizers
  - Cleaners and Sanitizers are chemicals they should be stored away from food and prep areas.
  - You should have a Material Safety Data Sheet (MSDS) for all chemicals. An MSDS sheet informs the user of safe use and handling.
- Clean all surfaces using an approved cleaner for food service.
- Food contact surfaces (walls & floors) are cleaned THEN sanitized.
- Some cleaner suggestions are:
  - Detergent
  - Degreaser
  - Delimer (an acid that is used to clean mineral deposits left behind from evaporated water)
- Heat sanitizing
  - Water must be 171 degrees for 30 seconds.
- Types of chemical sanitizers are:
  - Chlorine
  - Iodine
  - Quaternary ammonium compounds (quats)
- Making an effective sanitizer requires 5 components each must be correct or sanitizer will not be effective and can also be toxic if concentration is too high.
## Sanitizing Chart

<table>
<thead>
<tr>
<th></th>
<th>Chlorine</th>
<th>Iodine</th>
<th>Quats</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water temperature</strong></td>
<td>≥100°F (38°C)</td>
<td>≥75°F (24°C)</td>
<td>68°F (20°C)</td>
</tr>
<tr>
<td><strong>Water pH</strong></td>
<td>≤10</td>
<td>≤8</td>
<td>≤5 or as per manufacturer’s recommendations</td>
</tr>
<tr>
<td><strong>Water hardness</strong></td>
<td>As per manufacturer’s recommendations</td>
<td>As per manufacturer’s recommendations</td>
<td>≤500 ppm or as per manufacturer’s recommendations</td>
</tr>
<tr>
<td><strong>Sanitizer concentration range</strong></td>
<td>50–99 ppm</td>
<td>50–99 ppm</td>
<td>12.5–25 ppm</td>
</tr>
<tr>
<td><strong>Sanitizer contact time</strong></td>
<td>≥7 sec</td>
<td>≥7 sec</td>
<td>≥30 sec</td>
</tr>
</tbody>
</table>

### 5 steps to proper Cleaning and Sanitizing
- Scrap and rinse surface
- Wash with an approved cleaner
- Rinse with clear water
- Sanitize with effective solution
- Allow surface to air dry. All food contact surface should be cleaned AND sanitized

### When to clean and sanitize
- After each use
- Before working with a different type food
- When interrupted (you never know what happened when you were not there)
- After 4 hours of constant use.
Cleaning and Sanitizing: Dishwashing

Dishwashing

Manual
- Scrap and rinse
- Wash using 110 degree water
- Rinse
- Sanitize using chemical or 171 degree water
- Air dry

Chemical

Heat

Final rinse type 180 degrees
Stationary rack, single-temperature
Machines must be 165 degrees
Heat sensitive tape should be used to ensure proper temps.

Follow directions on Chemical for proper use

High temperature dishwashers should use heat sensing tape or some other method to ensuring temperature reaching plates is the required temperature.
How food becomes unsafe: 
Time and Temperature Abuse

- Monitoring Devices
  - Bimetallic Stemmed Thermometer
    - Calibrate daily or when dropped
    - Temperature is read between dimple and tip
    - Accurate within +-2°
  - Thermocouples and Thermistors.
    - Have different styles of probes
      - Immersion – temperature of liquids, soups or stews.
      - Surface – only surface temp of equipment.
      - Penetration – internal temperature of dense foods.
    - Air
  - Infrared – tests surface of food only – does not take internal temp.
  - TTI - Time Temperature indicator. Records temperature abuse.
  - Glass thermometers must have shatterproof shield.

- Common Mistakes and preventions
  - Improperly handling food during flow of food. (receiving, storing, prepping, cooking, cooling, reheating, hot holding)
  - Food must be cooked to proper temperature to kill pathogens or bring numbers down to safe levels
  - Allowing food to remain in the TDZ
  - Monitoring temperatures during the flow of food is essential to food safety
  - You should clean and sanitize thermometer before and after use to prevent cross contamination
The flow of food: Purchasing and Receiving

- **Purchasing**
  - Only purchase from approved supplier.
  - Supplier should be licensed and inspected by appropriate agency. FDA, USDA, local agency
  - All suppliers should follow good manufacturing practices or good agricultural practices.
  - Make sure shipments arrive at convenient times. Must have personal to check quantity and quality of food being received as well as put away promptly

- **Receiving**
  - If you use a key drop delivery use a supplier you trust to handle food properly
  - Check temperatures upon arrival using a thermometer
    - Meat & Poultry – insert thermometer in flesh
    - ROP food (like bacon) – between packages
    - Other (milk carton, sour cream) – open package and test food product.
  - Cold food should be 41 degrees except (new information for 6th edition);
    - Shell eggs received and stored at air temperature of 45 degrees.
    - Milk 45 degrees then cool to 41 within 4 hours
    - Live or shucked shellfish receive at air temp of 45 degrees around them and internal temperature of 50 degrees, then cool to 41 degrees in 4 hours. Shellfish should also be checked for excessively muddy shells or have broken shells.
    - shucked shellfish receive at air temp of 45 degrees, cool to 41 degrees within 4 hours
  - Frozen food is received simply frozen and hard to touch
  - Hot food must be received at 135 degrees or above.
  - Liquid eggs must be pasteurized
  - Documents – Save shellstock tags from live shellfish for 90 days and documents that show certain fish (sushi grade) have been frozen properly.
  - Inspect for signs of mold or insects, especially on produce
  - Reject any items that have signs of defrosting and refreezing, like ice crystals
  - Reject any items that have torn or damaged packaging
  - Be up to date on current recalls.
Flow of Food: Storage

- **Labeling**
  - Label foods with discard or use by date if food will be stored for more than 24 hours.
  - TCS food prepped in house or not in original container.
    - 7 days from prepping or if commercially prepared food 7 days from opening unless expire or use by date is sooner.
    - Must have name of food unless it can be identified by looking at it.
  - Properly label food for on-site retail sale. (raw crab cakes made for you to take home and cook.
    - Common name of food
    - Quantity of food
    - Ingredients in descending order by weight
    - Artificial colors, preservatives and food allergens
    - Name and place of manf, packer or distributor.
    - Sell by or discard date.

- **Storage**
  - **Dry storage**
    - 6 inches from floor and slightly away from wall.
    - Area should be well ventilated.
    - Must store single use items in original packaging
  - **Cold Storage**
    - Temperature of cold unit should be monitored by sampling temperature of stored food.
    - Thermometer should be stored in the warmest part of the unit for monitoring.
    - Do not line shelves in cold unit or overload – it will prevent proper air flow.
    - Rotate using foods with the earliest expiration date first.
    - When storing food in refrigeration it should be stored properly in a way to prevent cross contamination.
The flow of food: Preparation

- **Methods for thawing food**
  - In refrigerator,
  - Submersed with running water that is 70 and below, running at a strong enough force to flush small pieces away,
  - Microwave if cooked immediately, As part of cooking process,
  - ROP Fish can be defrosted in package under running water but removed from package as soon as defrosted. If defrosting in refrigerator certain ROP fish must be removed from package before defrosting.

- **Produce**
  - Watch for cross contamination,
  - Wash in water slightly warmer than produce,
  - Do not mix batches,
  - Fresh cut melons, tomatoes & leafy greens are TCS.

- **Batter and breading**
  - Watch for cross contamination and allergens,
  - Use small batches and discard at set time.

- **Eggs & egg mixtures**
  - Pooled eggs are cracked eggs combined together for later use,
  - Pasteurized eggs should be used in dishes that need little or no cooking.
  - High risk populations must use pasteurized eggs that will be undercooked. Regular eggs can be used if cooked all the way.

- **Use special precautions when making salads that contain TCS food such as chicken, pasta, eggs, etc.**

- **Ice, avoid cross contamination.**
  - Scooping ice with a glass is a risk of physical contamination.
  - Ice used for beverages should be treated as any other food item.

- **You must ask for a variance when doing practices that have additional risks such as:**
  - Smoking food as a way to preserve it.
  - Curing food
  - Custom processing animals
  - Using food additives so food no longer needs temperature control
  - Reduced oxygen packaging food (vacuum sealing)
  - Sprouting seeds or beans
  - Squeezing juice for sale at a later time unless you place a warning label on product
  - Offering live shellfish from a display tank:
The flow of food: Cooking

- **Cooking**
  - sufficiently reduces the number of microorganisms to safe levels.
  - It does not destroy any spores or toxins these organisms create or viruses
  - Check all temperatures with correct thermometer that has been calibrated. These temperatures must be maintained for 15 seconds with the exception of roasts.
  - 135°F
    - Ready to eat, commercially processed, for hot holding
    - Fruits or vegetables, for hot holding
  - 145°F
    - Seafood – including fish, shellfish & crustaceans
    - Steaks, chops – pork, beef veal or lamb
    - Roasts – must read temperature for 4 minutes
    - Shell eggs for immediate service
  - 155°F
    - Ground meats or fish – including beef, pork, lamb and other meat or fish
    - Injected meats or mechanically tenderized
    - Shell eggs hot held for service
  - 165°F
    - Poultry – whole or ground
    - Foods stuffed with a TCS ingredient.
    - Microwave cooking.
    - Dishes that include previously cooked TCS ingredients (soups or casseroles)

- **Cooking in a microwave is allowed:**
  - Cover to prevent drying out
  - Cook, stir and rotate ½ way though for more even cooking
  - Cook again, stir.
  - Let sit for 2 minutes
  - Check temp in at least two places
  - Must cook to 165 degrees
The flow of food: Cooking

- **Partial cooking**
  - Do not cook initially for more than 60 minutes
  - Properly cool
  - Properly store below 41 degrees
  - Heat food to required minimum temperature before serving.

- **Refilling returnable take home containers**
  - Must be designed to be reused
  - Must be provided to the customer by the operation
  - They are cleaned and sanitized correctly.

- **Refilling beverage containers**
  - Can be cleaned effectively
  - Rinsed with water under pressure before filling
  - Can be refilled without contamination

- **Advise** consumers that consuming under cooked foods could be dangerous. Do this with a warning on the menu or sign behind counter. If a buffet it should be near the under cooked product.

- **Never serve**; sprouts, under-cooked eggs, under-cooked meat or under-cooked seafood in a high risk facility such as a nursing home or day care center.
The flow of food: Cooling, Reheating, Holding

- **Cooling**
  - TCS food must be cooled properly
  - Goal 1 - Reduce temperature from 135 to 70 degrees in two hours
    - Step 1 – Reduce portion size. Placing product in shallow pans or metal containers will assist in faster cooling.
    - Step 2 – Use one of the following to reduce temperature.
      - ice water bath
      - ice paddle
      - blast chiller
      - ice as a cooling ingredient
    - Step 3 – Check temperature if 70 degrees or under, go to Goal 2, if not take corrective action of reheating to 165 degrees or discarding.
  - Goal 2 – Reduce temperature from 70 degrees to 41 degrees within 4 additional hours by refrigeration. If this goal is not accomplished product must be discarded.

- **Reheating**
  - For hot holding, must reheat TCS food to 165 degrees within 2 hours.
  - For immediate service - any temp. Think of roast beef that customer wants just warmed for sandwich.
  - Must use equipment designed for reheating. Can not use holding equipment unless it is designed for cooking.

- **Holding**
  - Hot food should be held at 135 degrees or above,
  - Must reheat to 165 degrees before 4 hours, start cooling process or throw out
  - Cold food must be held at 41 degrees or below

- **Holding without temperature control (catering):**
  - Cold: sell, serve or throw out within 6 hours as long as food does not go over 70 degrees. Can use an ice bath and stirring product regularly.
  - Hot: sell, serve or throw out within 4 hours. You must label with time removed from temperature control and the sell, serve or throw out time.
Service

- Practice good personal hygiene and avoid cross contamination & time and temperature abuse.
- Hold dishes by the bottom or edge. Never touch the food contact areas of dishes or glassware.
- Do not stack glasses when carrying them
- Hold silverware by the handle. Don’t grab glasses by the rim. The goal is to always avoid touching the surface where the customers’ mouth will go.
- Use ice tongs or scoops to get ice (not glasses or bare hands).
- Avoid bare hand contact with ready to eat food.
- Cooks use long handled utensils to serve food. ONLY one utensil per food item. Clean and sanitize the serving utensil every 4 hours. Can be stored in food 1” above rim.
- **Never re-serve bread, uncovered condiments or garnishes.** Unopened pre-packaged foods (condiments, crackers, etc.) can be re-used. Change bread linen used in bread baskets after each customer
- Prewrapped and Preset tableware
  - Can be set on another table if they are removed when guests are seated.
  - If they remain on the table, they are cleaned and sanitized
- Self Service Areas – should have a sneeze guard 14” above food and extending 7” beyond.
- Off site same temperatures, everything must be labeled, store ready to eat separate from raw food.
- Vending
  - Keep 7 days from prep date of TCS food
  - 41 degrees
  - TCS in Original container
  - Wash and wrap fresh fruit that has edible peel
Food Safety Management Systems and HACCP

- Having programs in place to teach your staff proper techniques is paramount in preventing the foodborne illness.
- Some examples of Food Safety Management Systems that you should have in place are:
  - Personal hygiene program
  - Standard Operating Procedures (SOP’s)
  - Using approved suppliers
  - Cleaning and Sanitation program
  - pest-management program
  - Facility design and equipment maintenance
  - Food safety training program.
- Active Managerial Control. As a reminder the 5 most common risk factors to food safety are:
  - Purchasing food from unsafe sources
  - Failing to cook food adequately
  - Holding food at incorrect temperatures
  - Using contaminated equipment
  - Practicing poor personal hygiene
- HACCP = Hazard Analysis Critical Control Point. Food Safety Management system based on the idea that if significant biological, chemical, or physical hazards (potential contaminants) are identified at specific points within a product’s flow through the operation, they can be prevented, eliminated, or reduced to safe levels.
- The seven HACCP Principles
  1. Conduct a hazard analysis – look at menu, group foods with similar processing methods. Eg. Cook> Cool> Reheat> Serve.
  2. Determine critical control points – Determine where foods could be abused.
  3. Establish critical limits – How can we prevent the abuse
  4. Establish monitoring procedures – How the food handler checks temperatures & time
  5. Identify corrective actions – How to correct if problem
  6. Verify the system works - Charting
  7. Establish procedures for record keeping and documentation – Keep documentation (charts)
- The following tasks require a HACCP plan
  - Smoking food as a method of food preservation
  - Use food additives so food no longer needs temperature control
  - Curing food.
  - Custom process animals for personal use.
  - Package food using a reduced-oxygen packaging method as a method of food preservation
  - Pasteurizing juice
  - Sprout beans or seeds
Sanitary Facilities & Equipment, Pest Management

- Having a good work-flow in your facility can help reduce cross contamination
- Materials should be made from a durable nonporous surface that is easily cleaned.
- Cutting boards should be resurfaced or discarded when chipped or nicked. If wood only hardwoods should be used.
- Equipment must be NSF approved
- Floor equipment should be 6” off floor
- Table top equipment should be 4” off counter top
- Lighting fixtures should be shielded to protect light bulbs.
- Handwashing stations need to be accessible and have hot and cold running water, soap, trash can and either paper towels or air dryer
- Have an air gap in all possible connections between safe (potable) water and dirty water preventing a cross connection also called backsiphonage. When a backflow exists it will allow unsafe water to come in contact with safe water.
- Use a vacuum breaker also called check valve when a plumbing connection is made between two piping systems (ice machine, soda machine)
- Have good lighting – Prep and cooking area should be brightest. Dry Storage, Dining area or Restroom can be dimmer.
- Use good practices for garbage. Outside receptacle should be on non absorbent surface with tight fitting lid. Inside cans should be plastic.
- Have good maintenance policies

Pest Management
- Keeping pests out of your facility is the first line of defense. Deny them access, food, water, hiding places and use a licensed PCO (Pest control operator) to eliminate the ones that might get in. Seal open spaces with concrete.
- Fill cracks or gaps on the exterior of building with concrete.
- You can not transfer pesticides to other containers.

Reasons to shut down operations
- Lack of refrigeration for an extended period of time
- Sewage backup, stop food service and close immediately
- Depending on severity, flood or fire
- Significant infestation of rodents or insects
- No water or electric for extended time
- Clear evidence of food illness outbreak
Food Safety Acronyms

- CDC – Centers for Disease Control
- FDA – Food and Drug Administration
- USDA – The US Department of Agriculture
- MSDS – Material Safety Data Sheet. Describes the chemical composition, clean up and first aide.
- PCO – Pest Control Operator
- pH – A scale from 0 to 14. 0 is acid and 14 is alkaline.
- RTE – Ready to eat foods. Food that will not be heat treated again. Can be hot food or cold food.
- ROP – Reduced oxygen packaged food. Vacuum sealed like bacon.
- TCS – Temperature Control for Safety. There are certain foods that require temperature control, hot or cold, to slow the growth of bacteria.
- TDZ – Temperature Danger Zone