FOOD PROTECTION MANAGER COURSE MANUAL 2022

Prepared from the 2019 FDA MODEL FOOD CODE

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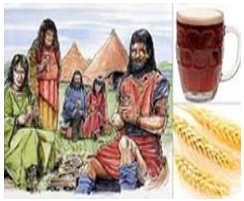
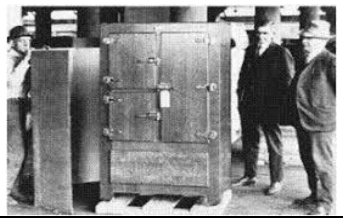
FOOD SAFETY TIMELINE

Food Safety began when the caveman killed their first meal and looked for a way to make it last longer. It continued throughout history for many different reasons, and continues today. Before you begin your study and preparation for your exam, take a look at this brief timeline. "You can't really know where you are going, until you know where you have been". Maya Angelou

5000 BC 	When man discovered fire, it enabled him to cook meat which in a small way acted as the first food preservation process, if even for just a few days.
12,000 BC 	Necessity being the mother of invention led to man's thinking out of the box which led to sun-drying and marinating foods for preservation.
600 AD 	The Romans found that mixing fruits (jams) with honey preserved foods and made trade more popular.
1202 	The **Assize of Bread and Ale** (Latin: *Assisa panis et cervisiae*) was a 13th-century law in high medieval England, which regulated the price, weight and quality of the bread and beer manufactured and sold in towns, villages and hamlets. It was the first law in British history to regulate the production and sale of food. At the local level, this resulted in regulatory licensing systems, with arbitrary recurring fees, and fines and punishments for lawbreakers.
1400 	**Curing** can be traced back to antiquity, and was the primary method of preserving meat and fish until the late-19th century. Dehydration was the earliest form of food curing. Many curing processes also involve smoking, spicing, cooking, or the addition of combinations of sugar, nitrate, and nitrite.

1646 	**1646**, the general court of the Massachusetts Bay Colony, which was the governing authority there, decreed how much a loaf of bread must weigh to be sold for a penny.
1748 	The technique of evaporative cooling, as described heretofore, has been known for centuries, but the fundamental methods of mechanical refrigeration were only discovered in the middle of the 19th century. The first known artificial refrigeration was demonstrated by William Cullen at the University of Glasgow in 1748.
1750'S 	During the latter half of the 1800s, the railroads expanded rapidly across the United States and its territories, providing for improved transportation of livestock. Technological advancements, such as refrigerated rail cars and electricity, made year-round business possible for the meat packing industry.
1795  	1795, Napoleon offered a 12,000-franc reward (a fortune in those days) to anyone who could develop a method of preserving large quantities of food. A French brewer and confectioner, Nicholas Appert, collected the prize, having observed that Food cooked inside a glass jar didn't spoil unless its seal leaked
1871 	**Pasteurization** is a process in which packaged and non-packaged foods (such as milk and fruit juice) are treated with mild heat, usually to less than 100 °C (212 °F), to eliminate pathogens and extend shelf life.
1906 	The Jungle is a 1906 novel by the American journalist and novelist Upton Sinclair. The novel portrays the harsh conditions in the slaughter houses and exploited lives of immigrants from the United States in Chicago and similar industrialized cities.
1906 	In 1883, Harvey W. Wiley, M.D., was appointed chief chemist at the USDA. Wiley devoted his career to raising public awareness of problems with adulterated food; developing standards for food processing; and campaigning for the Pure Food and Drugs Act, also known as the "Wiley Act. Enacted in 1906

1925 	1925 Clarence Birdseye creates the first modern food freezing system on a commercial scale.
1938  	The United States Federal Food, Drug, and Cosmetic Act, is a set of laws passed by Congress in 1938 giving authority to the U.S. Food and Drug Administration to oversee the safety of food, drugs, medical devices, and cosmetics
1945 	The 1940's invention of vacuum packs for stored foods was made. These were the first industrial sealers invented and they were small. Home vacuum sealers were first invented and made in use by a German inventor named Karl Busch. He made an entry into the market with industrial sealers first in 1963
1960's  	**HACCP** originated in the 1960's, when the National Aeronautics and Space Administration (NASA), the Pillsbury Company, and the U.S. Army Laboratories collaborated together to provide safe food for upcoming space expeditions.
1977 	The Food Safety and Inspection Service, an agency of the United States Department of Agriculture, is the public health regulatory agency responsible for ensuring that United States' commercial supply of meat, poultry, and egg products is safe, wholesome, and correctly labeled and packaged.
1996  	The Federal Food Drug and Cosmetic Act; It mandated a health-based standard for pesticides used in foods, provided special protections for babies and infants, streamlined the approval of safe pesticides.
2015  	The Food Safety Modernization Act was signed into law by President Barack Obama on January 4, 2011. The FSMA has given the Food and Drug Administration new authorities to regulate the way foods are grown, harvested and processed.

CHAPTER 1
INTRODUCTION TO FOOD SAFETY

In this chapter we will review….

WHY AM I TAKING THIS COURSE
HOW SAFE IS OUR FOOD?
GOVERNMENT OVERSIGHT
WHY IS FOOD SAFETY SO CHALLENGING?
THE FLOW OF FOOD
TIME & TEMPERATURE
THE PERSON IN CHARGE (PIC)

Why You Are Taking This Class and/or exam?

Each year in the United States, 48 million people contract a food borne illness. 128 thousand have to be hospitalized and approximately 3 thousand people will die due to their illness.

Because of the above conditions, it became apparent in the early 1900's that the government had to have control over those industries that provided food to the population. New agencies were created and new laws were enacted.

Additional Reasons for Taking the Course

- If you're particular jurisdiction does not require the certification, but your operation has been cited several times for violations of the local food code; you may, as part of your compliance, be required to take and pass an ANSI accredited certification course and/or exam.
- Your jurisdiction requires that one or more individuals employed in the operation have and maintain current certification.
- Your jurisdiction requires that your certification be renewed every three or five years. Depending upon their requirements, you may have to take the class, class and exam or just the exam.
- Your company policy requires that particular positions in their operation be certified. For example; all management personnel, all line cooks positions and up or all department heads

Achieving the Required Level of Food Safety Knowledge

Over forty years ago, the Council for Food Protection was created. This council sets the standards for the "Food Protection Managers Certification" This certification requires an individual to take an accredited examination in order to **"demonstrate knowledge of food safety".** The American National Standards Institute **(ANSI)** was contracted; they oversee all exams that want to be accepted for this certification. All ANSI exams are equal, but not necessarily in the eyes of a particular jurisdiction, or a certain business. **Individuals should verify with their company policy and/or the local jurisdiction as to the acceptance of the exam you will be taking.**

The FDA incorporated the Conference standards into its Model Food Code; they are now recommending that all retail operation have a certified Food Protection Manager during production and/or serving.

IMPORTANT GOVERNMENT AGENCIES INVOLVED IN FOOD SAFETY

Today the food service industry is overseen by the following agencies and departments, understanding their roles are important so we may better understand their rules and regulations.

FOOD AND DRUG ADMINISTRATION

The Food and Drug Administration (FDA), writes the **"Model Food Code",** a reference guide for all 50 states to use when preparing rules and regulations regarding the public and food safety. It is based on ongoing scientific research and is updated on a continuing basis, making it necessary for the states to change their rules and regulations from time to time. The Model Food Code now requires that in order to ensure food safety, all retail food establishments have a **certified food protection manager on site at all times that the operation is open.** *It is important to remember that the FDA Model Food Code are just* ***recommendations***  *to the 50 states, each state has to adopt this model code in part or whole.*

It also oversees other agencies who oversee that all food is grown, processed, transported, delivered, prepared and served safely to all consumers.

The FDA Model Food Code also establishes five key Public Health Interventions to protect consumer health.

1 Employee health controls. **Employees acknowledge that they have to report any illness to management.**
2 Time and temperature parameters for controlling pathogens. **Keeping TCS foods out of the TDZ**
3 Consumer Advisories. **Warning consumers about consuming undercooked foods and allergens.**
4 Demonstration of knowledge **PIC demonstrating an understanding of food safety**.
5 Controlling hands as a vehicle of contamination **Having an adequate hand washing program in place.**

UNITED STATES DEPARTMENT OF AGRICULTURE: (USDA) Is a federal agency that is charged with overseeing the meat, poultry (including eggs) and dairy industries nation-wide It has **jurisdiction anytime these products cross state lines**. If a product stays within the state boundaries the state department of agriculture will have jurisdiction.

THE CENTER FOR DISEASE CONTROL: (CDC) Located in Atlanta Georgia this agency collects data from all of the health departments located throughout the U.S and abroad. Using the latest software, they are able to traceback where an outbreak started. They also keep track of emerging pathogens.

Continued….

The Local Jurisdiction (Your Health Department) Depending on the state you work in, it is possible that your operation will be inspected by the state health department, the county health department or your city's health department. They are the boots on the ground, responsible for local investigations, inspections, training and a whole lot more.

After each state studies the new **Model Food Code**, the state health department will ask for a bill to be introduced to the state legislature to change particular rules and regulations. This can take quite a while to happen, but when it does the new rules and regulations take effect in that state. This is why food safety regulations can vary from one state to another.

FOR YOUR FPMC EXAM ALWAYS REFER TO THE FDA CODE AS OPPOSED TO YOU LOCAL JURIDSDICTION LAWS OR COMPANY POLICY	

The vast majority of our food supply is safe. *It is free of pathogens and other adulterants,*

Then why do we have to bother with this class?

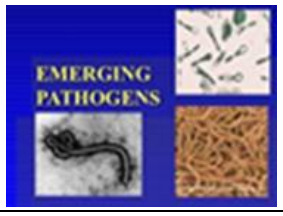
Because of the small amount of unsafe product that can and does get into our supply, we in the foodservice industry must be diligent. *We have to assume* that any of the products we use are unsafe and must be handled in a manner that *prohibits, eliminates or reduces* the risk to the consumer.

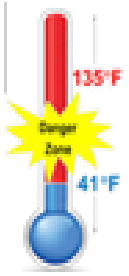
A POINT WORTH UNDERSTANDING:

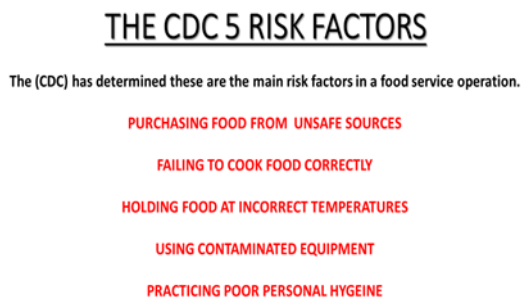
Any food that is delivered to our businesses may be unsafe to serve. Even upon careful inspection when its delivered. The **USDA** states; 1 out of every 4 chickens in the U.S. contain high unsafe levels of Salmonella bacteria. So, what can we do? We act pro-actively and create a policy that all poultry items must be cooked to an internal temperature of **165F**. We do this this because the FDA says doing that will reduce to safe levels or kill the Salmonella bacteria in poultry and make it safe to serve.

Challenges to Food Safety

Language and culture: For safety, communication is a must. Different languages and customs are road blocks.
Literacy and education: Many food service workers come here with little or no formal education, another roadblock.
Emerging Pathogens: Science moves very fast today. Discovering a new pathogen is common, then we must learn about it.
High-risk customers: Understanding the relationship between food safety, high-risk and the body's immune system is critical.
Staff turnover: The rapid growth of the industry relies more on younger entry level, whose maturity is lacking.
Unapproved suppliers: Food safety begins with purchasing. If you cannot trust your vendors the rest becomes more difficult.







The Flow of Food tells the story of any particular food item used in our kitchens; from the time we purchase it, until it is served. As we go through the course you will see how at each step in the Flow of Food, food is impacted by what the **CDC** calls Risk Factors and how we apply a food safety system known as Active Managerial Control to offset those risks. The number one factor during this trip is to make sure that food products are never exposed to Time Temperature Abuse. Time Temperature Abuse is the extended period of time a food product spends in what is called the Temperature Danger Zone **(TDZ),** which is above **41 degrees F.** and below **135 degrees F**.

PERSON IN CHARGE (PIC)

The Person in Charge could be anyone of a number of your operations staff. The owner, chef, manager, shift manager, head cook to name some. As long as that designated person can answer any questions about your operations food safety when asked by your health department. The PIC needs to take responsibility for many aspects of the operation and anything that affects food safety; from carrying out **Active Managerial Control** duties including, staff training, observing that policies and standard operation procedures are being followed correctly, to making sure that all risk factors are being dealt with to avoid any possible food safety issues. Passing and **ANSI** accredited Food Protection Managers Certification exam has been deemed sufficient by the Conference for Food Protection as a way to Demonstrate Knowledge of Food Safety**. The FDA code now requires that a certified person be present whenever a food service establishment is operating.**



CHAPTER 1 QUESTIONS

Fill in the blanks (use a separate sheet of paper to record your answers)

1	The P.I.C. must be able to demonstrate what to a health inspector?	
2	Two reasons for making food safety training so challenging are?	
3	State food codes are based on what agencies recommendations?	
4	The first step in the Flow of Food is?	
5	The FDA Food Code states that passing what kind of exam qualifies someone to be a P.I.C.	

True or False

1	Answers to the Food Protection Managers Certification exam are based on the regulations in your jurisdiction?	
2	Passing an ANSI accredited Food Protection Manager exam does not demonstrate sufficient knowledge of food safety?	
3	Once a food product has completed the 9 steps through the flow of food it can then be considered safe to eat?	
4	The food supply in the United States has many problems, that is why this certification is required.?	
5	If there are 6 people in the same room it is mathematically likely that at least one contracted or will contract a foodborne illness within the year.	

ANSWERS ON PAGE 14

TEST YOUR KNOWLEDGE

Column 1 are the questions. Choose the correct answer from the choices in column 2 and write the letter in the corresponding box in column 3.

Please note, some answers are used more than once and some are not used. The answer key is located on page 14

1		2		3	
1	Process in which food product travels from farm to fork	A	Food and Drug Administration (FDA) Model Food Code	1	
2	Tracks food borne outbreaks nationwide	B	Flow of Food	2	
3	Oversees the dairy, meat and poultry industries	C	Person in Charge	3	
4	Now recommends a holder of the Food Protection Managers Certificate be present during all operational hours	D	Language and culture	4	
5	Anyone employed by an operation who passes an ANSI accredited exam can be designated as the	E	Center for Disease Control (CDC)	5	
6	Challenges to food safety	F	Occupational Health and Safety Administration (OSHA)	6	
7	Recommends new and/or updated food safety regulations	G	Local Health Department	7	
8	Issues permits and licenses to retail foodservice establishments	H	United States Department of Agriculture (USDA)	8	
9	Government body that votes to accept the FDA food code for use in their own jurisdiction	I	Hepatitis A	9	
10	Federal agency which has jurisdiction of interstate egg business	J	The STATE Assembly	10	

ANSWER PAGE

FILL IN THE BLANKS

1	KNOWLEDGE OF FOOD SAFETY
2	COST, CULTURE, LANGUAGE, COMPRHENSION, TURNOVER, NEW PATHOGENS & HIGH-RISK GROUPS
3	FDA MODEL FOOD CODE
4	PURCHASING
5	AN ANSI ACCREDITED FPMC EXAM

TRUE OR FALSE

1	FALSE
2	FALSE
3	FALSE
4	FALSE
5	TRUE

TEST YOUR KNOWLEDGE

1	B
2	E
3	H
4	A
5	C
6	D
7	A
8	G

CHAPTER 2
FOOD SAFETY HAZARDS

In this chapter we will review….

WHAT IS A HAZARD?
PHYSICAL HAZARDS
CHEMICAL HAZARDS
BIOLOGICAL HAZARDS
TOXINS & SEAFOOD TOXINS
HIGH RISK CUSTOMERS
FOOD DEFENSE
ALLERGENS

A HAZARD is any source of potential damage, harm or adverse health effects on something or someone.

Hazards/Contaminants are the presence of harmful substances in food. Some food safety **hazards/contaminants** occur naturally, while others are introduced by humans or the environment. The three types of hazards are;

1. **Physical Hazards;** broken fingernails, staples and band aides that accidentally get in to food during the *Flow of Food*.
2. **Chemical Hazards;** food service chemicals (soaps, sanitizers, degreasers, or metals like zinc, copper & lead found in pots and pans, etc.)
3. **Biological Hazards** Bacteria, Viruses, Parasites, Fungi and Toxins. These ***Biological Hazards*** (contaminants) are very, very small and hard to detect. We refer to them as ***Pathogenic Microorganisms***; because unlike some microorganisms that just spoil food (spoilage pathogens), these microorganisms can make people ill or kill them.

PHYSICAL HAZARDS ARE DIVIDED INTO TWO GROUPS; NATURAL AND UNNATURAL

Physical Hazards are a constant problem. They can become a problem when you least expect it, so **diligence is needed to avoid these problems.** Some basic policies should be incorporated to help prevent people being injured or worse. **Do not leave things that do not belong in the kitchen in prep and/or service areas.**
Some examples;
Rubber bands around broccoli or celery, when cut they tend to take off like a rocket. If they land in something like spinach and cannot be seen, a customer can attempt to swallow only to start chocking.

The kitchen lights do not have a protective cover and one broke when the utility person lifted the mop-handle. The shattered glass went everywhere including into a bain-marie of soup. The customer ingested some soup and started bleeding internally.

A thumbtack fell off the cork board used for incoming dining room orders and fell into a bowl of chocolate mousse. Later, the customer felt something funny in his mouth and spit the tack out.

CHEMICAL HAZARDS

Many people have gotten sick after consuming food and beverages contaminated with foodservice chemicals. To keep food safe, follow these guidelines. Foodservice chemicals (cleaners, sanitizers, polishes, machine lubricants, pesticides, etc.) must be used carefully and stored properly.






- Purchase chemicals from approved, reputable suppliers.
- Store chemicals away from prep areas, food storage areas and service areas.
- Use chemicals for their intended use and follow manufacturer's directions.
- Only handle food with equipment and utensils approved for foodservice use.
- Make sure the manufacturer's labels on original chemical containers are readable.
- Keep SDS current, and make sure they are accessible to staff at all times.
  (Safety Data Sheets which are required by OSHA- Occupational Safety Hazard Administration)
- Follow the manufacturer's directions and local regulatory requirements when disposing of chemicals.
- When transferring chemicals to additional containers (bottles) make sure the bottles are labeled properly.
- Check to see that soda dispensing systems does not have old copper tubing that can contaminate water left in the lines overnight and become contaminated with ***Toxic Metal Poisoning.***
- Avoid use of toxic metals, copper, zinc and lead found in pots and pans.
  If acidic food is cooked in these containers you risk ***TOXIC METAL POISONING***



- **Never use used chemical buckets to store food product.**

OSHA Occupational Safety and Health Administration

MSDS SHEETS / OSHA

Safety Data Sheets (SDS) are informational sheets about chemicals in the workplace. The Occupational Safety Health Administration (OSHA), a federal agency that oversees workplace safety requires that these sheets be kept on file so employees who work with a particular chemical can read all about them. According to the regulation employees have a right to know what chemicals they are working with and what are the possible dangers. They should be displayed where staff can easily access them.

BIOLOGICAL HAZARDS

MICROORGANISIMS AND TOXINS

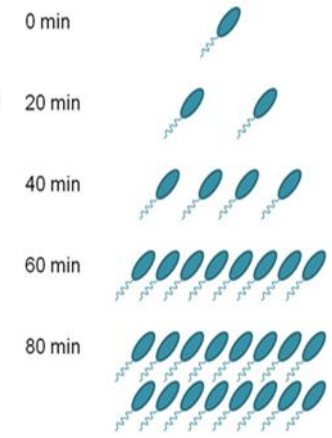
(Bacteria, Viruses, Mold, & Parasites)

Microorganisms are small living single cell organisms that can be seen only with the aid of a microscope. When the ***conditions*** are right, *microorganisms* start to multiply. On average they will double every 20 minutes**.** It is this **multiplication** to unsafe levels that causes people to become ill. It is our responsibility as food service professionals to help make sure this does not happen.

Food Safety Hazards

Cells

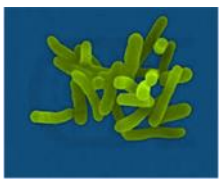
- Microorganisms are made up of cells (many, many) of them. Cells are living entities.
- Cells are so small you need a microscope. 17,000 cells can fit on the face of a dime.
- If conditions are right cells double every 20 minutes.
- Depending upon a particular pathogen (e-coli, salmonella, norovirus, etc.) the number of cells needed to make a person sick on average is in the thousands.



Bacteria will multiply in a predictable pattern, resulting in a growth curve composed of four distinct phases. Lag phase, exponential or log phase, stationary phase and the death or decline phase.

EXAMPLES OF TOXINS

TOXIN MICROBE **POISONOUS PLANTS** **WILD POISONOUS MUSHROOMS** **JAPANESE FUGU** **POLLUTED WATERWAYS**



In addition to microorganisms*,* ***Toxins*** are also Biological Hazards (Contaminants). *Toxins* are Poisons produced by pathogens, plants, fish or animals. Some occur in animals as a result of their diet.

Remember; both microorganisms and toxins are biological contaminants; the difference is that microorganisms are living cells while toxins are poisons.

Biological Pathogens

BACTERIA: *Biological Hazard/Contaminates*

Shiga Toxin E-Coli –

- Commonly found in cattle intestines then transferred (from their stool) to other parts of their carcasses when being slaughtered and prepared for market (usually in ground meats).
- Also found in fresh produce (leafy greens) that have been contaminated by animal droppings and/or irrigated with contaminated water through the roots.
- **Prevention;** Purchase from approved vendors. Cook ground meats to **155F** degrees internally and wash produce properly.

Shigella –

- Commonly spread by people who have not washed their hands properly after using the toilet and then prepping food.
- Ready to eat salads like, potato, egg, macaroni, chicken, etc. are common sources of Shigella.
- Flies in an operation can transfer the bacteria. In addition, food that has made contact with contaminated water such as produce. As few as 10 cells of Shigella can make a person sick.
- **Prevention;** Frequent and proper hand washing, restricting use of bare hand contact and proper use of single use disposable gloves. Control flies inside and outside of the operation.

Salmonella Typhi –

- Linked to contaminated water supply. Caused by flooding and the mixing of safe water supplies (potable water) with sewage treatment, or when a well gets compromised.
- Causes Typhoid Fever and Cholera. It is associated with beverages and ready to eat foods.
- **Prevention**- Check well water annually, prevent backflow in your operation.

Non Typhoidal Salmonella

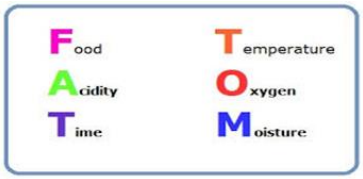
- Another salmonella linked to farm animals that causes salmonellosis that is predominantly found in poultry.
- May also be found in eggs, meat, dairy products and some produce
- **Prevention**- cook poultry and eggs to minimum internal temperature, prevent cross contamination between poultry and ready to eat foods.

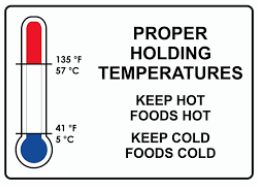
There are many pathogens, the selected ones in this manual were chosen by experts to be representative's pertaining to the course, based on their frequency of occurrence and association with each other, not to mention that there are also many strains, mutations and emerging pathogens. A glossary of additional pathogens can be found at the end of this chapter.

Bacteria pathogens are controlled by eliminating one or more of FATTOM conditions. Examples of this include, vacuum packing food to eliminate oxygen, acidification of food to raise the pH level, drying food to eliminate moisture and most important controlling time and temperature (refrigerating/freezing)

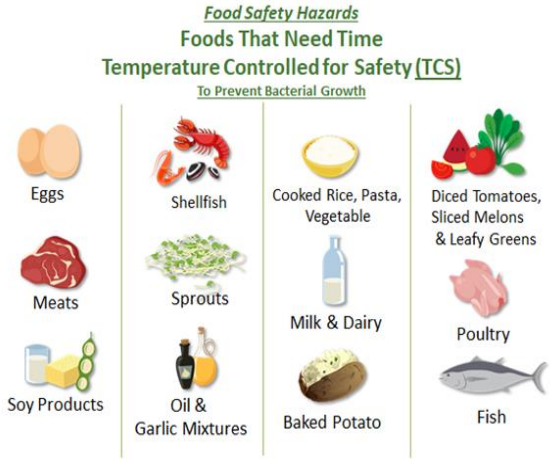
PREVENTING BACTERIA GROWTH USING FATTOM

The acronym FATTOM stands for the first letter of the 6 things that can prevent bacterium from multiplying to unsafe levels





FOOD: Typically, foods that are proteins or carbohydrates. These are categories of foods that are known to be very sensitive to **Time/Temperature Control for Safety (TCS).** Formerly known as **Potentially Hazardous Foods** 💡. Moving them through the **TDZ 41F-135F** is very important towards keeping them safe.



Some frequently asked questions about TCS foods…….

Q. Why a cooked baked potato and not a raw potato?

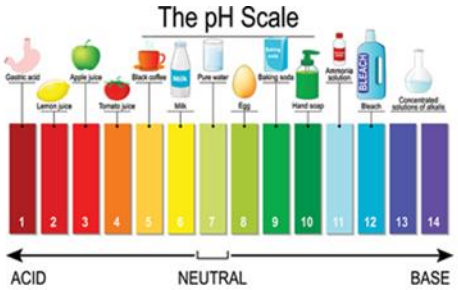
A. It has to do with the fact that potatoes originate from soil which contains many pathogens. Some pathogens have the ability to hibernate until FATTOM conditions are just right. This usually happens when potatoes are precooked and then left at room temperature (the Temperature Danger Zone). During this period the pathogens have the right FATTOM conditions and can multiply to unsafe levels.

Q. Why diced tomatoes and not diced green peppers?

A. This is not to say that green peppers have never been involved in an outbreak, they have. But they have not been involved in enough outbreaks and have not made enough people ill or killed them to make them unsafe if not properly handled. This list is composed by statistics compiled by the Center for Disease Control (CDC).

Q. What's up with untreated garlic & oil mixtures?

A. Garlic also comes from the soil. It is possible that it could contain a bacterium called botulism. Botulism is an anaerobic bacterium which means it does not require oxygen to survive. When placed in an airtight bottle with oil the environment is perfect for FATTOM and the botulism can multiply to unsafe levels (as in a swollen can)



ACIDITY:

- PH (potential hydrogen), or the level of acidity in a particular food.
- Bacteria like foods that have a slightly acidic to neutral acidic level; 4.6-7.5
- An example of this is sushi rice. Sushi rice has a ph of 6.0-6.7. Left alone at room temperature the rice could start to sprout a bacterium called Bacillus Cereus. Over a period of a few hours the bacteria would multiply to very unsafe levels. To prevent this rice wine vinegar is added to the cooked rice bringing down the ph below 4.6. This is checked by using an acid meter and then keeping a log book for documentation.

SUSHI RICE ACIDIFICATION

ACID METER READING

SUSHI FINISHED PRODUCT

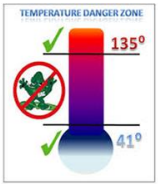
TIME & TEMPERATURE: (DANGER ZONE): Keeping hot food at **135F** degrees or higher and cold food at **41F** degrees or lower greatly reduces the growth of harmful microorganisms.

*The range of temperature between **135** and **41F** is referred to as the **TEMPERATURE DANGER ZONE**.

The two conditions that we can control the most are *TIME &TEMPERATURE*.

Food that is left in the ***Temperature Danger Zone*** for extended periods of time may experience pathogenic growth based on how long and at what temperature. Between **70 -125 degrees** *microorganisms* multiply even faster. Remember you need to have both **TIME and TEMPERATURE** to be present at the same time for **TT** to be a factor in bacterial growth.

T & T you cannot have one without the other, they go hand in hand



OXYGEN: By removing oxygen from food packaging materials we can reduce bacterial growth because of the lack of this required **FATTOM** condition. Many bacteria need oxygen **(aerobic),** there are bacteria like **Botulism** that are **anerobic bacteria**; they do not require oxygen as one of their growth conditions. Extreme care must be taken when using one of the following methods of reducing oxygen. The slightest mistake can cause harm. FYI/ There are some bacteria that can live with or without oxygen, they are called **facultative bacteria**.

- **Vacuum packed food: Food processed by removing the oxygen from the special plastic pouch and sealing it.**
- **Aseptic packaging: U**ltra **H**igh **T**emperature **pasteurized food combined with vacuum packaging creating a shelf stable product,**
- **Modified atmosphere packaging (MAP): Packaging method by which the air inside of a package is altered using gases, such as nitrogen and carbon dioxide**.
- **Sous vide: Packaging method by which portioned food is vacuumed packed in individual pouches then placed in a sous vide bath according to the chef's recipe. It is then chilled and can be stored. When it's time to serve the prep time is reduced.**

An example of **Botulism** are cans that are infected with the **anerobic bacteria**. Even without oxygen the bacteria will multiply. In the can with nowhere to go the can starts to bulge at the ends.	

VACUM

ASEPTIC

MAP

SOUS VIDE

SOUS VIDE

SOUS

MOISTURE: Removing moisture in food using low humidity, low heat and air circulation is an effective way for preserving food by removing one of the FATTOM conditions MOISTURE. It also is a tried and true method of improving the texture, taste and flavor of some foods; dried salamis, dry aged beef, cheeses, fruits and vegetables.

- The level of water in food is referred to as *water activity (Aw).* The levels range on a scale of 0.0-1.0 FYI/ pure water activity is 1.0 By reducing the water activity we are removing one of the FATTOM conditions needed for bacteria to multiply

- SALAMIS

DRIED FRUIT

DRIED AGED BEEF

If all of the above FATTOM conditions are present, bacteria cells can begin to multiply. We can alter this by addressing one or more of these conditions; keep food out of the danger zone using time and temperature, change the acidification level of a product, use dry processing to alter the water activity, or use reduce oxygen packaging (ROP), like vacuum packing to eliminate oxygen.

VIRUSES: *Biological Hazard/Contaminate*

Hepatitis A –

- Commonly linked to shellfish from contaminated waters and ready to eat foods.
- An infected person might not show symptoms until six weeks after being infected. Some people who are infected and contagious may not show any symptoms. These people are referred to as **carriers**.
- ***Jaundice*** (a yellowing of the flesh and whites of the eyes) is a common symptom of Hepatitis A. Exclude all persons with this symptom from the workplace.
- **Prevention;** Exclude food handlers who have had jaundice for 7 days from the operation. Wash hands properly after using the toilet, avoid bare hand contact and purchase shellfish from an approved reputable vendor.

Norovirus –

- Commonly linked to contaminated shellfish and ready to eat foods.
- A small amount of the virus can make a person ill
- An infected person might see symptoms appear in as little as a few hours after ingesting the virus.
- Prevention; Always exclude staff with diarrhea and/or vomiting, wash hands frequently, avoid bare hand contact and purchase shellfish from approved vendors.
- Unlike Hepatitis A whose symptoms can linger for 2 months or longer, Norovirus symptoms last 2-3 days. The bigger problem with Norovirus is that it is responsible for half of the 48 million yearly food borne illnesses and it requires special attention to how it is cleaned up after someone vomits. When someone vomits in a cafeteria, meeting room, or at some kind of cruise ship activity the cells from the vomit can be expelled in a 25-foot radius, many people can breathe in the cells, many surfaces can become infected, and the cells can last for some extended periods of time. Always follow your local jurisdictions outline for this type of cleanup which usually requires disposable outerwear, double gloves, masks, special means of disposing the vomit, disinfecting with repeated sanitization of all infected areas.

Viruses Spread Quickly in Concentrated People Locations

 		
Hospitals and Nursing Homes	**Schools**	**Cruise Ships**
		
Military Bases	**Resorts**	**Day Care Centers**

Viruses can only survive if they have a living host- human or animal.

This is the number one way how a pathogen is spread. Since pathogens are microscopic, and undetected by the naked eye, it is very possible that after someone uses the toilet, their hands and/or fingers may still contain feces attached to a hair on the hand, between a crease in their skin or under a finger nail. When they leave the lavatory and go to a buffet or into the kitchen everything they touch can be contaminated. When touch by someone else the cycle continues. Everyone who ingests food that was contaminated or comes in contact with the contaminated feces and by chance touch their mouth becomes a candidate to become ill. Remember, **viruses are mainly prevented by good and frequent hand washing, while bacteria are stopped primarily by time and temperature control.**

The most common way that food and food contact surfaces become contaminated is when an infected food handler does not wash their hands sufficiently after using the rest room.

We refer to this as the "**FECAL ORAL ROUTE"**

Practicing proper personal hygiene is the surest way to prevent virus infection. Cooking or freezing do not kill viruses

NOROVIRUS CLEAN UP

Dispose of all exposed food.

Wear disposable protective outerwear.

Clean, sanitize, the disinfect all areas within a 25-foot range.

Use the required solution of bleach to water 5-25 tablespoons of household bleach to a gallon of water.

Any clothes or fabric materials that were contaminated wash in very hot water and/or steam clean.

Norovirus can live on stainless steel for 10 days

The FDA has not as of yet recommended officially what should be done to deal with Norovirus accidents. In the meantime, follow any guidelines and/or rules set forth by your local jurisdiction.

Food Safety Hazards

The Big Six Pathogens

- Shigella
- Shiga Toxin E-Coli
- Salmonella Typhi
- Non - Typhoidal Salmonella
- Norovirus
- Hepatitis A

- Report infected staff to local health department.
- Infected staff cannot return to work without a doctors note.
- They must be symptom free.

While these are the six main pathogens that we are concentrating on in food safety, there are many different strains (variations) of **e-coli, salmonella**, etc. Also, there are many more pathogens that affect food safety; **Bacillus Cirrus, Campylobacter, Giardia's, Staphylococcus.** But for now, concentrate on these six. (A glossary of additional pathogens can be found at the end of this chapter). **FYI/ STAFF WHO ARE EXPERIENCING DIAHRREHA, ARE VOMITING OR ARE JAUNDICE MUST GO HOME. NO MATTER WHAT TYPE OF OPERATION.**

A policy document explains which symptoms and illnesses employees must report to their managers and what managers must do when they receive such reports. A clear employee health policy is necessary to prevent the spread of foodborne illness.

FUNGI/MOLD, MUSHROOMS AND YEASTS

Molds are microscopic fungi that live on plant or animal matter. Most are filamentous (threadlike) organisms and the production of spores is characteristic of fungi in general. These spores can be transported by air, water, or insects. Unlike bacteria that are one-celled, molds are made of many cells and can sometimes be seen with the naked eye. When airborne, the spores spread the mold from place to place like dandelion seeds floating in the air. Molds have branches and roots that are like very thin threads. The roots may be difficult to see when the mold is growing on food and may be very deep in the food. Foods that are moldy may also have invisible bacteria growing along with the mold. Some molds cause allergic reactions and respiratory problems. And a few molds, in the right conditions, produce "**mycotoxins,"** poisonous substances that can make you sick. You can only see part of the mold on the surface of food — gray fur on old bologna, fuzzy green dots on bread, white dust on hard cheese, smooth circles on fresh fruits, and on jams and jellies a furry growth on the surface. In some cases, toxins may have spread throughout the food. Molds are found in virtually every environment and can be detected, both indoors and outdoors, year-round. Mold growth is encouraged by warm and humid conditions. Outdoors, they can be found in shady, damp areas or places where leaves or other vegetation are decomposing. Indoors, they can be found where humidity levels are high. Molds form spores which, when dry, float through the air and find suitable conditions where they can start the growth cycle again. Food **Mycotoxins** are poisonous substances produced by certain molds found primarily in grain, nut crops, celery, grape juice, apples, and other produce. **Aflatoxin** is a cancer-causing poison produced by certain fungi in or on foods and feeds, especially in field corn and peanuts.

Yeast can spoil food quickly. But yeast needs oxygen to grow. When yeasts grow in food it produces alcohol and carbon dioxide. When this happens, you can smell and/or taste the odor of alcohol. Yeast is usually pink in color but can be slimy and may give off bubbles. Yeast can be killed during cooking and are beneficial to producing breads, beers, and vinegars. They do cause spoilage in foods like jams, jellies, meats, honey and wine. Food affected by yeast should be discarded even though yeasts are usually not associated with any illnes**s.**

Mushroom poisoning is caused by the consumption of raw or cooked mushrooms, which are higher-species of fungi. There is no general rule of thumb for distinguishing edible mushrooms from poisonous toadstools. The toxins that cause mushroom poisoning are produced naturally by the fungi. Most mushrooms that cause human poisoning cannot be made safe by cooking, canning, freezing, or any other processing. The only way to avoid poisoning is to purchase from reputable vendors. Molds are used to make certain kinds of cheeses and can be on the surface of cheese or be developed internally. Blue veined cheese such as Roquefort, blue, Gorgonzola, and Stilton are created by the introduction of P. roqueforti or Penicillium roqueforti spores. Cheeses such as Brie and Camembert have white surface molds. Other cheeses have both an internal and a surface mold. The molds used to manufacture these cheeses are safe to eat.

While most molds prefer warmer temperatures, they can grow at refrigerator temperatures, too. Molds also tolerate salt and sugar better than most other food invaders. Therefore, molds can grow in refrigerated jams and jelly and on cured, salty meats — ham, bacon, salami, and bologna.







Parasites may be present in food or in water and can be identified as causes of foodborne or waterborne illness in the United States. They range in size, from tiny single-celled organisms to worms visible to the naked eye. Their lifecycle may also vary. While some parasites use a permanent host, others go through a series of developmental phases using different animal or human hosts. The illnesses they can cause range from mild discomfort to debilitating illness and possibly death.

What are parasites?
Parasites are organisms that derive nourishment and protection from other living organisms known as hosts. They may be transmitted from animals to humans, from humans to humans, or from humans to animals. Several parasites have emerged as significant causes of foodborne and waterborne illness. These organisms live and reproduce within the tissues and organs of infected human and animal hosts, and are often excreted in feces.

How are they transmitted?
They may be transmitted from host to host through consumption of contaminated food and water, or by putting anything into your mouth that has touched the stool (feces) of an infected person or anima





- Common Food Parasites:
- ***Cryptosporidium parvum***
- ***Cyclospora cayetanensis***
- ***Toxoplasma gondii***
- ***Trichinella spiralis***
- ***Giardia duodenalis* or *intestinalis***
- ***Taenia saginata/Taenia solium* (Tapeworms)**

PARASITES – ***Biological Hazard/Contaminate.***

- Require a host to live and reproduce (like viruses).
- They are associated with seafood, wild game and food processed with contaminated water, such as produce.
- Make sure that fish to be served raw or cooked -rare is correctly frozen by the purveyor.

Biological Toxins - *Biological Hazards/Contaminates*

Some toxins (poisons) are associated with certain plants, mushrooms, and seafood. They can be a natural part of the product or can be caused by external issues.

Histamine (Scombroid poisoning) at times can be found on fish like tuna, mackerel or mahi-mahi. It becomes a safety issue if the fish is ***time-temperature abused***.
Ciguatera Poisoning: Fish like barracuda, snapper or grouper (predatory fish) that eat smaller fish, up the food chain, that ate contaminated algae can become contaminated with ciguatera toxin. Eventually the toxin has built up in the larger fish and has become systemic, while the fish has developed immunity to the poison.
Histamine can cause severe allergic reactions and **Ciguatera;** in addition to allergic reactions, vomiting, diarrhea, neurological symptoms (hot and cold sensations, tingling feeling in the extremities, difficulty breathing, rapid heartbeat and hives can be present. Both could lead to anaphylactic shock.

- Both toxins **cannot** be destroyed by cooking or freezing.
- The most important prevention is to **purchase seafood from approved reputable sources.**
- If considering Histamine poisoning in addition to reputable purveyors it **is more important** to control ***time and temperature*** when handling certain raw fish to prevent histamine poisoning. (Scombroid poisoning)


MAHI-MAHI


AMBERJACK


BARRACUDA


TUNA


SIAMESE ALGAE EATER

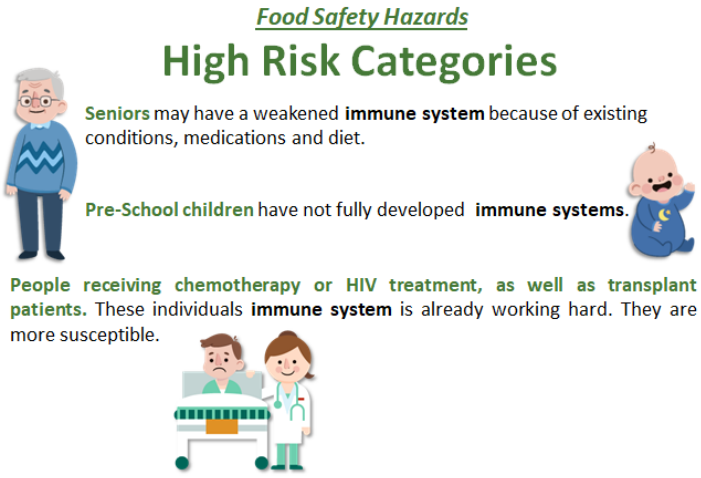
Common symptoms for the above illnesses are:

- Diarrhea vomiting, fever nausea, abdominal cramps
- Jaundice Heart palpitations Difficulty breathing Reversal of hot and cold sensations
- Tingling in the extremities

Onset time (the time it takes for symptoms to start) can be anywhere from 30 minutes to six weeks. An individual might suffer anywhere from mild diarrhea to death.

Biological Hazards: We have seen how these hazards can be very harmful. If a person is affected it is because it happened one of three ways;

Infection: the microorganism enters the body and continues to grow causing an illness.
Intoxication/Poisoning: a toxin created by a microorganism, a poison (toxic) substance that causes illness when ingested.
Toxin-Medicated Infection: A microorganism in the body produces a toxin causing illness.



What is a High-Risk Population? It is a category of people whose immune system is being challenged, such as the elderly, due to poor eating habits, medications, and diminished immune system, the very young (toddlers); their immune system has not fully developed, transplant recipients and those people receiving chemo-therapy or HIV treatment. These groups cannot take a chance of getting a food borne illness infection on top of their current condition. If your operation includes any people in the high-risk group, it is a good policy to take extra care and precautions during the ***"Flow of Food"*** through your operation

SAFE SERVICE OF HIGH RISK GROUPS

Operations that serve mainly a high-risk group such as the elderly in assisted living, nursing homes, etc. should take extra precaution and follow the following guidelines;

- Never serve raw seed sprouts
- Raw or undercooked eggs (use pasteurized eggs)
- Do not serve raw or undercooked meats, seafood.
- Do not serve unpasteurized milk or juice.
- Do not use time as a safety factor.

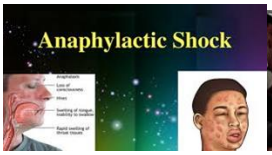
Severity	Symptoms	Signs
Mild	– Itching mouth – Nausea	– Urticaria – Oedema of the face – Conjunctivitis – Red throat
Moderate	– Cough or wheeze – Diarrhoea – Sweating	– Wheeze – Tachycardia – Pallor
Severe	– Difficulty in breathing – Collapse – Vomiting	– Severe wheeze with poor air entry – Oedema of the larynx – Shock – Respiratory arrest – Cardiac arrest

Allergies is the body not recognizing certain proteins. When this happens, it goes into a defense mode. Food allergies have become a major concern in the food industry and it will only get to be a bigger concern as time goes on. Create a protocol for dealing with allergy orders and train your staff to follow it 100% of the time. Even the smallest insignificant mistake in preparation or service can result in a crisis. Remember we refer to the transferring of allergens from one surface to another as "**CROSS CONTACT"** and not cross contamination. 💡

The first line of defense is to inform the consumer that they should inform the business if they do have an allergy or intolerance (a food product or ingredient that an individual has a problem digesting). Based on your menu and the type of service create a plan that deals with allergen orders. It should include a list of ingredients based on the eight classified allergen foods, designated equipment or a policy to wash, rinse and sanitize any equipment that will be needed, how to present the order to the kitchen, who should be designated and responsible for prepping, cooking and plating and another designee who serves the allergen order.

Staff should be trained not to answer allergy customer questions unless they have been trained and allowed to do so. The allergen order from the very beginning needs to be carefully monitored and kept separate through service. All equipment must be washed rinsed and sanitized prior to use in preparing an allergy order. A manager should oversee all allergy orders.

A person who has an allergic attack can become seriously ill. Check your local regulatory to see if you can give out Benadryl or an epee pen to someone who is having a reaction. Unchecked they could go into anaphylactic shock.


Servers should be informed as to what is in a dish. This will help them help customers with allergies. The daily pre-open staff meeting is a good place to go over this.

A food intolerance is difficulty digesting certain **foods** and having an unpleasant physical reaction to them. It causes symptoms, such as bloating and tummy pain, which usually happen a few hours after eating the **food**.

DELIBERATE CONTAMINATION OF FOOD
FOOD DEFENSE

It is unfortunate that we live in a world today where we must be diligent about basic security in our operations. Obviously those of us who work in locations that attract high profile customers, or if we offer specific ethnic cuisines, or management decides it wants to use its position in the community to support ideas or causes that are contrary to other people's beliefs, any of these scenarios can attract individuals or groups to the contrary who then feel the necessity to make a point using harmful tactics. Statistically most food defense issues have to do with a former and/or disgruntled employee. Work to establish good relations with the local police, install remote monitoring systems, do background checks for the people you are thinking of hiring, know your vendors and delivery people and do not leave any doors or exits unattended or unlocked. Your staff should be trained to report unusual occurrences, such as, packages left unattended, people over dressed for the weather or acting peculiar and people who might be doing anything suspicious. Train them to follow the FDA's ALERT system.

- **Food Safety** is preventing the **accidental** contamination of food.
- **Food Defense** is preventing the **deliberate** contamination of food.
- **Groups who may attempt to contaminate food:**
- Terrorists or activists.
- Disgruntled current or former staff.
- Vendors.
- Competitors.

- **THE FDA'S RECCOMMENDED PRORAM FOR FOOD DEFENSE**
- **Assure** = Make sure products received are from safe sources.
- **Look** = Monitor the security of products in the facility.
- **Employees** = Know who is in your facility.
- **Reports** = Keep information related to food defense accessible.
- **Threat = Develop a plan for responding to suspicious activity for a threat to the operation**. (this is the number one thing to remember)

ADDITIONAL PATHOGENS

S. No.	Microorganism	Disease	Symptoms
1.	*Campylobacter jejuni*	Diarrhea	Fever, blood in stools, abdominal pain, abdominal cramps.
2.	*Salmonella typhi*	Typhoid high fever	Pain in the abdomen or muscles, whole body fatigue, fever, chills, loss of appetite, or malaise
3.	*Staphylococcus aureus*	Infected eczema, psoriasis or any other pus draining lesion	Redness, painful and swollen and the skin
4.	*Escherichia coli*	Diarrhea	Fever, blood in stools, abdominal pain, abdominal cramps.
5.	*Listeria monocytogenes*	Septicemia and meningitis	Shivering, or having cold hands and feet, pale, blotchy complexion, confusion, aching limbs or joints.
6.	*Shigella*	*Shigellosis*	Fever, Abdominal Cramps And Tenesmus, And Frewuent, Small Volume, Bloody Stools Containing Mucous
7.	*Paratyphi*	Paratyphoid fever	Vague chills, sweating, headache, weakness, dry cough, anorexia, sore throat, dizziness, and muscle pains
8.	*Staphylococcus aureus*	Illnesses, skin infections	Pimples, impetigo, boils, cellulitis, folliculitis, carbuncles, scalded skin syndrome, and abscesses
9.	*Clostridium perfringens*	Abdominal pain and stomach cramps	Nausea, Fever and vomiting
10.	*Clostridium botulinum*	Flaccid paralysis of muscles	Double vision, Drooping eyelids, muscle weakness (resulting in a flaccid paralysis)
11.	*Bacillus cereus*	Emetic toxin	Nausea and vomiting
12.	*Yersinia enterocolitica*	Yersiniosis	High body iron levels, watery or bloody diarrhea and fever
13.	*Vibrio parahaemalyticus*	Cholera	Water diarrhea, abdominal cramping, nausea, vomitig
14.	*Norovirus*	Dehydration, malnutrition and even death	Dry mouth and throat, dizziness, decreased urine output

Chapter 2 Fill in the blanks

1	Toxic Metal Poisoning and Choking on a chicken bone are examples of what type of hazards?	
2	What acronym is used to stave bacteria growth?	
3	What was referred to as “Potentially Hazardous Foods” is now called?	
4	Controlling acidity and moisture are just two methods of controlling?	
5	Norovirus and Hepatis A spread due to the Fecal Oral Route which describes improper what?	
6	Virus cells need what in order to invade living cells?	
7	Mold that does not make someone ill, but only changes the appearance, taste and smell of food is called?	
8	Parasites are found to be problematic with?	
9	The best way to make sure that you do not have a problem with Histamine or Ciguatera poisoning is to?	
10	The transferring of allergens from one surface to another surface is called?	
11	The most important aspect of the ALERT system is?	

Chapter 2 True or False

1	With the right FATTOM conditions, cells can double on average every 20 minutes?	
2	Norovirus cells that land on raw meat can cause humans to become ill?	
3	TCS foods left in the danger zone for 30 minutes will have a significant increase in cell multiplication?	
4	The 3 types of food safety hazards are physical, chemical, and microscopic?	
5	The number one way to prevent bacteria multiplication is through frequent hand washing?	
6	The most likely threat to a food service establishment comes from a current or past employee?	

Answers on page 35

TEST YOUR KNOWLEDGE

Chapter #2

Column #1 are the questions. Choose the correct answer from the choices in column #2 and write the letter in the corresponding box in column #3.

Please note, some answers are used more than once and some are not used.

The answer key is on page 35

1		2		3	
1	It is a poison	A	Living hosts for viruses	1	
2	Sustained use can cause splintering and become a food hazard	B	Medical ID bracelet	2	
3	What information on chemicals is required by OSHA	C	Rubber spatula	3	
4	The best way to prevent bacteria from multiplying is	D	Egg shells mix in with food	4	
5	Pigs, sheep, cattle and people are	E	Lead Pots	5	
6	This is a physical hazard	F	Cooper tubing	6	
7	Causes discoloration and off odor	G	Safety Data Sheets (SDS)	7	
8	Can be caused by Salmonella Typhi	H	20 minutes	8	
9	The range on the ph scale that bacteria like to thrive in	I	Toxins from chemicals, fish or mushrooms	9	
10	May not be worn when working in a kitchen	J	Contaminated well water	10	
11	On average, bacteria double every	K	Prevent Time and Temperature abuse	11	
12	Another name for Scombroid poisoning	L	A type of Reduced Oxygen Packaging (ROP)	12	
13	Is affected by time-temperature abuse	M	4.6-7.5	13	
14	Sous Vide is	N	Spoilage mold	14	
15	Can be a problem in a soda system	O	Histamine poisoning	15	
16	When interacted with acidic food can cause toxic metal poisoning	P	High Risk	16	

Answer Page Chapter 2

Fill in the blanks

1	CHEMICAL & PHYSICAL
2	FATTOM
3	FOODS THAT ARE TIME & TEMPERATURE CONTROLLED FOR SAFETY
4	BACTERIAL GROWTH
5	POOR OR LACK OF PROPER HAND WASHING
6	A LIVING HOST
7	SPOILAGE MOLD
8	SEAFOOD AND WILD GAME
9	PURCHASE FROM REPUTABLE VENDORS
10	CROSS CONTACT
11	THREAT (DEVELOP PLAN)

True or false

1	True
2	False
3	False
4	False
5	False
6	True

Test Your Knowledge

1	I	9	M
2	C	10	B
3	G	11	H
4	K	12	O
5	A	13	O
6	D	14	L
7	7	15	F
8	J	16	E

CHAPTER # 3
FOOD SAFETY MANAGEMENT SYSTEMS

In this chapter we will review….

USING ACTIVE MANAGERIAL CONTROL
THE CDC'S FIVE RISK FACTORS
THE FDA'S PUBLIC HEALTH INTERVENTIONS
PRE-REQUISTE PROGRAMS
POLICIES & PROCEDURES
STANDARD OPERATING PROCEDURES
HAZARD ANALYSIS CRITICAL CONTROL POINT

THE PROCESS APPROACH

THE PURPOSE OF ACTIVE MANAGERIAL CONTROL

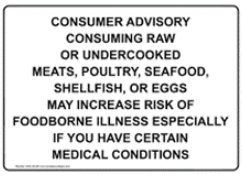
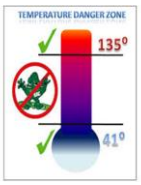
- The (CDC) has determined these are the main risk factors in a food service operation.
- PURCHASING FOOD FROM UNSAFE SOURCES
- FAILING TO COOK FOOD CORRECTLY
- HOLDING FOOD AT INCORRECT TEMPERATURES
- USING CONTAMINATED EQUIPMENT
- PRACTICING POOR PERSONAL HYGEINE

PLEASE READ

- Management uses Active Management Control by establishing policies and procedures (pre-requisite programs) to implement the following…
- CONTROLLING TIME AND TEMPERATURE
- PREVENTING CROSS CONTAMINATION
- PROMOTING PERSONAL HYGEINE
- PURCHASING FROM REPUTABLE SOURCES
- PROPER CLEANING AND SANITIZING

Active Managerial control means taking a pro-active attitude. In food safety this is accomplished by addressing established risk factors that have been determined by the CDC. By creating pre-requisites, policies and standard operating procedures (SOP's) we can meet these objectives.

PUBLIC HEALTH INTERVENTIONS

		
ALLERGEN WARNING	CONSUMER ADVISORY	DEMONSTRATION OF KNOWLEDGE
		
HAND WASHING PROGRAM	TEMPERATURE CONTROLS	NOTIFICATION OF ILLNESS

The FDA has accomplished this by creating Public Health Interventions. Letting the public be forewarned that they need to let food establishments know beforehand that they have an allergy problem. The posting of signs and notices on menus accomplishes this. Also, the notification on all menus that people are warned that consuming raw and/or undercooked foods may be hazardous to their health, especially those in high-risk groups. It is now required that every food service establishment have at least one person during each shift present who has passed an ANSI food protection exam. This is referred to; **Demonstration of Knowledge.** Since it has been established that food service workers are the number one reason for the spreading of contamination and hands are the number one way that this happens, every food establishment must have a recognized policy in place for proper and frequent hand washing. Establishments must practice proper temperature controls to keep food out of the temperature danger zone and lastly, a policy in place that lets employees know the importance of letting the PIC know if they are ill, or if someone in their household is diagnosed with one of the big six pathogens

All food safety programs begin with pre-requisite programs. The pre-requisites are like the foundation of a building. It's upon these choices that we can develop policies and procedures and from there standard operating procedures (SOP's). The pre-requisites shown above are just a small amount that any one place might have. Each establishment will have their own depending on the type of operation and particular circumstances.

Example

Pre-Requisite: Engage a Professional Pest Control Operator

Policy: To maintain a pest free environment

SOP: Based on the recommendations of the PCO utilize his services as needed to rid the operation of any pest and then to maintain that status.

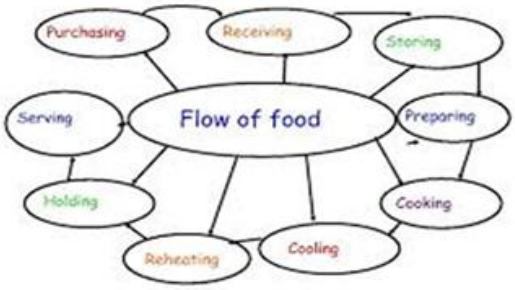
Hazard Analysis Critical Control Point (HACCP)

is a food safety system that is currently used worldwide, mostly in the manufacturing, processing, distribution or wholesale food production level. It is not used that much on a retail food service level, (restaurants, caterers, hospitals, food trucks, etc.). HACCP began back in the 1960's when the National Aeronautical Space Administration (NASA) gave the Pillsbury Company a contract to design a food safety system that would protect astronauts from food poisoning while in outer space. Pillsbury designed a 5 step (later to be changed to 7 steps) **pro-active** system to detect possible problems in advance so that they could be dealt with before they became problematic.

The Seven HAACP Steps:

1 Conduct a HACCP Analysis
2 Determine if there are any Critical Control Points (CCP)
3 Establish Critical Limits
4 Establish Monitoring Procedures
5 Establish Corrective Action Procedures
6 Verify That the System is Working
7 Document Findings

#1 Conduct a Hazard Analysis, we will use a menu item like a roast chicken to illustrate the HACCP procedure. The first step is to look at the menu item through the nine steps in the **flow of food**. Where, if any, were there steps not performed properly, that could cause the chicken to become dangerous to serve?



#2 Determine Critical Control Points In this case the cooking step might be **A Critical Control Point** if the product served never reached a safe internal temperature.

#3 Establish Critical Limits; If the critical Control Point is cooking to the correct temperature, we know for poultry the right temp is **165F**. This is now our Critical Control Point (CCP).

#4 Determine Monitoring Procedures; In this case checking temperature will require a calibrated thermometer.

#5 Determine if Corrective Action is required; Using the monitoring procedure, check the temperature of the chicken and record the findings on a log or tally sheet. If the chicken did not meet the Critical Limit of **165F** the Corrective Action would be to cook the chicken longer. If this happens note it down. Usually, if conducting a HACCP like this, a manger would be stationed by this part of the line. She will check each chicken as it comes out and make the necessary notations.

#6 Verification; After enough chickens are temped, the manager will analyze her tally sheet. If very few chickens did not meet the required limit, it can then be ascertained that the system works. On the other hand, if a large number needed corrective action there must be a problem. Some possibilities could be;

The wrong size chicken was ordered or shipped wrong.

The line cooks thermometer was not calibrated properly.

The oven thermostat was working on and off.

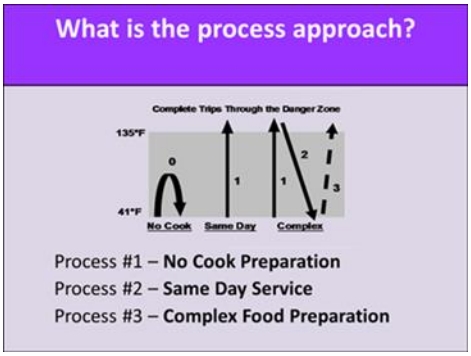
The recipe is incorrect, or the cook was not trained properly.

Once the problem is discovered, corrective action must be taken to see that it does not happen again.

#7 Documentation; At the end of the investigation all relative paper work, notations, reports, etc. must be organized and saved in a manner that it can be called upon if needed in the future regarding similar problems.

- This is a simplified explanation of HACCP. Though widely used throughout the world, it is used in retail operations usually for obtaining a variance. A variance allows an operation to perform something not normally allowed. In the farming, production, manufacturing and distribution food industries it is almost always used.

THE PROCESS APPROACH



- A method of grouping menu items into one of three processes depending on the number of times the food goes though the **temperature danger zone,** which is between 41 °F and 135 °F

- **Food Process Categories**
  Process #1 No Cook Preparation
  Process #2 Same Day Service Preparation
  Process #3 Complex Food Preparation

- This should be considered very carefully when developing your menu and recipes Which will ultimately impact your **Active Managerial Controls**.

The Process Approach is very good way to map out your menu so that you can do an analysis of the menu with regards to storage space, prepping, cooking equipment and ease of service. All menus should consider the following points;
Is all of the cooking equipment sharing the work load of the menu?
Are the menu items divided equally with regard to preparation, and the skill level of staff?
Are menu items available on a regular basis, and is there enough storage space?
Do menu items evenly disperse the Process Approach

NOTES

Preparation Requiring a Variance: A variance is special permission given by the local regulatory authority to perform a process normally not allowed. In giving permission to do this the local authority usually requires that the requesting establishment show proof of the ability to keep the product safe. This proof usually comes in the form of a HACCP plan. The following items usually need a **variance;**

- Packaging fresh juice on site to be sold at a later time, unless the juice has a label warning the consumer that complies with any local regulations.
- Smoking food for preservation *(it's okay to smoke to add flavor).*
- Using additives to change the pH or other means of additives so the product is no longer subject to time and temperature control.
- Using a curing process. (using salt or other ingredients to draw out moisture from a product to make it harder for pathogens to multiply).
- Using foraged products that do not get properly inspected *(a deer dressed, cooked and served at a local restaurant), otherwise known as custom processing or wild mushroom use.*
- Packaging food using a reduce oxygen method. Including MAP, vacuum packed and sous vide.
- Sprouting seeds or beans. *Unless properly controlled e-coli and salmonella can develop.*
- Offering live shellfish from a display tank.

FRESH SQUEED JUICE

SPROATING SEEDS

SMOKING FOR PRESERVATION

DRESSING WILD GAME

SALTING OR CURING

VACUUM PACKING

DISPLAYED SHELLFISH

TRAINING AND MONITORING

- Train staff to follow food safety procedures
- Provide initial and ongoing training
- Provide all staff with general food safety knowledge
- Provide job specific food safety training
- Retrain staff regularly
- Monitor staff to make sure they are following procedures
- Document training
- Use Job Aids
- Correcting a situation immediately is called corrective action

- Managers must set up standard operating procedures that focus on the measures listed above. Then they must train their staff on these procedures and monitor them to make sure the procedures are followed. They should also walk the walk and talk the talk.
- Staff training another pre-requisite of Active Managerial Control should be an ongoing policy in your operation. Monitor staff and the operation itself to make sure that general food safety knowledge is being applied by everyone all of the time. Pay close attention to staff regarding their required specific knowledge of their job. If you find problems, decide if it is something that needs immediate attention (corrective action), or something that you should plan to discuss with the individual later, or a problem/situation you want to cover at the next staff meeting. Training should be set up on a schedule, and remember to always document all training sessions.

Info Search has the student research the answers.
Guided Discussion is an active learning technique that encourages the student to reflect on their own experiences and explore alternative ways of thinking.
Demonstrations takes concepts and present them visually.
Games are designed to create an alternative fun experience.
Technology incorporates methods that are alternative to traditional learning and presented by using the latest available delivery mechanism.
On the Job requires having existing staff who are able to do the job and demonstrate at the same time. then turn things around and let the student take the lead.
Classroom is the established way of learning. It also has the ability to incorporate one or more of these other options.
Role Playing allows students to see and experience other sides of a situation.
Jigsaw is a cooperative learning strategy that enables each student of a "home" group to specialize in one aspect of a topic.
JOB AIDES ARE INFORMATIONAL TYPE POSTERS THAT ARE POSTED TO REMIND PEOPLE HOW, WHAT, WHY TO DO THINGS

TRAINING TIPS

1. Have an ongoing food safety training program for your entire staff that meets regularly before opening or whenever and discuss ongoing topics.	
2. Use job aides; posters and signs to remind staff of regulations and food safety practices they should be following	
3. Use a walk through your facility with an examinee and point out things like an air gap, back flow valve, proper storage of raw products, Master Cleaning Schedule, differences between your corporate and/or local regulations with the exams FDA required answer.	
4. Create an exam buddy system, where two examinees or even an examinee teamed with someone who has done well on the exam in the past. They can study together and just talk to one another whenever there is some down time.	
4. Have an ongoing food safety contest; write a question, post it and let people hand in a written answer. Whoever reaches a certain number of points in a period of time wins a prize.	
6. If the employee passes the exam, give them the rest of the day off with pay; invite their family in for dinner	
7. Display all Food Protection Manager Certificates prominently, either where your patrons can see them, but certainly where all of your staff can see them. Contact your local newspaper, they are always looking for a photo and some copy. And, its great free advertising.	
8. Start out by having all non-manager employees take the Food Handler program. This entry level training program is an excellent way to introduce your staff to the world of food safety, and it will help enable those who move up and need to be certified.	
9. Have examinees come in one to one and half hours before their shift to study. This way there should be someone available to help them if they need it.	

Management must remember to walk the walk and talk the talk!

CHAPTER 3 Complete the answer

1	Organizing and filing information gathered when conducting a HACCP is called, and is step number?	
2	Attributing a value, minimum or maximum to a Critical Control Point in a HACCP is called and is step number?	
3	When conducting a Hazard Analysis, the nine steps that we examine are called?	
4	Reviewing temperature logs when conducting a HACCP is called and is step number?	
5	When conducting a HACCP the first step is called?	
6	When conducting a HACCP, taking action to rectify a possible hazard is called?	
7	When conducting a HACCP determining how to determine Critical Limits is called and what step?	
8	When conducting a HACCP checking to see if there are any hazards that can be mitigated by step and number?	
9	Asking for permission to do something not normally allowed is called?	
10	What are JOB AIDES and what should be done with them?	

Chapter 3 True or False

1	Step 7, Documentation is used to request refunds from vendors?	
2	Conducting a HACCP Analysis is taking a menu item and taking that item through the flow of food to see if there any dangerous pitfalls if something is not done right or a mistake made?	
3	Amelia Erhardt was the first long distance flyer to request HACCP services?	
4	Corrective Action is making an adjustment to the process to avoid a problem in the end?	
5	Checking the temperature of a HACCP item is Step 6 Verification?	
6	Making sure staff is up to date regarding the latest food safety requirements is part of ongoing training.	

Answers on page 46

TEST YOUR KNOWLEDGE

Column #1 are the questions. Choose the correct answer from the choices in column #2 and write the letter in the corresponding box in column #3.

Please note, some answers are used more than once and some are not used.

1		2		3	
1	Keeping records that show the validity of the system and the results for future use.	A	Pre-requisite	1	
2	Conducting a Hazard Analysis	B	Complex trips	2	
3	Managements way of deciding how to implement Pre-requisites	C	Seven	3	
4	Most often this step checks temperature	D	Monitoring	4	
5	Pre-determined programs to focus on particular operational needs; for example, pest control.	E	Policies and Procedures	5	
6	The number of parts to conducting a Hazard Analysis	F	Investigating the flow of food	6	
7	A food product that goes through the temperature danger zone more than once	G	Documenting	7	

ANSWERS

Chapter 3, Fill in the Blank

1	7
2	3
3	Flow of food
4	6
5	1 Conduct a haccp analysis
6	5
7	4
8	2
9	A VARIANCE

Chapter 3 True or False

1	False
2	True
3	False
4	True
5	False
6	True

Chapter 3 Test Your Knowledge

1	G
2	F
3	E
4	D
5	A
6	C
7	B

CHAPTER #4

Implementing Food Safety Management

In this chapter we will review….

Preventing Cross Contamination

Purchasing, Receiving, Storing, Prepping, Cooking & Service

Thermometers and Temperatures

Safe Defrosting of Foods

Buffet Service

Off Premise Service

Safe Egg Handling

Partial Cooking

Ready to Eat Foods

Handling Silverware

Cooling Food, Reheating Food & Using Time as a Safety Factor

Personal Hygiene, Hand Washing & Disposable Glove Use

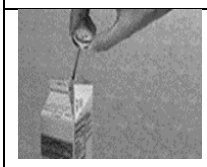
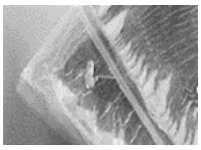
Cross Contamination *is the transferring of pathogens from one surface to another surface. These surfaces can be equipment, food, clothing or people.*

To prevent cross contamination, follow these guidelines;

1. Use separate **color**-coded equipment.	
2. Designated special times to do certain jobs, based on internal cooking temps	**PREP LIST** 1. CHOP CELERY 2. WEIGH & SHAPE BURGERS 3. BONE CHICKENS
3 Wash, rinse and sanitize whenever changing tasks.	
4. Store raw foods properly by internal cooking temperatures.	
5. Change gloves when changing tasks, when gloves get torn or too soiled, etc.	
6. Make sure you are wearing clean clothes, especially your apron.	
7. Use separate work areas (space)	**MEATS / POULTRY/ FISH/ PRODUCE/ DAIRY**
8. Use separate serving pieces on buffets	
9. Use prepared/prepped foods	
10. **THE MOST IMPORTANT EXAMPLE** **Wash hands, often and correctly**	

Purchasing and Receiving

<table>
<tr>
<td> 


 </td>
<td>Always purchase from approved, reputable suppliers who follow federal, state and local rules and regulations.
Delivers should be made when you have time and staff to check deliveries in properly. Check one delivery in at a time.
Make sure the purveyor can meet your needs with regard to very early deliveries, PM deliveries, weekends and weekly multiple deliveries.</td>
</tr>
<tr>
<td>  </td>
<td>• Make sure all items are labeled properly, what you ordered and in good condition.
• No broken bags to torn boxes, return any dented cans or evidence of pest infestation.
• Make sure recalled items are stored separately and marked clearly prior to pick up and are noted on paperwork.
• Store items as soon as possible (to avoid time temperature abuse)</td>
</tr>
<tr>
<td> 




 </td>
<td>• Check for proper temperatures; insert thermometers into items whenever it’s possible without compromising the integrity of the package. Items that can be opened and resealed (like sour cream) should be opened and insert thermometer to check temp.
• It may be possible to check the temperature of bulk food by folding the packaging around the thermometer stem or probe. You must be careful not to puncture the packaging when using this method.
• Make sure that all products have the right color, odor and texture, reject those that do not.
• Look for ice crystals. It is an indication of food that had thawed and refroze.</td>
</tr>
<tr>
<td>  </td>
<td>• If receiving live shellfish make sure the bag or box has the required shell stock i.d. tag attached.
• If buying farm raised fish make sure the package contains the necessary required FDA documentation.
• Fish purchased to serve raw or cooked raw requires documentation on how it was frozen and thawed to kill any parasites that may have been present, keep all of this documentation for 90 days starting with the last day you had the product in your possession.</td>
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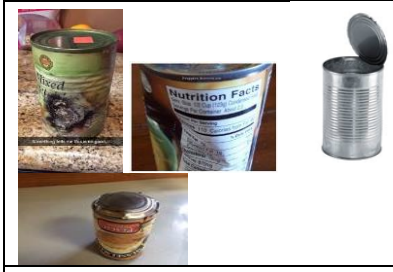
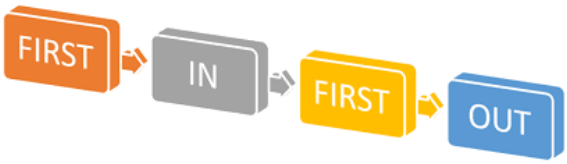
	• Reject cans if they have severe dents, deep dents in the seams, no labels, swollen or bulging at the ends, holes or visible signs of leaking and rust. • **Key Drop Deliveries;** for off hours deliveries when there is no one to receive it is sometimes necessary to have the driver have access to the operation. All receiving guidelines must be kept when this happens.
	The only exceptions to the normal delivery guidelines are these four items; live shellfish and shucked shellfish, fresh milk and fresh eggs in the shell. All of these may be delivered at an ambient temperature of **45F.** The meat inside the shell fish may arrive as high as **50F.** The stipulation is that upon delivery you have to cool these products to **41F** within 4 hours.

STORAGE

Inventory control is based on storage capacity, delivery availability, availability of product and use by time. If you are located in a rural area with minimum deliveries consider basing your menus on as much local and seasonal product as possible. Consider the amount of dry and frozen space available. Dry storage needs a temp range of **50-70 degrees F**. While frozen and canned products have relatively long shelf lives remember that acidic products like fruit and meat products usually have a shelf life of about 18 months, and frozen products need to be kept at zero degrees or lower.

Create policies, like using First In-First Out (FIFO), date marking and labeling. make sure that management follows up on a regular basis, checking to make sure all staff are adhering to these policies is most important. Without management follow up there is no **Active Managerial Control.**
First in First Out–*FIFO* is a system used to rotate inventory that ***does not have*** use-by, sell-by or expires on date. The first case of lettuce that comes in should be the first case to go out (used), while for items with use by dates the item with the earliest use-by, sell-by or expires on should be used first no matter in what order it was received.



An example would be: You received 1 case of milk on June 1st dated, use by June 30th and put them in the back of the refrigerator.

On June 5th you received 1 case of milk dated use by, June 27

These would go in front of the ones you already had in the refrigerator because the use by date is earlier then the case you already had.

Active Managerial Control

Step 2 Flow of Food

12 Tips for Food Storage

1. Follow the First In, First out (FIFO) rule.
2. Shelve raw food in refrigerator according to internal cooking temperature, lowest down to the highest (poultry products including raw shell eggs always on the bottom).
3. Store in air tight containers.
4. Store all food at least 6 inches off the floor.
5. Cold food is properly stored when the internal temperature of the food is 41°F or lower.
6. Never cool hot food in the refrigerator.
7. Do no overload refrigerators and freezers.
8. Refrigerator lighting a minimum of 10 foot-candles.
9. Label and date where needed.
10. Keep shelves, walls, floors and doors clean and organized.
11. When in doubt, throw it out.
12. ICE is FOOD, treat it properly. Never use bare hand contact, ice bins and machines cleaned on a regular basis, never leave the scoop in the ice and store it properly.

SMOKED FISH MUST BE STORED AT A MINIMUM OF 38F DEGREES OR LOWER

TIP! Wilk-in refrigerators are also referred to as boxes and coolers

Active Managerial Control

Step 3 Flow of Food

Proper Storage of TCS Foods

Date marking:

- **Ready-to-eat TCS food must be date marked if held for longer than 24 hours (1 day)**
  - Date mark must indicate when the food must be sold, eaten, or thrown out.

- **Can be stored for a maximum of seven days if it is at 41F or lower**
  - The count begins on the day that the food was prepared (or from the date of the oldest ingredient) or a commercial container was opened.
  - For example, potato salad prepared and stored on October 1 would have a discard date of October 7 on the label. BUT; if the potatoes were cooked on September 30 and the salad was made on the October 1 the discard date would be October 6.

Active Managerial Control

Shell Stock Identification Tags

Shell stock Identification Tags

- Must accompany all shellfish (mollusks).
- Tells the who, what, where, when and must accompany the container wherever stored or displayed.
- Kept on file for 90 days starting with the **last day in possession.**

Farm raised fish

- Must have documentation stating the fish was raised to FDA standards.
- Keep documents for 90 days from the sale of the fish.

Fish served raw or cooked served rare

- Certain species of fish must have documentation that the fish was frozen and properly thawed to kill any parasites.
- Keep on file for 90 days.

Sushi Blast Freezer & Frozen Tuna = Part of the process to make sure there are no parasites

Active Managerial Control

Step 3 Flow of Food

Storage

Labeling food for use on-site:

- All items not in their original containers must be labeled.
- Food labels should include the common name of the food or a statement that clearly and accurately identifies it.
- It is not necessary to label food if it clearly will not be mistaken for another item, allowed but not recommended.

Labeling food is important for many reasons. Illnesses have occurred when unlabeled chemicals were mistaken for food such as flour, sugar, and baking powder. Customers have also suffered allergic reactions when food was unknowingly prepped with a food allergen that was not labeled. It also lets you know when you have run out of a product or getting low.

Labeling food packaged on-site for retail sale:

Food Packaged in the operation that is being sold to customers for use at home, such as a bottled salad dressing, must be labeled. The label must contain the following information

1. Common name of the food or a statement that clearly identifies it
2. Total weight of the food
3. List of ingredients and sub-ingredients in descending order by weight. This is necessary if the item contains two or more ingredients
4. List of artificial colors and flavors in the food. Chemical preservatives must also be listed
5. Name and place of business of the manufacturer, packer or distributor
6. Source of each major food allergen contained in the food. This is not necessary if the source is already part of the common name of the ingredient

These labeling requirements do not apply to customer's leftover food items placed in carry-out containers.

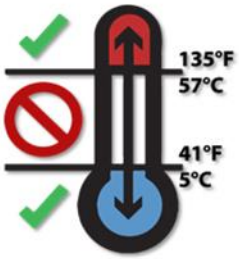
Suggestion: Due to the Corona Virus Epidemic we recommend that all take out containers and bags be sealed with a store label to prevent tampering from delivery or other personnel.

Active Managerial Control

Step 2 Flow of Food & Required Storage Temperatures

Temperatures:

- Store TCS food at an internal temperature of 41°F (5°C) or lower or 135 F (57°C) or higher.
- Store frozen food at temperatures that keep it frozen.
- Make sure storage units have at least one air temperature measuring device; it must be accurate to +/- 3°F or +/- 1.5°C.
- **Place the device in the warmest part of refrigerated units**, and the coldest part of hot-holding units .
- When removing product from storage for prepping, take a small amount at a time to avoid time temperature abuse.



- Pathogens can grow when food is not stored at the correct temperature. Follow the guidelines above to keep food safe. Remember that the proper temperature for storing cold food is **41 degrees** or lower. This means that the internal temperature of the food in storage and not the ambient air temperature of the refrigerator unit. The same is true for hot holding. Go by the internal temperature of the food not the oven temp.

Active Managerial Control

Storage and Traceability

Rotate food to use the oldest inventory first:

- One way to rotate products is to follow FIFO

1. Identify the food item's use-by or expiration date.
2. Store items with the earliest use-by or expiration dates in front of items with later date.
3. Once shelved, use those items stored in front first.
4. Throw out food that has passed its manufacturer's use-by or expiration date.

Modern technology has made tracking your products easier thus enhancing the ability to maintain high food safety standards.

- Food must be rotated in storage to maintain quality and limit the growth of pathogens. Food items must be rotated so that those with the earliest use-by or expiration dates are used before items with later dates.
- Many operations use the first-in, first-out (FIFO) method to rotate their refrigerated, frozen, and dry food during storage. Here is one way to use the FIFO method.
- Many operations especially schools and institutions are required to keep track of their inventory. The reason is two-fold. First it is a way to expedite recalls should it be necessary and second it aids in proper purchasing and tracking within an operations **FLOW OF FOOD**.

PROPER STORAGE RAW FOOD

UNCOOKED PRODUCTS	
FISH, STEAKS, CHOPS	145 F (15 SEC)
ROASTS	145 F (4 MIN)
GROUND FISH & SEADOOD	155 F (15 SEC)
ALL POULTRY PRODUCTS	165 F (15 SEC)

Raw food is stored under refrigeration based on the products **recommended internal cooking temperature.** The lowest temperatures go on the top and as you go down the temperatures become higher.

PROPER AND SAFE THAWING/DEFROSTING OF FOOD

Under running water

No warmer than **70F degrees.**

The spray is hard enough to knock off loose bits of food.

No pooling of water, use a colander or strainer.

Once product surface reaches **41F degrees**, only 4 hours left.

As part of the cooking process

Like fries or onion rings; from the freezer to the fryer.

Or from the freezer onto the grill (small burger).

Frozen shrimp or scallops, from the freezer into boiling water.

In a microwave

After the microwave product must finish cooking.

Under refrigeration, the best way for safety and product quality.




NEVER THAW FOOD AT ROOM TEMPERATURE

Fish that has been individually vacuum packed and frozen must have the vacuum packaging removed prior to defrosting.

PREPARATION

- Whenever entering the prep area and before beginning a task always wash hands.
- Make sure all contact surfaces are clean and sanitized. (Due to covid-19 you may want to consider wiping down all surfaces at the start of the day).
- When prepping large batches of product, take out only enough at one time to avoid time/temperature abuse.
- If possible, schedule prepping based on internal cooking temperatures to avoid cross contamination.
- Make sure frozen products were properly and safely thawed.




INTERNAL COOKING TEMPERATURES

•165 degrees F:>1 SEC

- **All poultry products**
- **Anything cooked in a microwave**
- **Reheating product for hot holding**
- **Casseroles and stuffed foods**

•145 degrees F:>15 SEC

- **Steaks and chops**
- **Large cuts of meats (hold for additional 4 minutes)**
- **All seafood**
- **Eggs for immediate service**

•155 degrees F:>17 SEC

- **All ground meats and ground seafood**
- **Eggs for hot holding**
- **Ratites (birds that do not fly, Emu, Ostrich)**
- **Injected, tenderized & vacuum tumbled meats**

•135 degrees F:>N/T

- **Fruits and vegetables**
- **Commercially processed foods (canned & frozen)**
- **Rice, pasta and legumes (beans)**

An additional note about cooking in a microwave: Microwave ovens are frequently used for reheating leftover food, and bacterial contamination may not be repressed if the safe temperature is not reached, resulting in foodborne illness, as with all inadequate reheating methods. While microwaves can destroy bacteria as well as conventional ovens, they do not cook as evenly, leading to an increased risk that parts of the food will not reach recommended temperatures. It is recommended that when microwaving food, it should be turned and or mixed half way through and then let to sit for a couple of minutes when done to let the heat distribute evenly. And all foods should be cooked to **165 F**. internally

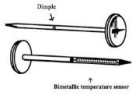
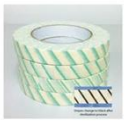


TEMPERATURE MONITORING DEVICES

Types of Thermometers:

- **Infrared;** shoots a beam of infrared light to check temp, only works on surface temperatures cannot penetrate food products like a roast or turkey.
- **Bi-metallic**; checks temperatures from **zero degrees Fahrenheit to 220 degrees**, needs to be calibrated frequently and requires insertion up to the dimple between 2-3 inches of the stem inserted, if not done properly you will not get an accurate reading.
- **Thermocouples and thermistors** are digital thermometers that have interchangeable probes. The probe is the part of the thermometer that directly interacts with whatever you are trying to get a reading on. The probes are tip sensitive and need only to be slightly inserted into the product for an actual correct reading.
  Digital: is now the standard in the workplace. It requires less calibration than a bi-metallic and calibrates faster and easier. Most digitals now come with a sensitive tip rather than the dimple in the probe.
- **Time Temperature Indicator:** when activated acts like a GPS and during the delivery of product or for a period of time it documents any fluctuation in temperature.

- **Maximum Registering Tape** is a special tape placed on items going through a hot water dishwasher. It will self-record the highest temperature reached during the cycle so you can determine if your dishwasher is working properly **(180F degrees)** or waterproof thermometer that records or holds.

				
BI-METTALLIC THERMOMETER	THE DIMPLE IN A BI-METTALIC	TIME-TEMPERATURE INDICATER	DIGITAL	THERMOCOUPLE
				
INFRARED	IMMERSION PROBE	MAX REG TAPE	SURFACE PROBE	INSERTION PROBE

Types of Probes:

- **Penetration** is any kind of probe that is physically stuck into the food.
- **Surface** is a probe that flattens out at the end in order to have it sit flush to the surface of a grill for example. It can also be used to check the temperature of frozen products.
- **Immersion probe** is a long probe for use with large stockpots, kettles or deep sinks.
- **Air probes** are used to check the temperature inside refrigerators and freezers.

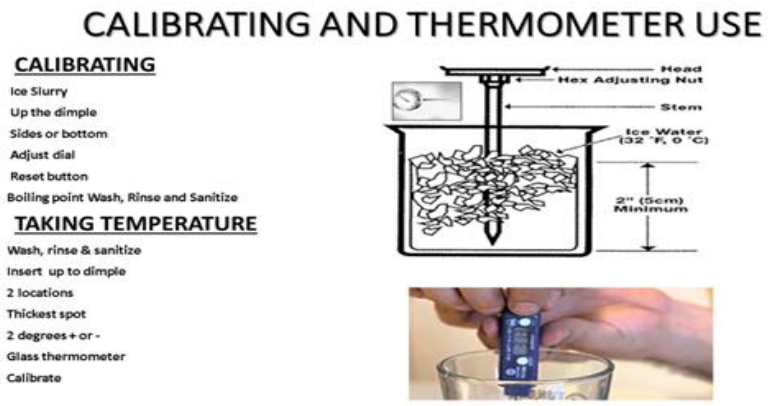
	AIR PROBE

Continued….

The difference between regular thermometers and thermocouples and thermistors is the design inside of them. They use technology that measures temperature through a metal probe, and the temperatures are displayed digitally

Thermometer Guidelines:

- Make sure thermometers are calibrated properly by using the ice point or boiling point methods.
- You have a plus or minus 2 degree spread to maintain accepted accuracy.



PREPARE AN ICE SLURRY OF ICE AND WATER
INSERT THE BI-METTALIC THERMOMETER UP TO THE DIMPLE (OR NOTCH ON THE PROBE).
DO NOT LET IT TOUCH THE BOTTOM OR SIDES.
HOLD THE THERMOMETER BY THE SIDE OF THE HEAD.
IF IT IS CALIBRATED IT WILL READ 32 DEGREE F. IF NOT USE A PLIER OR WRENCH TO ADJUST THE NUT UNDER THE HEAD TO 32 DEGREES F.
IF IT'S A DIGITAL INSERT THE PROBE PASSED THE TIP AND PRESS THE RESET BUTTON.

Be sure to calibrate your thermometer daily!!!

Time Temperature Abuse occurs when food is left in the temperature danger zone for extended periods of time. To keep this from occurring always:

- Use calibrated thermometers
- Monitor
- Use corrective action when necessary
- Never use glass thermometers that are not specially designed for foodservice.
- Always check product temperature in two locations. One location should always be the thickest part.
- Always clean and sanitize before and after use.
  These are industry recognized methods of cooling food safely. Usually, you need to incorporate two of these methods to reach the proper temperatures in the allotted time.

TEMPERATURES

THIS IS REAL IMPORTANT STUFF!
Other Temperatures:

Water at Hand Washing Station / minimum **100F** **(For the ServSafe Exam = Warm Water)**

Defrosting Under Running Water / maximum **70F**

Reheating TCS Foods / **165F minimum and no more than within 2 hours**

Temperature Danger Zone / **between 41F and 135F**

Most Rapid Growth / **between 70F and 125F**

Hand Dishwashing / Hot Water Sanitize: **171F**
Chemical Sanitizer: Manufacturer Directions

High Temp Dishwasher Final Rinse Temperature / minimum **180F**

Stationary single rack dishwashing machine **165F***

Low temp machine washes at **120F** and final Rinse at **140F** with the addition of bleach.

Cooling temps / **135 F** to **70F** in 2 hours, **70 F** to **41F** in 4 hours

Holding food without temperature control: hot / start at/**135 F** maximum to 4

Cold /start at **41 F** maximum 6 hours unless food temp goes above **70 F** degrees.

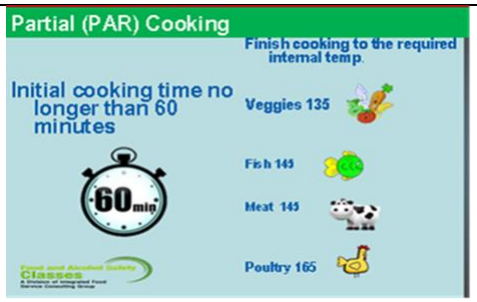
Defrosting under running water, water temp no more than **70F**

EGG FACTS

- Never pool eggs, if you do make sure it will be for items that will be fully cooked (cake, quiche).
- Use pasteurized eggs for Hollandaise sauce, Caesar dressing.
- Use pasteurized eggs for High-Risk populations.
- Cooking temperature for eggs vary
  155 degrees F for eggs that will be held before service (like a buffet), and **145 degrees F** for eggs served immediately.
- Keep eggs refrigerated (even during service), and store eggs like poultry on bottom shelves.

PAR COOKING:

When prepping which includes cooking, but only cooking part of the way, follow these two rules; 1. The initial cooking time cannot exceed 1 hour (60 minutes) 2. When you finish cooking the product you must cook it to it recommended internal temperature.

	**After the initial cooking the product must be cooled and stored under refrigeration as quickly as possible. Some examples of par cooking;** **Blanching vegetables** **Grill marking fish, steaks** **Searing off roasts**

SAFE BUFFET SERVICE

- All serving pieces must be labeled.
- One serving piece for each buffet item.
- Food items should be labeled.
- Post-consumer advisory signs regarding allergens and consuming raw or undercooked product.
- Signage to remind people to use a new plate each visit to the buffet.
- Sneeze guards that are 14" up and 7" inches out.
- To avoid cross contamination, use a plunge dispenser instead of bowls and ladles for salad dressings.
- Assign a staff person to make sure guests take new plates and use the right utensils.
- Check every 2 hours to make sure all items are a minimum of **135 degrees F.**
- Keep a watchful eye out for possible deliberate contamination of the buffet.
-

Honest Presentation of Food: The color of food whether raw or cooked is an indication of its quality, freshness and safety. Do not mislead consumers by altering with food additives, colored wrapping, etc.

Proper Sneeze Guards & Individual Serving Pieces

Guest Reminder

Have Ample on Hand

Check Temp

Safer Way to Dispense P

OFF PREMISE SERVICE Off Premise Service follows the same food safety rules and guidelines.

Special attention should be paid to the following

Unless the function location has a sufficient kitchen facility, or if you are utilizing a remote set-up (for example, rented stoves, refers, etc.) make sure all food is shipped in insulated containers made to hold the proper temperature for the needed time involved.

Make sure your delivery vehicles are clean inside and out.

Staff should be dressed properly and follow all personal hygiene guidelines.

Check internal temperature of food at least every 2 hours.

Make sure there is a potable supply of water available and available hand washing stations.

Always expect the unexpected, bring a supply of tape, electrical cords, basic tools, large stapler, etc.

Know where the nearest supermarket is and a place for more ice if needed.

Based on the menu and type of service be sure to have enough service ware so people do not reuse.

Label foods with all needed info, including safe storing leftovers and reheating

Keep Vehicles Clean

Know Closet Market

Insulated Carrier

Remote Set-Up

Mobile Hand Washing

Peel & Stick Labels

Asst Thermometers

Active Managerial Control

Ready-to-Eat Food Requires No Bare Hand Contact

Use disposable gloves, tongs, deli paper to handle

Ready-to-eat food is food that can be eaten without further:

- Preparation
- Washing
- Cooking

Ready-to-eat food includes:

- Cooked food
- Washed fruit and vegetables
- Deli meat
- Bakery items
- Sugar, spices, and seasonings




Bare Hand Contact:

- This should be avoided by using tongs, wax paper or disposable gloves to handle ready to eat foods (foods that do not need any further cooking like cold cuts, fruits and vegetable, etc.)
- There are times when it may be acceptable to handle raw food with bare hands
    - The food will be added as an ingredient to a dish that does not contain raw meat, seafood or poultry but will be cooked to at least 145F. An example of this would be adding cheese to pizza dough
    - The food will be added as an ingredient to a dish containing raw meat, seafood or poultry and the dish will be cooked to the required minimum internal temperature of the raw items. An example of this is adding vegetables to beef stew.
- If your jurisdiction allows bare hand contact, be sure to follow any and all specific policies that you have to put in place as to hand washing, staff health and training.

Use the following items to handle ready-to-eat-foods


REUSING CONDIMENTS

The top row of factory packaged and sealed condiments may be reused if served and not used. The bottom row of in house prepped condiments may not be reused.

WHAT TO DO WITH UNUSED SILVERWARE SETTINGS

When guest leave if there are any silverware settings that were unused here is what to do

If silverware is laid out you must REMOVE, wash rinse and sanitize before reuse.	If the silverware is rolled up in a napkin you can leave and reuse for the next service.
	

The FDA code recommends that silverware not wrapped in a napkin or other packaging must be cleared and washed, rinsed and sanitized even if the setting was not used but people were sitting at that table.
If rolled up it may be left on table and used for the next seating.
Always handle serving plates by the bottom or side.
Hold cups and glasses by the stem or handle.
Do not stack glasses when carrying.

THE 5 GALLON POT OF 4 HOUR SIMMERING CHILI

This 5-gallon pot of chili has been simmering (about **180 degrees F**) on the stove for about 4 or 5 hours. We are going to use it to help explain proper cooling and reheating. If we remove it from the stove and set it upon a table it will cool very slowly, but it will be relatively safe as long as the internal temperature is above the **135 F.** mark (note; the FDA and local agencies strongly recommend to begin the cooling process asap). First, let's discuss cooling. The cooling process has two aspects; first what we use to cool and second the time parameters we have to follow. It is important to note that only food that has been safely cooked can be cooled and reheated.

THESE PICTURES SHOW THE DIFFERENT WAYS TO COOL FOOD. SOMETIMES WE COMBINE TWO OR MORE TO ACHIEVE A SUCCESFUL COOL.

#1 is an insert from a steamtable or chafing dish. It is 2" deep and sometimes referred to as a Hotel Pan. If we divide the 5 gallons of chili into 1 gallon per insert, we would achieve very rapid cooling due to the shallowness of the pans and lots of surface area for the heat to easily dissipate through.

#2 is called Batching Out, this refers to placing a large quantity of hot food and dividing it up between several smaller pots. Less product the quicker it can cool. This method is usually augment with an ice paddle or ice bath.

Continued…

#3 is an ice bath. Shown above is a small one, often an empty sink filled with ice and water can accommodate the Batching Out pots. It is important to stir the pot contents to help facilitate the cooling process.

#4 is an ice paddle, a plastic mold filled with ice cubes or with frozen water. Using it with a stirring motion helps to cool down hot food.

#5 are ice cubes. If a recipe calls for water, a portion of the water is held back and made into ice cubes. Added at the end of the cooking process the cubes cool down the product.

#6 is a Blast Chiller. Pans of food are inserted into the cavity. The chiller will blast frozen air all around the food pans, cooling them quickly.

RE-HEATING FOOD SAFELY:

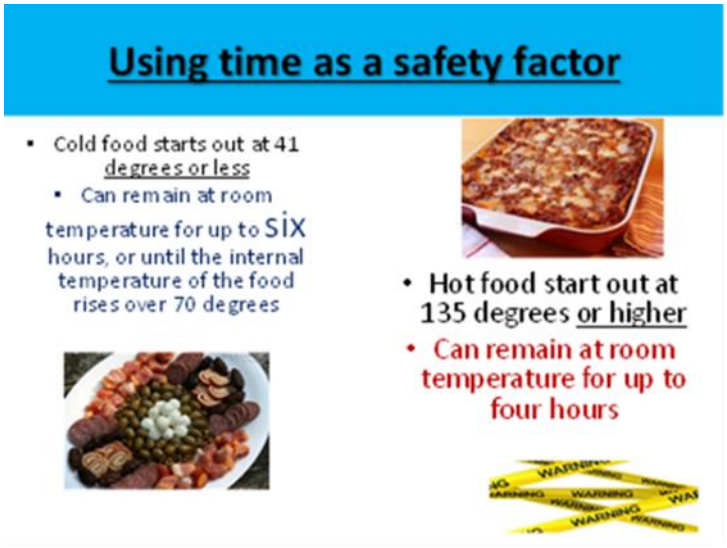
Food that has been cooked and properly cooled and kept at **41F degrees** or lower has to be reheated to **165 degrees** within 2 hours if you want to hot hold it at **135 degrees** (Example: CHILI) **Food that is being reheated for immediate service can be reheated to any desired temperature.** (example: hot roast beef sandwich, or a container of CHILI) since it does not stay in the **temperature danger zone for an extended period of time, pathogens do not have sufficient time to multiply to unsafe levels.**	

HOLDING TEMPERATURES:

After food has been prepared and/or cooked properly you can keep it safe by holding it under refrigeration (**41 degrees or lower**) or in a hot holding unit, for example, a steam table or warmer **(135 degrees or higher).** The reason for this is that harmful microorganisms multiply much slower below **41** and above **135**.

Examples of Keeping Food Hot Safely

			
Steam Table	**Oven Turned Down**	**Electric Warmer**	**Insulated Warmer**



A pan of lasagna is removed from the oven or warmer (it is **135 degrees** internally or higher) and it is placed on a buffet table without the use of a chafing dish with sterno. It may safely be left on the table at room temperature ***for up to four hours***. At the end of the four hours it has to be discarded.

While a cold platter of antipasto salad is removed from the refrigerator (**41 degrees** or lower) and is placed on the buffet table without any ice to keep it cold. It may stay on the table at room temperature for ***up to six hours***. One difference from the hot food is, if at time during the six hours the internal temperature of the food goes above **70 degrees** it has to be discarded.

Most jurisdictions require a variance to do this. (An application to the local health department to do something that is currently not allowed). It is also recommended that a calibrated thermometer and a watch be available to the PIC of the function.

PERSONAL HYGEINE

The importance of creating and monitoring a Good Personal Hygiene program should include all of the aspects mentioned below. Employees should be made aware of these conditions before they begin their job and reminded as needed. The program should be a part of the employee manual.

Observing Satff Illness:

- **Management should always be on the lookout for signs of employee illness, including;** Vomiting, frequent bathroom trips, jaundice, sweating or chills, constant nasal discharge and open wounds or boils.

Food Handlers can contaminate food in the following ways:

- If they have a food borne illness
- If they have wounds that can contain pathogens
- When they sneeze or cough
- When they come in contact with a person who is ill
- When they touch something that can contaminate their hands and they fail to wash their hands
- If they have symptoms such as diarrhea, vomiting or jaundice
- Or if they do not feel sick but they are infected (we call these people carriers), they can still infect others

Food Handlers actions that can contaminate food:

- Scratching their scalp or other parts of their body
- Running fingers through their hair
- Rubbing an ear
- Touching a pimple or infected wound
- Wearing a dirty uniform or their or clothes that are soiled
- Improper coughing or sneezing
- Spitting in the operation
- If they are infected with a pathogen, but do not show any signs of it, they may still contaminate others and objects by using the toilet, cleaning themselves and then not properly washing their hands. This is referred to as **"The Fecal Oral Route".**
- Open infected wounds or boils are dangerous if not covered properly. If they are oozing pus precautions must be taken to see that the wound is contained. Proper bandaging is required depending upon the wound location. If on the hand, after bandaging, a single use glove should be worn.

It is very important for a food service operation to have a good personal hygiene program. It should include policies pertaining to staff hygiene and health, a good training program, modeling of policies by management, supervision of policies and revisions to policies when needed.

Hand washing is critical to a safe operation.

- There must be an adequate number of available dedicated hand washing sinks (prep areas, wait stations, bathrooms, dishwashing areas). These sinks must be designated for hand washing only. Use of other sinks such as; prep, pot sinks, utility sinks are forbidden to be used for hand washing.
- they must properly supply (soap, hot and cold running water disposable paper towels and/or a warm air hand dryer
- trash can for the towels
- sign reminding employees to wash their hands

Hands should be washed:

- Before starting work
- Before and after handling raw meat, poultry and seafood
- When sneezing, coughing or using a tissue
- After eating, drinking, smoking or chewing gum or tobacco
- Handling chemicals that can affect food safety
- After taking out the garbage
- Clearing tables or busing soiled dishes
- After touching clothing or aprons that are soiled
- Handling money
- Whenever leaving or returning to the kitchen area
- Touching anything that may cause your hands to become contaminated
- After using the restroom
- After handling soiled items
- After touching service or aquatic animals
- After using electronic devices
- aquatic animals
- After using electronic devices
- THE ABOVE PERTAINS TO PROSTETIC DEVICES ALSO

washing technique 

Wet hands and arms first, apply soap, scrub hands, forearms, between fingers and under nails for **approximately 10-15 seconds**, rinse with warm water, dry with paper towel and use towel to turn off faucets. The entire process should take **approximately 20 second**

Hand sanitizers *are used only after proper hand washing and only as* ***an added layer of protection*** *and not as a substitute for hand washing*

If food becomes contaminated due to one of the above actions use the following corrective actions;

- Dispose of the contaminated food(s)
- Clean potentially contaminated equipment and utensils
- Retrain or coach individuals who do not follow proper procedure

Guidelines for proper/safe hand care:

- Fingernails should be kept at a proper length
- Do not wear false fingernails or nail polish unless using a single use disposable glove
- Cover all wounds, cuts or boils properly with a bandage covered with a finger cot or disposable glove.

Work Attire:

- Besides giving a bad impression of your business dirty clothing can carry many pathogens that can be transferred to food, work surfaces and equipment.
- Clean clothing or *clean work uniforms* should be worn daily,
- A hairnet or hat worn to protect hair from falling into or on product. Hair accessories are limited to items that restrain hair from becoming unsafe
- Removal of jewelry with the exception of a solid band ring or band.
- Aprons should always be removed when leaving the prep area and never used to dry hands.

Eating, Drinking and Smoking:

- Is allowed only in designated areas and never in or around prep/service or storage areas.
- The possibility of saliva coming in contact with your fingers could cause pathogens to then be transferred to food or equipment. A covered drink with a straw is permissible in a work area.
- **Personal Cleanliness:**
- Since pathogens can be found on your skin and hair it is important to bathe or shower before coming to work.

RESTRICTION VS EXCLUSION

IF A FOOD SERVICE WORKER COMES TO WORK WITH A SORE THROAT OR FEVER….

In a regular operation they may stay but must be reassigned to a job task that cannot contaminate anyone or anything. Examples; sweeping, mopping, garbage detail, cashier, load soiled dishes, storeroom work	
If this person is experiencing diarrhea and/or vomiting along with the headache or fever they must go home.	

IN A HIGH-RISK OPERATION, WE DO NOT TAKE ANY CHANCES. THE PERSON MUST BE SENT HOME.

Disposable Glove Use:

- Hands must be washed before putting on disposable gloves *(unless changing gloves while working at the same task).*
- Use only approved gloves for food service
- Have correct sizes available and if needed an alternative for those allergic to latex
- Always put gloves on properly, never blow into them or roll them up
- Change gloves as soon as they become dirty or torn, before beginning a new task, after an interruption (phone call) and after handling raw meat, poultry or seafood, after 4 hours of continuous work.
- You do not need to rewash your hands each time you change gloves as long as you are performing the same tasks and your hands have not become contaminated

How to Put On and Take Off Disposable Gloves

5 STEPS TO PUT ON DISPOSABLE GLOVES

1. Thoroughly wash hands.
2. Select the appropriately sized gloves.
3. Hold with one hand and Insert the other. When the base of your thumb reaches the cuff of the glove begin to spread fingers and insert hand into glove.
4. Pull glove cuff towards wrist to cover as much skin as possible and secure glove.
5. Check to make sure there are no holes or tears.
   When removing a pair of disposable gloves, in order to prevent cross-contamination, do not touch the outside of the glove with bare skin, and do not remove gloves near or over food or any food handling surface. Read more about how using a disposable glove does not automatically create food safety. One should follow these steps to properly doff disposable gloves:
   5 STEPS TO REMOVE DISPOSABLE GLOVES

1. Pinch one glove at the wrist
2. Remove glove by pulling away from your body
3. Continue holding the glove you just removed in your gloved hand. Slide a few fingers of your bare hand inside the cuff of the glove you are still wearing.
4. Pulling away from your body, peel off the second glove, turning it inside out and leaving the first glove wrapped inside as you remove it.
5. Dispose the gloves safely and wash your hands before touching any other surfaces.

Cleaning and Sanitizing

Cleaning is removing visible soil and dirt from a surface.
Sanitizing is reducing pathogens to safe levels.

Non-contact surfaces, floors, walls, shelving, that do not come in contact with food need only be cleaned and rinsed to prevent an accumulation of dirt.

Make sure to use coving in all food prep and storage areas. Coving is where the floor and wall meet. Special tiling creates a curved bottom to allow for easier sweeping and moping.

Poor Cleaning and Sanitizing:

- Equipment and utensils are not properly washed, rinsed, and sanitized between uses.
- Food contact surfaces are wiped clean instead of being washed, rinsed, and sanitized.
- Wiping cloths are not stored in a sanitizer solution between uses.
- Sanitizer solution was not prepared correctly.
- Using the wrong chemical.
- Using a mislabeled product.

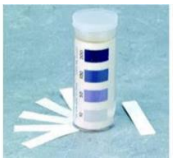
When to clean and sanitize food contact surfaces?

After they are used.
When changing from one task to another.
If there is an interruption while working, and the product may have become contaminated.
After 4 hours of continued use.










Sanitizing is achieved one of two ways,

1. using heat as in a hot water dishwasher where the final rinse must be **180 degrees** or in a three-compartment sink in which the rinse water must be at least **171 degrees**. This is usually achieved by having a gas burner under the third compartment.
2. The second way is by using chemicals. There are three accepted chemicals for sanitizing in a food service operation.
   Chlorine
   Iodine
   Quats.
3. Make sure your operation uses the right type of **TEST KIT** WHICH CHECKS FOR PROPER CONCENTRATION OF CHEMICALS TO WATER.

Continued…..

Product	Water temperature	Concentration	Contact time
Chlorine	**100 F**	50-90 ppm	7 seconds
Iodine	**68 F**	12.5-25 ppm	30 seconds
Quats	**75 F**	Check with manufacturer	30 seconds

Important factors when using chemicals as sanitizers are water temperature, water pH, water hardness, sanitizer concentration (how many ppm of water to the chemical) and sanitizer contact time (how long must the items being sanitized be immersed in the sanitizer solution). If using a heating element to

sanitize, the water temperature must remain at **171 degrees**.
Cleaning and sanitizing are a process which can differ depending upon what is being cleaned and sanitized, for example you can be cleaning and sanitizing a surface, individual pieces of equipment, stationary equipment or clean in place equipment.

Depending upon the application you might be:

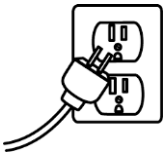
- **washing/rinsing and sanitizing**
- **washing/rinsing/sanitizing and air drying**
- **scrape or soak/wash/rinse/sanitize and air dry**

No matter what, the sequence cannot change!

Cleaning and sanitizing stationary equipment:

- Unplug the equipment
- Take the removable parts off the equipment
  - Wash, rinse, and sanitize them by hand or run the parts through a dishwasher if allowed
    - Use hoses, buckets, spray bottles on all parts that cannot be removed
- Scrape or remove food from the equipment surfaces
- Wash the equipment surfaces
- Follow any local regulatory rules pertaining to soft serve

- Cleaning is removing visible dirt from a surface
- Sanitizing is reduce pathogens to a safe level
- Equipment in use for long periods must be cleaned &
- Sanitized every 4 hours



REMEMBER TO ALWAYS REMOVE THE PLUG BEFORE STARTING TO CLEAN

Chapter 4 QUESTIONS FILL IN THE BLANKS

1	Active Managerial Control is based on?	
2	Engaging a Certified Pest Controller, setting standards for vendors, ongoing food safety training and monthly food safety audits are examples of?	
3	Shellfish identification tags, farm raised fish tags and fish to be served cooked rare or served raw tags must be saved for?	
4	When prepping food in house that will be used for more than 24 hours, how many days can it be used and when do you start the clock from?	
5	Milk was delivered two days in a row. The second day the use by date was two days earlier then the first delivery, but still in an acceptable time frame. How should this milk be stored based on FIFO?	
6	The transferring of pathogens from one surface to another surface is referred to as?	
7	Storing raw food under refrigeration and prepping raw foods in the same work space is based on what for safety?	
8	Initial cooking time no longer than 60 minutes and finish cooking for service requires a minimum internal temperature are the requirements for?	
9	Using time as a safety factor requires cold food to remain below what temperature requirement?	

10	What two temperatures can thermometers be calibrated to (Fahrenheit)?	
11	What are the two parameters for reheating previously cooked foods?	
12	When changing task that require disposable gloves what should be done when removing old gloves and replacing with new gloves?	
13	Tongs, disposable gloves and what can be used for handling ready to eat foods?	
14	Because it can only indicate surface temperature, what thermometer(s) have little function?	
15	Ice bath, shallow out, batch out, blast chiller and ice cubes are examples of?	
16	What temperature is required for sanitizing with heat when using a three-compartment sink?	

Chapter 4 True or False **Answers on page 74**

1	TCS food prepped in house on Tuesday using an ingredient prepped on the Monday before allows that product to be kept until Sunday?	
2	Par cooking is allowed when the item being cooked is initially cooked for less than 60 minutes and then finished cooking to the required minimum internal temperature?	
3	Pre-Requisite Programs are used in HACCP but not in Active Managerial Control?	
4	A guest may reuse a previously used plate as long as the serving pieces do not touch their plate?	
5	Same Day Service is part of the Process Approach?	
6	Reheating previously cooked food to 165 F within 3 hours is acceptable?	
7	Active Managerial Control is based on Risk Management?	
8	Raw ground turkey burgers can be stored with raw ground beef burgers on the same shelf under refrigeration?	

TEST YOUR KNOWLEDGE CHAPTER #4

Column #1 are the questions. Choose the correct answer from the choices in column #2 and write the letter in the corresponding box in column #3.

Please note, some answers are used more than once and some are not used. The answer key is located page 64

1		**2**		**3**	
1	How often must you clean a slicing machine that is in constant use?	A	Risk factor	1	
2	Wash, rinse and sanitize before use	B	Approved purveyor	2	
3	An open wound on a food service worker needs to have	C	How many days to keep shell stock ID tags?	3	
4	Upon leaving the kitchen always	D	Four Hours	4	
5	Average time to complete proper handwashing	E	Seven days	5	
6	The transferring of pathogens from one surface to another surface	F	Wet hands	6	
7	Food prepped in house may be kept for	G	Cross contamination Definition	7	
8	Acronym for proper rotation of inventory	H	How to pre a 3-compartment sink	8	

9	The first step in a proper hand washing procedure	I	Experiencing Vomiting and/or Diarrhea	9	
10	What is coving used for	J	Band aide and Disposable gloves	10	
11	Purchasing food from an unknown source	K	20 seconds	11	
12	Time allotted to receive shellfish out of temp and to cool down to 41 degrees	L	Apply soap to hands	12	
13	90	M	FIFO	13	
14	Reason enough to send a worker home	N	Remove apron	14	
15	Follows local, state and federal guidelines	O	Connects kitchen walls and floors to ease sweeping and mopping.	15	

Chapter 4 Fill in the Blanks

1	RISK ASSESMENT
2	PRE-REQUISITE POLICIES
3	90 DAYS FROM THE LAST DAY IN POSESSION
4	7 AND FROM THE OLDEST PREPPED INGREDIENT
5	THE EARLIER DATE IN FRONT OF THE OLDER DATE
6	CROSS CONTAMINATION
7	INTERNAL COOKING TEMPERATURES
8	PAR-COOKING
9	70
10	32 F AND 212 F
11	FOR HOT HOLDING REHEAT TO 165F WITHIN 2 HOURS, FOR IMMEADIATE SERVICE THERE ARE NO RESTRICTIONS
12	WASH HANDS
13	DELI PAPER
14	INFRARED AND A THERMOMETER WITH A SURFACE PROBE
15	PROPER SAFE COOLING
16	171 F

Chapter 4, True or False

1	True
2	True
3	False
4	False
5	True
6	False
7	True
8	False

Chapter 4, Test Your Knowledge

1	D	9	F
2	H	10	O
3	J	11	A
4	N	12	D
5	K	13	C
6	G	14	I
7	E	15	B

CHAPTER 5
FACILITIES AND MAINTENANCE

In this chapter we will review….

REFRIGERATORS & FREEZERS
FOOD VENDING MACHINES
SINKS,
HAND WASHING SINKS
BACK FLOW PREVENTION
INSTALLATION & MAINTENANCE OF EQUIPMENT
ICE MACHINES
DISHWASHING MACHINES
GARBAGE & USED OIL PROCEDURES
PEST CONTROL POINTS
ASSITIONAL FACILTY FACTS
BEHIND THE BAR

REFRIGERATORS AND FREEZERS

REFRIGERATORS AND FREEZERS SHOULD BE PURCHASED WITH THE FOLLOWING INFORMATION FOR CONSIDERATION
ALL EQUIPMENT USED IN A COMMERCIAL FOOD SERVICE OPERATION MUST HAVE THE UL, UNDERWRITERS LABORATORIES, ETL OR THE NSF, NATIONAL SAFETY FOUNDATION STICKER ON IT. THESE COMPANIES CERTIFIY THAT THE EQUIPMENT MEETS SAFETY AND CONSTRUCTION STANDARDS.

NSF	ETL US	UL

		The Flow of Food Receiving STORING Prepping Cooking Serving	
1	2	3	4
			
5	6	7	8
			
9	10	11	12
			
13	14	14	16

1 AMOUNT OF FOOD TO BE STORED, NUMBER OF DELIVERIES EACH WEEK, TO AVOID OVER CROWDING.
2 TYPE OF COMPRESSOR REQUIRED DUE TO LOCATION, AMBIEANT AIR TEMPERATURE, HUMIDITY.
3 LOCATION BASED ON RECEIPT OF DELIVERIES, PREP AREAS AND SERVICE AREAS.
4 **CONSIDER WHICH WAY DOORS SHOULD OPEN; TO THE LEFT OR TO THE RIGHT.**
5 POSITION OF BLOWERS IN RELATION TO DOOR, TO AVOID HOT SPOTS.
6 ABILITY FOR AMBIENT TEMPERATURE TO GO LOW ENOUGH TO KEEP FOODS AT 41F INTERNALLY.
7 SHELVING AND DUNNAGE RACKS DESIGNED TO PROMOTE AIR FLOW
8 CONSIDER IF GLASS DOORS WILL PROMOTE SAVING TIME AND LESS ENERGY USE.
9 MAINTENACE OF UNITS IS IMPORTANT TO PROMOTE EFFICENCY AND PREVENTING CROSS CONTAMINATION.
10 LIGHTING IN WALKIN SHOULD BE 10 FOOT CANDLES AND IN REACHINS AND LOWBOYS 20 FOOT CANDLES.
11THERE ARE MANY REMOTE SYSTEMS AVAILABLE TODAY THAT WILL NOTIFY YOU SHOULD THE INTERNAL TEMPERATURE DROP AND IN ADDITION THE SYSTEMS CAN KEEP A REALTIME LOG OF TEMPERATURES AND FLUCTUATION.
12 REACHIN WITH DIGITAL TEMP DISPLAY ON TOP.
13 LOW BOY UNIT WITH SALD TOP / 2 DRAW REFER WITH PLATFORM FOR ADDITIOBAL EQUIPMENT LIKE A GRILL.
14, 15 & 16 3 TYPES OF FREEZERS; COFFIN CHEST, WALKIN AND REACHIN.

FOOD VENDING MACHINES

All products should be labeled with all required information including expiration date, or use by date.
These dates should be checked daily.
Discard any food that was prepared on site within7 days.
Keep all foods within proper temperatures; cold 41 degrees or below and hot at 135 degrees or above.
Display all TCS foods in their original packaging.
Fresh fruit with edible peels should be washed and wrapped.

Using separate sinks for separate uses helps to eliminate the possibility of cross contamination. Slop, Mop, Utility and Curb sinks are expressly used for mops, buckets, brooms and other cleaning supplies. Remember to store cleaned mops and brooms with their heads up preferably attached to the wall. All cleaning tools should be rinsed daily and hung to dry.

Hand washing sinks cannot be used for anything else and accept handwashing and must be fully equipped at all times; hot and cold water, soap, disposable towels or electronic air dryers, waste basket, employee reminder sign. Hands may not be washed in any other sink except those sinks designated for hand washing.

Prep sinks need to be washed, rinsed and sanitized whenever changing tasks.

3 COMPARTMENT SINK

Before using a 3-compartment sink for washing pots or dishes, the first thing to do is wash, rinse and sanitize the drainboards and bays. A garbage can is needed near the first drainboard for any debris from scraping and/or soaking. Next a clock with a second hand to time the sanitizing process.

Step1 is the drainboard for soaking and scraping.

Step 2 is the first sink for washing. Water temp must be at least 110F.

Step 3 is the middle sink for rinsing, any temp for the water is okay.

Step 4 is the third sink for sanitizing. If using a heat element, the water temperature must be 171 F and the soak time is 30 seconds. If using chemicals, see above chart.

Step 5 is the other drainboard for drying. No towel drying is allowed, only air drying.

PROPER HAND WASHING SINK STATION

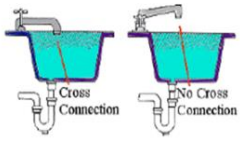
Hot and cold running water to create warm water for use
Soap (liquid preferred) Hand sanitizers (or hand antiseptic) are no substitute for washing, only as an additional safety layer.
Preferred hands-free single use paper towels or an approved air dryer
Sign indicating that staff must wash their hands
Garbage can for used paper towel
Disposable gloves located in close proximity

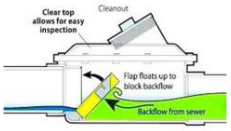
FACILITIES & MAINTENANCE

Proper Installation and Maintenance of Equipment

- Use only professional licensed installers and maintenance people.
- Follow manufacturers directions for cleaning and in house maintenance.
- Check equipment daily to make sure it is working correctly.
- Set up a maintenance schedule by adding to master cleaning schedule.
- Ice machines need to installed and maintained properly. Ice is considered food. The ice scoop should have a designated location (holder) on the outside of the machine.
- Floor equipment not on wheels needs to be 6 inches off floor, table top equipment needs 4 inches so that cleaning is possible.

PREVENTING BACKFLOW OR BACK SIPHONAGE





BACKFLOW AND BACK SIPHONAGE ARE A REVERSAL IN THE FLOW OF WATER DUE TO A CONFLUENCE OF WATER PRESSURE RELATED INCIDENTS.
IF CONTAMINATED WATER IS ALLOWED TO FLOW IN REVERSE IT CAN CONTAMINATE THE POTABLE (SAFE DRINKING WATER) SYSTEM.
THIS IS CAUSED BY WHAT WE CALL A CROSS CONNECTION.
HOW DOES THIS HAPPEN IN A FOOD SERVICE OPERATION?
LEAVING A HOSE THAT IS CONNECTED TO OUR WATER SUPPLY AND LEAVING THE HOSE SUBMERGED IN A BUCKET,
A LOOSE FAUCET THAT DROOPS INTO A FILLED SINK OF DIRTY WATER,
A FAULTY VACUUM BREAKER OR BACKFLOW PREVENTER ON A PIECE OF EQUIPMENT OR
LACK OF AN AIR GAP OR INDIRECT DRAIN.
AN AIR GAP IS THE BEST WAY TO PREVENT BACK FLOW, BECAUSE IT CANNOT BREAK.
AN AIR GAP IS A SPACE PURPOSELY CREATED BETWEEN A POTENTIALLY CONTAMINATED WATER SOURCE AND A POTABLE WATER SOURCE

ICE MACHINES

Ice must be considered food and treated as such. Ice should be produced by approved ice machines that use a potable water source and equipped with any necessary valves and protection to prevent things like backflow. Ice machines need to be cleaned on a regular basis, follow manufacturer's directions, most now come with a self-cleaning feature. Ice scoops should be stored in a designated holder, affixed to the side of the machine or a nearby wall. Ice transporters should be designated for this exclusive use and should not be nested (stacked inside one another).

DISHWASHING MACHINES

MOST COMMERCIAL DISHWASHER COME IN ONE OF 3 STYLES, WITH DIFFERENT VARIATIONS. THERE IS THE HIGH TEMP, SINGLE RACK HOT WATER AND THE LOW TEMP.
IT IS IMPORTANT TO BASE YOUR DECISION WHEN PURCHASING OR LEASING ON CERTAIN CRITERIA;
SPACE AVAILABLE FOR THE MACHINE AND THE NECESSARY ADDITIONAL SUPPORT TABLES. SOILED DISHES TABLE, PRE-RINSE TABLE, EXIT TABLE AND DRYING TIME.
WATER AVAILABILITY. DISTANCE FROM HOT WATER SUPPLY. ROOM FOR A BOOSTER IF NEEDED. THE ABILITY FOR WATER TEMPERATURE TO RECOVER IN TIME FROM THE HEAT SOURCE.
THE ANTICIPATED TURNOVER TIME AND EXPECTED NUMBER OF DISHES PER HOUR.
TYPE OF CUISINE BEING SERVED. CERTAIN FODS TEND TO STICK AND BAKE ON.
THE MACHINE MUST BE NSF, ETL OR UL APPROVED.

	**UNDER THE COUNTER, AKA/ LOW TEMP MACHINES ARE VERY POPULAR BUT DO THE LEAST ADEQUATE JOB. SANITIZING IS ACHIEVED BY INTRODUCING BLEACH INTO THE FINAL RINSE CYCLE WITH WATER TEMP AT 145F**
	**SINGLE RACK HOT WATER USES HOT WATER AT 165F TO SANITIZE.**
	**HOT WATER MACHINES USE 180F WATER TO SANITIZE, WHICH DOES THE BEST OVERALL JOB, BUT COST THE MOST TO OPERATE.**
	**THE DIFFERENCE IN THE WATER TEMPERATURES IS DUE TO THE TEMPERATURE OF THE WATER WHEN IT LEAVES THE MAIFOLD, IT IS DISPERESED THROUGH THE SPRAY ARMS AND THEN LANDS OR HITS THE PLATE OR PIECE OF CUTLERY.** **THIS IS WHAT WE ARE ACTUALLY LOOKING FOR IN HOT WATER MACHINES. THAT THE TEMPERAURE OF THE PLATE OR UTENSIL WHEN THE WATER MAKES CONTACT, THE WATER TEMPERATURE IS AT LEAST 160 F. THIS IS CALLED PLATE TEMPERATURE.**
 	**THIS TEMPERATURE MUST BE REGISTERED BY AN IRREVERSEABLE REGISTERUNG TEMPERATURE INDICATOR**
	**ALL MACHINES MUST BE EQUIPPED WITH GUAGES INDICATING WATER PRESSURE, LINE SPEED, WATER TEMPERATURES AND CHEMICALAND/OR SOAP LEVEL INDICATORS.**
 	**HOT WATER HEATERS ARE THE USUALL SUPPLY OF HOT WATER FOR DISHWASING MACHINES. THEY USUALLY HEAT WATER TO 140F. IN ODER TO MAINTAIN A CONSTANT SUPPLY FOR HOT WATER MACHINES A BOOSTER IS REQUIRED**

MAINTENANCE OF MACHINES REQUIRES THAT PERIODIC DELIMING (DESCALING) BE DONE ON THE INTERIOR TO REMOVE SCALE AND MINERAL DEPOSITS, NOZZLES ON SPRAY ARMS CHECKED DAILY, BASKETS CLEANED DAILY, AND A GOOD PRE-WASH TO REMOVE EXCESS REFUSE FROM ENTERING.

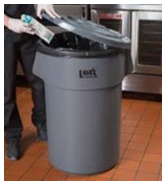
WASTE REMOVAL

GARBAGE

Kitchen garbage cans when not being used continuously should be kept covered, or covered with swinging flaps. Garbage cans attract flies and other insects that can spread pathogens. Cans should be constructed from waterproof materials and should not leak. They should be cleaned in an area not near food prep or storage. When removing garbage from the kitchen area make sure to keep it in the can until you get to the dumpster, or carry it low to the floor to prevent contamination of food and food contact surfaces.

Waste and recyclables must be stored separately from food and food contact surfaces. The storage of these items must not create a nuisance or a public health hazard.

Dumpster should be located as far away from the building as possible; their drain plugs must be left in and their covers able to close shut. The surface under the dumpsters must be blacktop or concrete to afford easy cleaning.



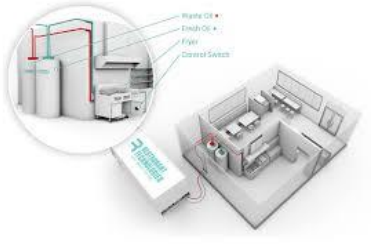


USED COOKING OIL

Used cooking oil can be refined into different types of biofuels **used** for power generation and heating. ... **Cooking oil** recycling also results in less **used oil** being disposed of in drains, which can clog sewage lines due to the build-up of fats and has to be collected there as "brown grease" by grease traps.

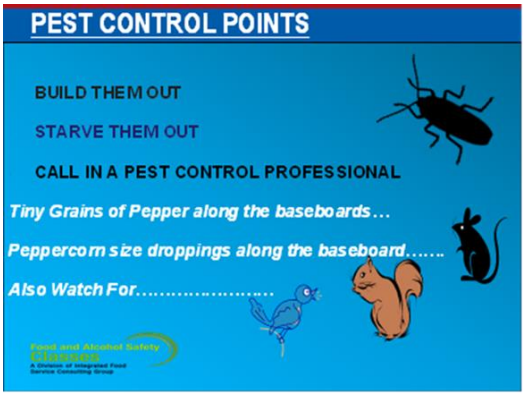
Yellow **grease** is an industry term for recovered vegetable oil from restaurants and other meal preparation places (hospitals, etc.) which can be **reused** in other industries. It goes by several names, including used cooking oil (UCO), used vegetable oil (UVO), **recycled** vegetable oil, and waste vegetable oil (WVO).

Today you can still pour your cooking oils and fats into designated oil drums for pick-up by a refining company. Another option is to use a company that specializes in supplying and removing all types of oils. The system usually includes storage tanks for the oil and a delivery system for automatically topping off or refilling fryolators, a cleaning system to clean the oil and finally a system to pump the used oil to storage tanks where it is picked up periodically for removal.



Courtesy Restaurant Technologies

PEST MANAGEMENT



Courtesy Orkin Pest Control

Three things to prevent pest infestation:

1. Deny pests access to the operation/ fix holes in screens, make sure they are tight fitting, and have an ample number of squares per inch, to keep out the smallest of insects. Doors should close properly and have sweeps on their bottoms. All doors should be self-closing. Holes and cracks in walls and floors need to be repaired and sealed. Cracks around plumbing and holes located on the outside foundation need to be filled in and sealed.

2. Deny pests food, water and shelter/ keep floors, equipment and storage areas free of food, keep food containers tightly sealed, and check all delivers before they come inside. Fix all leaking pipes or faucets and do not leave any kind of material around that pest can use for nesting.

3. Live and/or dead insects and rodents are signs of infestation

   When all else fails call in a Pest Control Operator (PCO). Do not leave pesticides in the operation, if allowed make sure they are kept stored separately from food prep and storage areas. Only a PCO can use poisonous or toxic pest control materials.

   Even if you do everything possible to keep pest out and creating a non-welcoming inside you should still work with a licensed pest control operator, making them a part of your pre-requisite programs. They should do quarterly (or more) inspections where they can leave special tracking implements to see if there is anything happening. Then they can act accordingly and swiftly.






ADDITIONAL FACILTY FACTS

FACILITIES

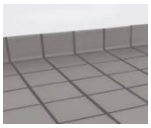
- **Floors, walls and ceilings** must be made from materials that are smooth and durable. Floors need to have **coving**, a curved, sealed edge between the floor and wall. It aids in easy cleaning.

FRP WALL


STAINLESS STEEL WALL


TILE WALL


ECO-TEK FLOOR


COVING

- **Equipment** must be installed properly and so that it is easy to maintain and clean. Must be NSF, ETL or UL approved

- **Chemicals** used in the operation must be acceptable to local and state regulations and disposed of properly. Remember to keep all Safety Data Sheets (SDS) as required by OSHA.

- **Water** must come from an approved source being a municipal water main, private tested source or water transport vehicles.

- **Plumbing** must meet current code. **Indirect drains, back flow valves** or **air gaps** must be used these devices prevent the co-mingling of contaminated sewage or water to mix with the safe water supply (potable water).

- **Proper lighting** must be installed with adequate foot candles to illuminate. **50-foot candles** for any prep area, **10-foot candles** for walk-ins, storage areas and dining rooms and **20-foot candles** for all other equipment and locations.

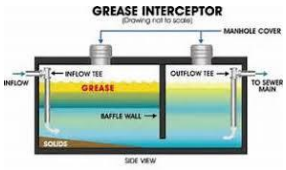
- **Proper ventilation** to remove grease, heat and steam that is properly maintained.

- **Master Cleaning Schedule** assists in proper cleaning and maintenance of floors, walls, ceilings and equipment that are not normally cleaned on a daily basis. It should inform staff of when the work must be done, how it's done, and who is responsible for doing it.
- **MASTER CLEANING SCHEDULE**

EQUIPMENT	DATE	CLEANING EQUIPMENT	WHO	COMPLETED
WALKIN	EVERY SUNDAY	DECK BRUSH, BUCKETS ALL PURPOSE CLEANER	MICHAEL P	
GREASE FILTERS	EVERY THURSDAY	HOSE OFF IN 3 COMP SINK RUN THRU DISHWASHER	DISHWASHER OPR	

- **Onsite septic systems** need regular maintenance and are properly tested.





- **Ladies rest rooms** must have a **covered** receptacle for sanitary napkins and all bathrooms must have self-closing stall doors.

- **Check Soda System Dispensing System**: Check to see that soda dispensing systems does not have old copper tubing that can contaminate water left in the lines overnight and become contaminated with Toxic Metal Poisoning.

Dipping Wells: The Dipping well system of continuous running water has been around for a very long term. And from a food safety perspective it does an adequate job. A problem that does exist is that on when in use it wastes thousands of gallons of water. Check with your supplier, there are some new products out that can keep the water at **135F** or higher.

FOOD SAFETY BEHIND THE BAR

- To keep the bar area safe from pests including fruit fly's special attention needs to be paid to these areas;
- Use pourers with covers, wipe down pourers, bottles and shelving every night.
- Every night, make sure that the following is cleaned; soda gun and holder, ice bin & scoops, under the chill plate, garbage cans and any wall surfaces around cans, all small wares sent to be run through dishwasher including plastic drip strips.
- Remove garbage frequently throughout service, use flipping lids on trash cans. Never leave empty bottles under bar, send to kitchen to be rinsed and then recycled.
- Floor mats removed each night and washed. Cover floor drains when not in use.
- If unable to use up bottle and/or can juices and such within two services think about using smaller sized options.
- Bar towels left in sanitizer solution or use pop up disposables.
- Bar fruit & ice are food and should be treated as such. No using fingers to tear lemon twist. All garnish should be pre-made and refrigerated Use disposable gloves.
- Bartenders should be dressed in special work attire not personal clothes worn to work. Do not use bare hands when handling bar fruit. **Cut fruit must be kept chilled.**
- Check soda dispensing system to make sure that copper tubing is not being used. This can cause toxic metal poisoning when soda is left overnight in the copper tubing.

			
Fruit Flies	Pourer with Lid	Gun Holder	Cocktail Equipment
			
Icebin	Chill Plate	Bar Fruit	Bar Fruit Caddy
			
Sanitizer Wipes	Drip Mats	Covered Garbage Can	Floor Mat

CHAPTER 5 Fill in the Blanks

1	Before placing a whole apple into a vending machine what must be done to the apple?	
2	Name three things that can be done to prevent cross contamination?	
3	A posted schedule of equipment cleaning, including when to do, with what and by whom is called?	
4	Outside garbage dumpsters must be placed on, and have what two other requirements?	
5	Build them out and Starve them out are referring to what?	

CHAPTER 5 True or False

1	Kitchen equipment with the NRA certificate on it is deemed suitable for use in a commercial kitchen?	
2	In addition to a break in a drainpipe to the entry at the floor drain, the faucet and flood rim of a sink are also considered air gaps?	
3	Garbage dumpsters can be situated on top of clean and sanitized white gravel?	
4	It is recommended that bar pourers with covers be used to ward off fruit flies?	
5	If the hand washing sink has all of the required necessities then a sign is not required?	

Answers are located on page 88

TEST YOUR KNOWLEDGE

CHAPTER 5 #5

Column #1 are the questions. Choose the correct answer from the choices in column #2 and write the letter in the corresponding box in column #3.

Please note, some answers are used more than once and some are not used. The answer key is located on page 88

1		2		3	
1	Kitchen walls and floors must be…	A	What are foot candles?	1	
2	Connecting curved tile where the floor meets the wall	B	Coving is….	2	
3	Plug must be left in, covers closed and placed on solid ground	C	"Potable"	3	
4	Illumination measurement	D	Smooth and durable	4	
5	Must have the NSF or UL approval	E	An air gap	5	

6	Must be kept at 41 degrees or lower
7	Safe water to drink
8	The space between where a sink drain ends and floor drain begins to prevent backflow
9	Cannot be used for defrosting foods, cleaning vegetables or washing pots

F	Garbage Dumpster
G	A hand washing sink
H	A cold sandwich vending machine
I	Commercial kitchen equipment

6	
7	
8	
9	

Chapter 5 Fill in the Blanks

1	WASHED AND WRAPPED
2	DIFFERENT OR SEPARATE CUTTING BOARDS, WASH, RINSE AND SANITIZE EVERYTHING BETWEEM CHANGES, BUY PREPARED FOODS, SEPARATE PREP AREAS, PREP ORDER DETERMINED BY INTERNAL COOKING TEMP
3	MASTER CLEANING SCHEDULE
4	CONCRETE OR ASPHALT, DRAIN PLUG IN PLACE AND LIDS CLOSED
5	PEST CONTROL

Chapter 5 True or False

1	False
2	True
3	False
4	True
5	False

Chapter 5 Test Your Knowledge

1	D
2	B
3	F
4	A
5	I
6	H
7	C
8	E
9	G

CHAPTER 6

In this chapter we will review….

Health Department Compliance
Health Inspectors
Emergencies & Outbreaks
Crisis Management

LOCAL HEALTH DEPARTMENTS

Depending on your location and size of your town, your facility will be inspected by either the state health department, county health department, city or town health department. It is also possible that in some areas depending on the state code, you could be overseen by the State Department of Agriculture. Again, depending on your size, location and your classification as to risk, you will be inspected anywhere from one to three times per year. In some areas locations that only sell packaged products could be inspected less than once a year.

HEALTH INSPECTORS

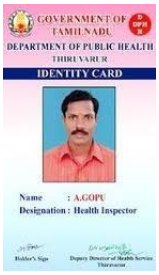
The law requires that a health inspector be allowed to enter a establishment at any time. They cannot be denied entry. You do have a right to ask for identification. If they do not have proper I.D. ask them to wait while you call the health department. There have been documented cases of scams being played on restaurant operators. If The inspector shows I.D. and is legitimate and you do not let them in, he will go to a judge and get a court order and return with a police officer. It is suggested that a manager or at least the person who is a certified food protection manager accompany the inspector so that any questions the inspector has can be answered properly. Also, it is a good idea to take a pad and pen and make notes as the inspector goes through the inspection.

In most jurisdictions the latest copy of your health department inspection must be made available to anyone who requests to see it. The inspection report is not only a report and/or a score of your business's operation, but also a very good indication of where you need to concentrate more to correct any existing problems and to prevent them from returning. The health department is also an excellent source of information. Do not be afraid to ask questions or for help.

Besides inspecting operations, health departments also perform pre construction audits, approve HACCP plans, issue permits and licenses, follow up consumer complaints, enforce the code and if need be, close operations due to Imminent Danger.



You should not have to prepare for an inspection. If you maintain your operation in a professional manner, you should always be ready. You can use a copy of your last inspection from the department of health. Everything is outlined on it and it will also inform you of any areas you need to be concerned with. You can take this a step further and contract a third party audit company to come in on a scheduled or unanounced basis and due a mock inspection. Involve your entire staff, and reward them them whenever you receive a perfect score.




EMERGENCIES AND OUTBREAKS

A foodborne illness outbreak happens when the following criteria are met:

Two or more people become ill after eating the samething from the same establishment.
An investigation is conducted by the local health department.
The findings are verified by laboratory analysis.

This information is then sent to the ***CDC***.

Why is this important?

Gathering this information and analyzing it helps to find out how the outbreak started and may help to prevent it from happening again.

- **An immanent health hazard** is a significant threat or danger to the public's health requiring immediate **correction or closure** to prevent injury.
- Examples of immanent dangers are;
- Electrical Power Outage
- Fire
- Flooding
- Sewage Backup
- Well Water Contamination
-

If the risk is significant (IMMENENT)

- Stop service
- Notify the local regulatory authority

Decide how to correct the problem

- Establish time-temperature control
- Clean and sanitize surfaces
- Verify water is drinkable
- Reestablish physical security of the facility



Here are some things you can do to minimize and/or prevent emergencies from happening.

1. Contract a hood, duct and exhaust cleaning and maintenance company for scheduled maintenance.
2. Have your fire suppression system checked annually or more if required.
3. Contract a grease trap removal and maintenance company.
4. Have a once-a-year inspection of your electrical wiring and system.
5. Take preventive measures and regular scheduled maintenance on all of your drains.
6. Install a refrigerator/freezer remote monitoring system.
7. Consider installing a back-up generator system.

Make sure that wherever possible before and after photos are taken of work done. Maintain all receipts for documentation and make sure you engage a triple A insurance company that will give you all the proper coverages you will need and give credit for all of the pro-active precautions you take.

BACK UP GENERATOR COURTESY OF KOHLER

INCIDENTS AND IMMINENT DANGER

How to respond to a crisis affecting the facility:

- DOCUMENTATION! (take photos as soon as it is safe to do so)
- Determine if there is a significant risk to the safety or security of your food and/or staff.

- <u>If the risk is significant (IMMENENT)</u>
  - Stop service
  - Notify the local regulatory authority
- <u>Decide how to correct the problem</u>
  - Establish time-temperature control
  - Clean and sanitize surfaces
  - Verify water is drinkable
  - Reestablish physical security of the facility

INCIDENTS AND IMMINENT DANGER

Responding to a Foodborne-Illness Outbreak

Gather Information

- Ask the person for general contact information.
- Ask the person to identify the food eaten.
- Ask for description of symptoms.
- Ask the person when did they first get sick.

Notify Authorities

- Contact the local regulatory authority if an outbreak is suspected.

Never admit guilt over the phone.

DOCUMENTATION!

Every operation must have a **Crisis Management Plan** which includes an Emergency Contact List, Alternate Power Supplier, Alternate Water Supplier, plan for savaging or disposing of food, and on hand cleaning and sanitizing supplies etc.

The 3 main elements of any Crisis Management Plan are; **PREPARATION, RESPONSE AND RECOVERY**.

An outbreak can occur anywhere at any time, even to the best of places. Any size business can prepare for the possibility of a problem. Do not try to fake and hide things. Develop a dialog early on with your local health department. Don't be afraid to call them and ask for help. Have a prepared statement should the local press come around, appoint someone who speaks well to be the spokesperson. If there is a problem, go the extra mile to make things right. But most important; DOCUMENT everything from the beginning.

Chapter 6 Fill in the Blank

1	Two or more people have had to eat the same thing from the same location and this is followed by an inspection from the local health department and what else before being declared an outbreak?	
2	Anytime there is an incident that requires a report to be filed the most important thing to remember is to?	
3	Always keep a copy of what readily available if requested by a customer, health inspector and for employees to see where additional attention may be needed?	
4	What are job aides and what should be done with them?	
5	A medical I.D. bracelet may be worn on what part of the body?	

Chapter 6 True or False

1	The FDA's food defense system acronym is called ALERT?	
2	An operation that uses well water must have the well tested at least once a year?	
3	A grease trap back up that covers most of the kitchen floor is cause for shutting down the operation until it can be repaired and cleaned up?	
4	A person claiming to be a health inspector but is unable to show proper I.D. should still be allowed to carry on the inspection?	
5	The criteria for a food borne illness outbreak is; three people eating the same food, an onsite inspection by the CDC and a conclusive laboratory report?	

TEST YOUR KNOWLEDGE

Chapter #6

Column #1 are the questions. Choose the correct answer from the choices in column #2 and write the letter in the corresponding box in column #3.

Please note, some answers are used more than once and some are not used. The answer key is located on the next page.

1

1	Local Health Department
2	Imminent danger
3	When presented with this, this person must be allowed to enter your business
4	Possible problem associated with backup of water and/or sewage into an operation
5	Two or more people become sick after eating the same food at the same establishment including an inspection by the BOH and conclusive lab results
6	Making sure the staff is up-to-date regarding the latest food safety requirements
7	Local health departments send reports regarding local outbreaks to
8	An operation that has been closed by the health department may not reopen until

2

A	New definition of an outbreak
B	The Center for Disease Control (CDC)
C	All violations have been fixed and permission is granted by the health department
D	Approves HACCP plans
E	Salmonella Typhi
F	Health inspector with proper I.D.
G	Operation closure due to public safety
H	Ongoing training

3

1	
2	
3	
4	
5	
6	
7	
8	

Chapter 6 Fill in the Blanks

1	FOOD BORNE ILLNESS OUTBREAK
2	DOCUMENT
3	THE LATEST HEALTH DEPARTMENT INSPECTION REPORT
4	POSTERS DIPICTING THE CORRECT WAY TO DO A TASK(S)
5	ONLY ON THE NECK OR ANKLE

Chapter 6 True and False

1	True
2	True
3	True
4	False
5	False

Chapter 6 Test Your Knowledge

1	D
2	G
3	F
4	E
5	A
6	H
7	B
8	C

AFTER COVID-19 FOOD SAFETY CULTURE

- The consequences and/or the aftereffects of this significant unpleasant event are not yet known or fully understood. Safe to say that the consumer will be looking and expecting those establishments who are still in business to be embracing higher standards of food safety in both the front and back of the house.
- It won't be anything on a grandiose scale, like chefs in full surgical outfits, but rather many small detailed oriented things like wrapped silverware, how condiments are served, more attention to servers' hands, cleanliness of staff dress, bathroom sanitation and how the outside of each business is maintained.
- Takeout and delivery are sure to maintain a more significant place in a retail sit down operation. How that is conducted is sure to be scrutinized in more detail going forward. From the condition of the delivery vehicle, the quality of the product used to keep food hot or cold, secure sealing of packages to the driver's overall appearance.
- Developing a Food Safety Culture will become important now than ever before. It will become the line in the sand that separates those who continue succeed and those that eventually fail.








FOOD SAFETY LINKS

FDA	https://www.fda.gov/home
USDA	https://www.usda.gov/
CDC	https://www.cdc.gov/
NATIONAL REGISTRY OF FOOD SAFETY PROFESSIONALS	https://www.nrfsp.com/
SERVSAFE	https://www.servsafe.com/
LEARN2SERVE	https://www.360training.com/learn2serve
PROMETRIC	https://www.prometric.com/
STATE FOOD SAFETY	https://www.statefoodsafety.com/
Always Food Safe	https://alwaysfoodsafe.com/
National Environmental Health Association	www.neha.org
National Safety Foundation	www.nsf.org
American National Standards Institute	https://webstore.ansi.org/
International Association of Food Safety	https://www.foodprotection.org/
National Restaurant Association	https://www.restaurant.org/home
American Culinary Federation	https://www.acfchefs.org/
Food Safety News	https://www.foodsafetynews.com/
I Was Poisoned.com	https://iwaspoisoned.com/
Conference for Food Protection	http://www.foodprotect.org/
American Egg Board	www.aeb.com
CDC Vessel Sanitation Program	www.cdc.gov/nceh/vsp
Food Allergy & Anaphylaxis Network	www.foodallergy.org
Food Service Consultants Society International	www.fcsi.org
International Dairy Foods Association	www.idfa.org
Morbidity and Mortality Weekly Report	www.cdc.gov/mmwrr
National Chicken Council	www.nationalchickencouncil.com
National Fisheries Institute	www.aboutseafood.com
National Pest Management Association	www.pestworld.org
N.A. Association of Food Equipment Manufacturers	www.nafem.org
National Food Service Security Council	www.nfsconline.org
Council for Food Protection	http://www.foodprotect.org/

Meet the Editor Michael Pozit

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Certified Norovirus Trainer and Allergen Trainer
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Integrated Food Service Consulting Group
Creative Solutions for Sustainable Results

Mission Statement: ***"Creative Solutions for Sustainable Results",*** is not just a tag line, it is a business philosophy that we strive to achieve for each and every one of our clients. The hospitality industry faces more challenging obstacles today than ever before, especially for the independent operator. No longer can issues, problems or situations be viewed from just one or two perspectives. Operations must focus on the total picture and scrutinize using an integrated view. At IFSCG we harness the power of our professional network to solve problems that not only succeed but enhance an existing operation or new venture.