

# Basic Food Safety



HEALTH DIVISION  
DAVID COULTER  
OAKLAND COUNTY EXECUTIVE



# Food Safety

Centers for Disease Control and Prevention estimates that each year:

- roughly 1 in 6 Americans, or 48 million people, get sick from food
- 128,000 are hospitalized
- 3,000 die of foodborne illnesses

\*CDC Findings 2011 Estimates of Foodborne Illness

# Outbreaks

- 2015 - Mexican-fare restaurant
  - *E. coli*
  - 45 confirmed illnesses, 16 hospitalizations
  - Stocks down over 20%
- 2005 - sandwich/sub restaurant
  - *Norovirus*
  - 3 clusters
  - At least 100 ill

# Outbreaks

- 2006 - large food producer
  - *Salmonella*
  - 628 persons infected from 47 different states
  - 9 deaths
  - Company president sentenced to 28 years in prison

# Course Objective

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Show how basic food safety practices can help prevent the threat of foodborne illness by focusing on the five major risk factors.

# Foodborne Illness Risk Factors

The Centers for Disease Control and Prevention (CDC)'s foodborne illness risk factors are:

1. Unsafe Sources
2. Poor Personal Hygiene
3. Inadequate Cooking
4. Improper Holding Temperatures
5. Contaminated Equipment

# Unsafe Sources

- Purchase food only from approved, licensed sources
- No home prepared foods
- Keep documentation from suppliers

# Unsafe Sources

When receiving items, it is important to check:

- Cold foods are 41°F or below
- Hot foods are 135°F or higher
- Expiration dates
- Evidence of pest activity
- Damaged packages



# Foodborne Illness Risk Factors

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5. Contaminated Equipment

# Poor Personal Hygiene

- Proper hair restraint
  - Hairnet, hat, or visor with hairnet
- Designated areas for eating and drinking
- Drinks shall be in a cup with a tight fitting lid and straw
- Smoking shall be done outdoors where no food or beverage is served
- Clean uniform
- Limited jewelry

# Poor Personal Hygiene

## Handwashing:

- Use soap and warm running water
- Rub your hands vigorously for 20 seconds
- Wash all surfaces, including:
  - Backs of hands
  - Wrists
  - Between fingers
  - Under fingernails

# Poor Personal Hygiene

## Handwashing:

- Rinse well under warm running water
- Dry hands with paper towel or hand dryer
- Turn off the water using a paper towel instead of bare hands

# Poor Personal Hygiene

## When to wash:

- Before handling food or clean equipment
- After touching any source of potential contamination
  - Hair/Skin
  - Soiled dishes
  - Money
  - Raw meat
  - Any unclean surface or item
  - Chemicals/cleaning supplies

# Poor Personal Hygiene

## Where to wash:

- Only wash hands in a designated hand washing sink
- Do not use a prep sink nor a three-compartment sink



# Poor Personal Hygiene

## Hand sink usage:

- Only for hand washing
- Do not fill items in a hand sink
- Do not pour food/ice/water in a hand sink
- No food prep should be done in a hand sink
- Hand sink **MUST** be accessible at all times



# Poor Personal Hygiene

## Important Fact:

- *Staphylococcus aureus* is a common bacterium found on the skin and in the noses of up to 25% of healthy people and animals
- *Staphylococcus aureus* has the ability to cause several different toxins responsible for food poisoning



# Poor Personal Hygiene

## Glove use:

- Wash hands before putting on gloves
- Designed for single use
- Replace when torn or contaminated
- Not a replacement for handwashing
- Do not blow in gloves
- Do not roll gloves when putting them on
- Do not wash nor reuse gloves

# Poor Personal Hygiene

## Food Employee Foodborne Illness Guidelines

### Illness Symptoms Action Guidance (Food Code Sections 2-201.12, and 2-201.13)

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

\* Note: Associated hands and wrists must be free of cuts or sores that are red or oozing, unless an impermeable cover is used over the sore and a single-use glove is worn over the impermeable cover. Cuts or sores on exposed portions of the arms and other body parts must be covered with an impermeable cover or tight-fitting bandage.

**The Big Five are: 1. *Salmonella typhi* 2. *Shigella* 3. Shiga toxin-producing *Escherichia coli* 4. *Hepatitis A* 5. *Norovirus***  
If you have been diagnosed with, or exposed to these illnesses, they are so contagious that you must be excluded from work at a food establishment, and you cannot return to work at a food establishment until approval has been received from the Local Health Department.

**Criteria for Exclusion from Work:** Any food employee diagnosed with an illness due to the Big Five must report the diagnosis to the manager. The food employee must be excluded from working in the retail food establishment and the law requires the manager to notify the local health department immediately. Before a food employee is allowed to return to work, check with the local health department.

[www.michigan.gov/mda](http://www.michigan.gov/mda)

Funded by Act No. 92, of P.A. 2000, Industry Food Safety Education Fund

# Poor Personal Hygiene

## Employee Health

- Inform your manager if you are experiencing any of these symptoms:
  - Vomiting
  - Diarrhea
  - Jaundice (yellowing of the eyes or skin)
  - Sore throat with fever
  - Infected cut/wound/burn

# Poor Personal Hygiene

## Employee Health

- Know the **BIG 5** for foodborne illness!
  - *Salmonella typhi* (Typhoid Fever)
  - *Shigella* species
  - Shiga toxin-producing *Escherichia coli* (*E. coli*)
  - *Hepatitis A*
  - *Norovirus*
- Inform your manager and do not report to work if you are diagnosed with any of the above illnesses

# Poor Personal Hygiene

## Employee Health

- Restriction vs Exclusion
  - Restriction: Can work in the facility, but not with food, clean equipment, utensils, linens, or unwrapped single-service or single-use articles
  - Exclusion: Cannot work in the facility at all

# Poor Personal Hygiene

## Employee Health

- Diarrhea and/or vomiting
  - Exclude employee from facility
  - Return to work
    - 24 hours symptom free OR
    - Medical documentation that states the symptom is from a noninfectious condition

# Poor Personal Hygiene

## Employee Health

- Jaundice (yellowing of the eyes or skin)
  - Exclude employee from facility and notify the health department
  - Return to work
    - Medical documentation that the employee is free of hepatitis A virus or other fecal-oral transmitted infection

# Poor Personal Hygiene

## Employee Health

- Sore throat with fever
  - Restrict employee from food areas
  - Return to work
    - Medical documentation stating one of the following:
      - Received antibiotic therapy for >24 hours
      - One negative throat culture
      - Free from *Streptococcus pyogenes* (Strep Throat)



# Poor Personal Hygiene

## Employee Health

- Infected Wound or Pustular Boil
  - Restrict employee from food areas
  - Return to work
    - Once properly covered with an impermeable cover or a tight-fitting bandage
    - Use a bandage and glove if cut is on the hand or wrist

# Poor Personal Hygiene

## Employee Health

- Diagnosed with or exposed to one of the **BIG 5**
  - Exclude employee from facility and notify the health department
  - Returning to work
    - **Seek approval from the health department**

# Foodborne Illness Risk Factors

The Centers for Disease Control and Prevention (CDC)'s foodborne illness risk factors are:

1. Unsafe Sources
2. Poor Personal Hygiene
3. Inadequate Cooking
4. Improper Holding Temperatures
5. Contaminated Equipment

# Inadequate Cooking

## Minimum Cooking Temperatures

- 165°F
  - Poultry
  - Stuffed meats
  - Any meat or eggs cooked in a microwave



# Inadequate Cooking

## Minimum Cooking Temperatures

- 155°F
  - Ground meat
  - Minced fish
  - Mechanically tenderized or injected meat
  - Pooled shell eggs
  - Eggs for hot holding
  - Ratites



# Inadequate Cooking

## Minimum Cooking Temperatures

- 145°F
  - Whole beef/pork
  - Commercially raised game
  - Fish/Shellfish
  - Shell eggs (cooked to order)



# Inadequate Cooking

## Minimum Cooking Temperatures

- 135°F for hot holding
  - Cooked fruits
  - Cooked vegetables
  - Cooked beans or grains



# Inadequate Cooking

## Thermometers

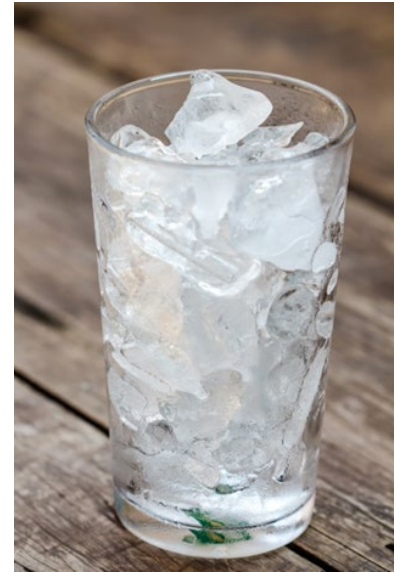
- Use the appropriate sized and scaled thermometer for the job
- Take the reading in the thickest part of the food
- Wait for temperature to steady before reading
- Place unit thermometers in cold and hot holding equipment



# Inadequate Cooking

## Thermometers

- Calibration Step 1:
  - Pack cup with ice and add just enough water to cover the ice



# Inadequate Cooking

## Thermometers

- Calibration Step 2:
  - Make sure the sensing area is submerged in the ice water
  - Wait until the indicator stops moving
  - Thermometer should read 32°F



# Inadequate Cooking

## Thermometers

- Calibration Step 3:
  - If the thermometer does not read 32°F adjust it as follows:
    - Using a wrench or pliers, turn the calibration nut while keeping the probe in the glass of ice water
    - Turn the face of thermometer until the pointer lines up with the correct temperature (32°F)
    - If the thermometer is digital, follow manufacturer's instructions for calibration



# Foodborne Illness Risk Factors

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# Improper Holding Temperatures

## Time/Temperature Control for Safety Foods (TCS)

- Foods that contain the right characteristics for harmful bacterial and viral growth:
  - Nutrients
  - pH (level of acidity)
  - $a_w$  (water activity)
  - Oxygen (anaerobic versus aerobic)

# Improper Holding Temperatures

## Time/Temperature Control for Safety Foods

- Cut leafy greens
- Cut tomatoes
- Cut melons



# Improper Holding Temperatures

## Time/Temperature Control for Safety Foods

- Poultry
- Fish/Shellfish
- Meat
- Eggs
- Meat Alternatives
  - Tofu/Soy



# Improper Holding Temperatures

## Time/Temperature Control for Safety Foods

- Heat-treated, plant-based food items (vegetables, fruits, beans, grains, pasta)
- Fresh garlic in oil
- Seed sprouts
- Dairy





# Improper Holding Temperatures

## Temperature Danger Zone

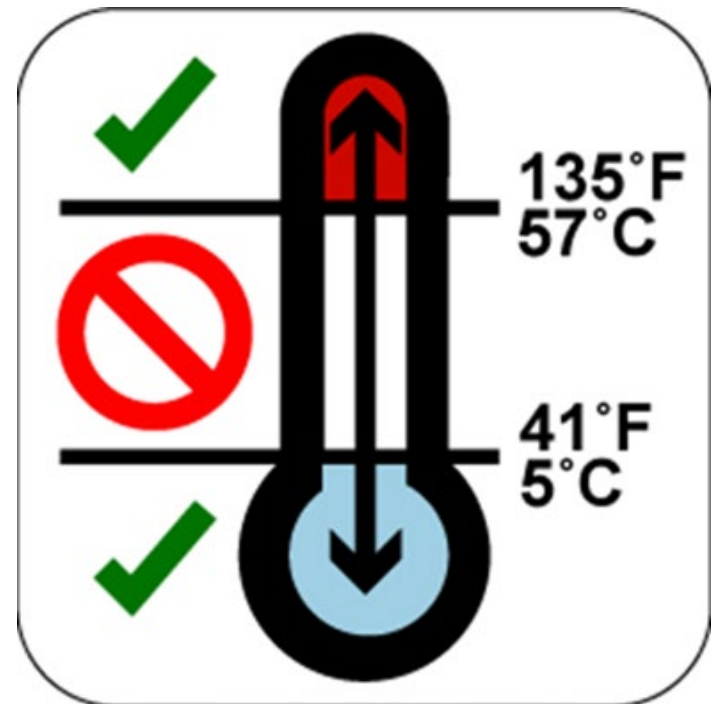
- Keep time/temperature control for safety food out of the temperature danger zone as much as possible



# Improper Holding Temperatures

## Temperature Danger Zone

- Store cold food at 41°F or below
- Store hot food at 135°F or above
- **Bacteria grow most rapidly between 70°F and 125°F**



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# Improper Holding Temperatures

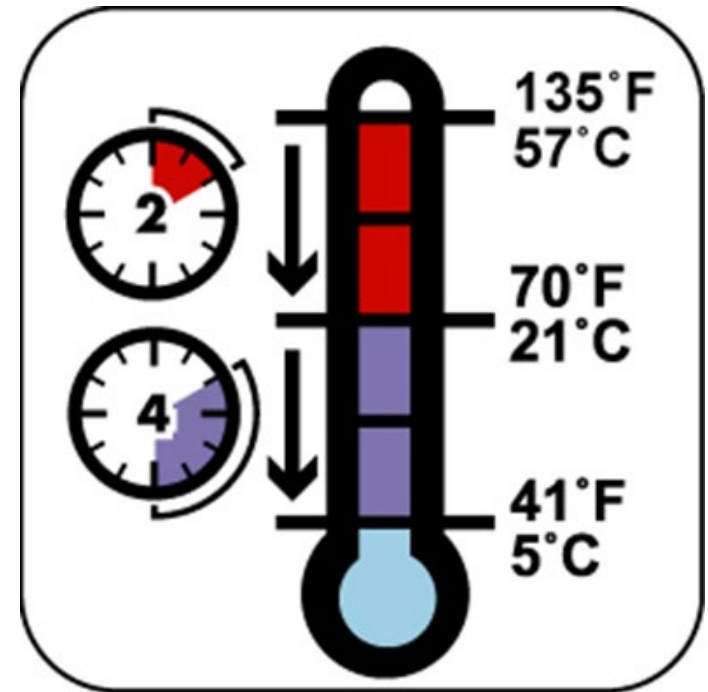
## Proper Thawing Methods

- Submerged under running water of less than 70°F
- Under refrigeration
- As part of the cooking process
- In the microwave if the product will be fully cooked immediately after

# Improper Holding Temperatures

## Cooling Hot Food

- 135°F - 70°F within the first 2 hours or less
- 70°F - 41°F within an additional 4 hours or less
- Total time = 6 hours or less



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# Improper Holding Temperatures

## Proper Cooling Methods

- Ice wand/ice bath
- Smaller portions/shallow pans
- Use ice or cold water as an ingredient
- Walk-in cooler or freezer
- Leave uncovered



# Improper Holding Temperatures

## Cooling Room Temperature Food

- Ambient air temperature - 41°F within 4 hours or less
- Use rapid cooling methods
- Pre-chill ingredients in a cooler when possible



# Improper Holding Temperatures

## Reheating Food

- 135°F in 2 hours or less for commercially prepared items
- 165°F in 2 hours or less for previously cooled items
- Use equipment that can reheat rapidly

# Foodborne Illness Risk Factors

The Centers for Disease Control and Prevention (CDC)'s foodborne illness risk factors are:

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# Contaminated Equipment

## Cross Contamination

- Harmful bacteria and viruses from one food item or surface are transferred to another
  - Food to Food
  - Equipment to Food
  - Hands to Food
  - Hands to Equipment



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# Contaminated Equipment

## Preventing Cross Contamination

- Storage
- Preparation timing and location
- Cleaning and sanitizing
- Hand washing
- Glove use

# Proper Food Storage - Refrigeration

TOP

	Ready –to-Eat Fully Cooked Foods	_____
	Unwashed Produce	_____
	Raw Seafood/Fish Shell Eggs (cooked to order)	145° F
	Raw Whole Muscle Intact Beef	145° F
	Raw Whole Pork Raw Wild Game	145° F
	Raw Ground Meat or Fish Mechanically Tenderized Meat Pooled Eggs/Egg Batter	155° F
	Raw Whole/Ground Poultry	165° F

BOTTOM

# Contaminated Equipment

## Cleaning vs Sanitizing

- Cleaning process uses detergent to remove debris
- Sanitizing process uses heat or chemical to reduce the number of harmful bacteria and viruses to a safe level

# Contaminated Equipment

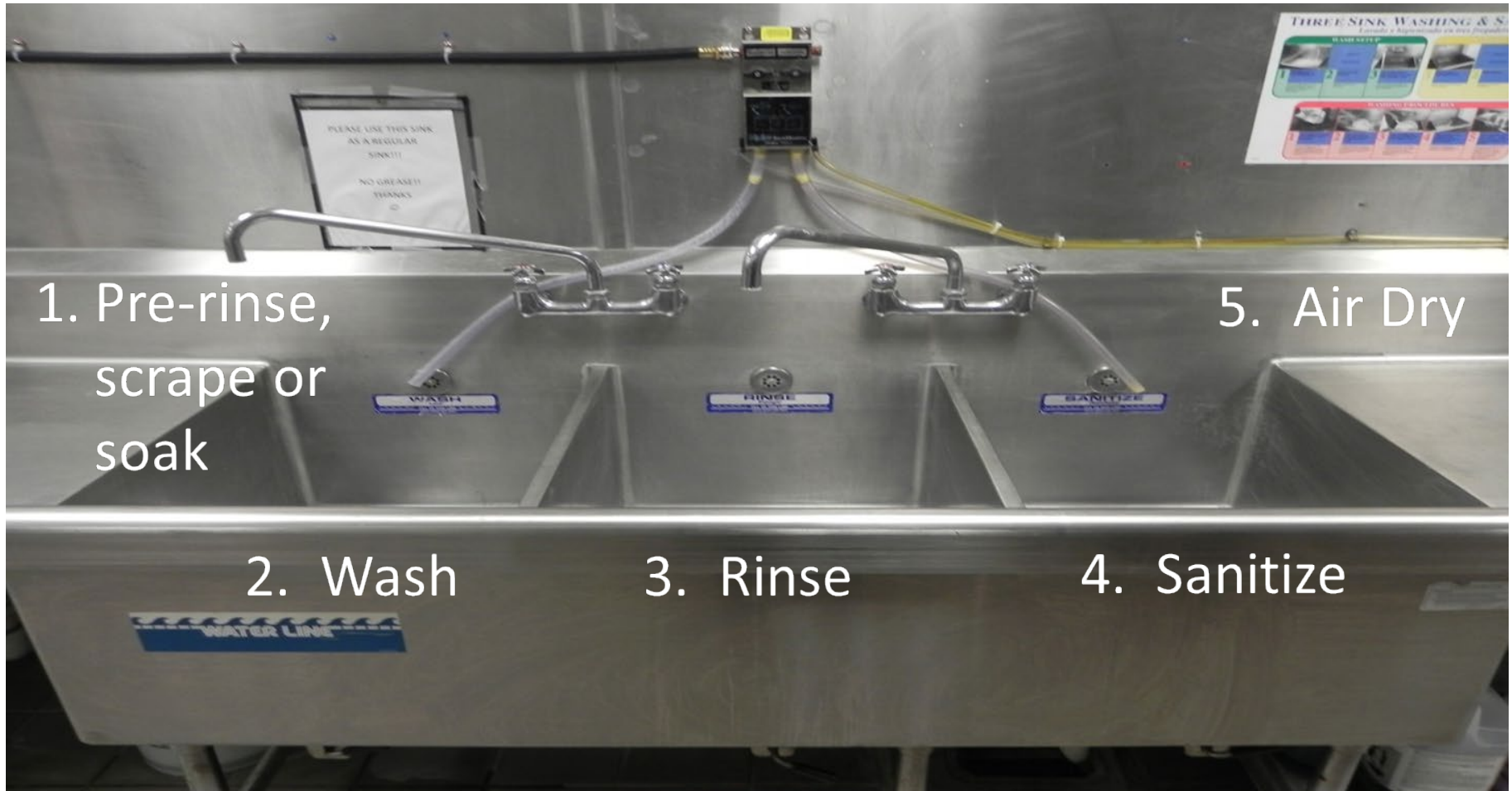
## Wash, Rinse and Sanitize

- Food contact surfaces in constant use with time/temperature control for safety food must be washed, rinsed and sanitized every 4 hours
  - Examples: Cutting boards, knives, tongs
- Other items including clean-in-place equipment should be washed, rinsed and sanitized after use
  - Examples: Deli slicer, stand-up mixers



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# Three Compartment Sink



# Contaminated Equipment

## Three Compartment Sink

- Step 1: Rinse, scrape or soak items before washing them



# Contaminated Equipment

## Three Compartment Sink

- Step 2: Wash items in the first sink with hot water and detergent





# Contaminated Equipment

## Three Compartment Sink

- Step 3: Rinse items in the second sink with warm water



# Contaminated Equipment

## Three Compartment Sink

- Step 4: Sanitize items in the third sink using an approved sanitizer **at the concentration and water temperature specified by the product manufacturer**



# Contaminated Equipment

## Test Strips

- Use test strips to ensure the sanitizer is at the proper concentration specified by the product manufacturer
- Common Ranges:
  - Chlorine 50-100ppm
  - Quaternary ammonia (Quat) 200-400ppm
  - Iodine 12.5-25ppm

# Contaminated Equipment

## Three Compartment Sink

- Step 5: Air-dry items on a clean and sanitized surface.



# Contaminated Equipment

## Wiping Cloths

- Wet wiping cloths
  - stored submerged in sanitizer solution
- Solution buckets
  - kept off the floor in an area where they will not contaminate food items or clean equipment



# Risk Factor Review

Identify the following times and temperatures:

1. 32°F \_\_\_\_\_
2. 41°F \_\_\_\_\_
3. 70°F \_\_\_\_\_
4. 135°F \_\_\_\_\_
5. 145°F \_\_\_\_\_
6. 155°F \_\_\_\_\_
7. 165°F \_\_\_\_\_
8. 2 Hours \_\_\_\_\_
9. 4 Hours \_\_\_\_\_  
\_\_\_\_\_
10. 6 Hours \_\_\_\_\_

# Risk Factor Review

Identify the following times and temperatures:

1. 32°F Thermometer calibration
2. 41°F Cold holding
3. 70°F Thawing water temperature, First step of cooling
4. 135°F Hot holding, Re-heat of commercial product
5. 145°F Whole meat/seafood, Eggs to order
6. 155°F Ground meat/seafood, Pooled eggs, Hot held eggs
7. 165°F Poultry, Stuffed meat, and Re-heating
8. 2 Hours Re-heating, 1<sup>st</sup> step of cooling
9. 4 Hours 2<sup>nd</sup> step of cooling, Ambient cooling,  
TCS in-use utensil cleaning
- 10.6 Hours Total cooling time frame

# Other Important Information for Food Employees



# Ready-to-Eat

## Ready-to-Eat

- Food that will not undergo any further preparation, washing or cooking and are ready to eat the way they are. Examples include:
  - Washed produce
  - Deli meats
  - Cheese
  - Bakery items
  - Raw uncooked items such as sushi

# Ready-to-Eat

## Handling Ready-to-Eat Foods

- Ready-to-eat foods shall not be touched with bare hands
- Only handle with gloves or other suitable utensils
  - Examples: tongs, deli tissue, ladles



# Date Marking

- A product needs to be date marked if **it is all of the following:**
  - Fully cooked/ready-to-eat
  - Time/temperature control for safety foods
  - Prepared/opened and held cold for over 24 hours
- The bacteria *Listeria monocytogenes* continues to grow at refrigerated temperatures

# Date Marking

- If combining ingredients, use earliest date
- Date cannot go past manufacturer's expiration/use-by date
- Must have a consistent date marking system
- Date marking may not exceed **7 Days**

**Open/Prep Date + 6 Days =  
Discard Date**

# Date Marking

- Exemptions:
  - Hard and semi-soft cheeses
    - Examples: Cheddar, swiss, parmesan, blue cheese, gorgonzola
  - Cultured dairy products
    - Sour cream, yogurt, buttermilk
  - Commercially prepared deli salads
    - Examples: Potato salad, macaroni salad, pasta salad

# Food & Equipment Storage

- Store items 6 inches off the floor in a clean location
- Follow the “First In, First Out” rule
- Invert bowls, dishes or take-out containers that may collect dust or debris

# Chemicals/Toxic Items

- Store all chemicals below and away from all food, equipment, utensils and single service items
- Chemical bottles must be labeled with the common name at all times
- Only use chemicals approved for use in commercial kitchens

# Wait Staff

- Store personal items in approved areas
- Avoid touching food contact surfaces
- Do not use drinking glasses as ice scoops
- Be aware of menu items that may contain undercooked ingredients or food allergens



# Dishwashers

- Check the chemical levels and temperature gauges at the start of shift
- Use test kit to check that the machine is sanitizing properly
- Wear proper hair restraint
- Wash hands between handling soiled and clean dishes
- Allow items to air dry – never towel dry

# Person In Charge

- Must be present at all times of operation
- Does not have to be the certified manager
- Must know basic food safety principles as they relate to the facility

# Certified Manager

- Food establishments shall employ a minimum of 1 full time managerial employee as a food safety manager with a valid certificate
  - Must be certified under a personnel certification program accredited by the American National Standards Institute (ANSI)



# Certified Manager Class

The Oakland County Health Division offers  
ServSafe® Food Safety Programs.

Registration and fees can be found at the  
following website:

<https://www.oakgov.com/health/services/Pages/Classes.aspx>

# Food Allergens

- As of January 2017, Michigan restaurants shall:
  - Have one certified manager who has taken an approved allergen training course
  - Post an approved allergen awareness poster

# Food Allergens



# Food Allergens

## Symptoms of an Allergic Reaction:

- Fainting
- Shortness of breath
- Itching or tingling
- Hives
- Wheezing
- Swelling of face, tongue, eyelids, lips, hands or feet
- Difficulty swallowing
- Sudden onset of vomiting, cramps or diarrhea

# Food Allergens

## **Food Allergy Awareness**



### **The Eight Major Food Allergens**

**Milk**  
**Eggs**  
**Fish**  
**Crustacean Shellfish**  
**Wheat**  
**Soybeans**  
**Peanuts**  
**Tree nuts**

### **Symptoms of an Allergic Reaction**

- Loss of consciousness
- Shortness of breath
- Itching or tingling in or around the mouth, face, scalp, hands and feet
- Hives (welts)
- Wheezing or difficulty breathing
- Swelling of the face, eyelids, tongue, lips, hands or feet
- Tightening off the throat (difficulty swallowing)
- Sudden onset of vomiting, cramps or diarrhea

### **If a customer informs you of a food allergy:**

- Refer the food allergy concern to the Person in Charge (PIC).
- Review the food allergy with the customer and check the ingredient labels.
- Respond to the guests request and inform them of your findings.
- Remember to check the food preparation procedures for **ANY** possible cross contamination, which could include frying the item in question in the same grease as an item that contains an allergen.
- If a food items is returned to the kitchen due to an allergen, **DO NOT** attempt to remove the allergen and send the food back. *Trace amounts of allergens can trigger an allergic reaction.*

**Notify the Person in Charge immediately  
if a customer has an allergic reaction!**

[www.michigan.gov/mda](http://www.michigan.gov/mda)



# Taking Food Off Site

- Call your health department to determine if temporary licensing is required.
  - Health Division: North Oakland Health Center  
**Phone: 248-858-1280**
  - Health Division: South Oakland Health Center  
**Phone: 248-424-7000**

# Remodeling

- Contact your local health department about plan review:
  - Adding equipment
  - Adding seats
  - Removing equipment
  - Significantly changing menu
- Contact the city building department for proper permits

# Inspection Policy

- Routine inspection at least once every 6 months
- Inspections may be conducted at any time the facility is in operation
- Follow-up inspections may be necessary after routine inspections
- Enforcement follow-ups are required for continuously repeating violations

# Food Regulations

- Michigan Food Law, Act 92 of 2000, as amended
- 2009 Modified Michigan Food Code
  - Based on the 2009 FDA Food Code
- Oakland County Sanitary Code
  - Article IV

# QUIZ

1. 1 in \_\_\_\_ Americans get sick each year from a foodborne illness
2. Name one of the “Big 5” illnesses:
3. Handwashing should take \_\_\_\_\_ seconds
4. Open/Prep + \_\_\_\_\_ Days = Use by Date

# QUIZ

5. True or False: You should avoid touching ready-to-eat foods with your bare hands
6. True or False: Poultry should be cooked to a minimum internal temperature of 155°F
7. True or False: A thermometer should be calibrated to 32°F
8. True or False: Foods prepared in house should be rapidly reheated to 165°F

# QUIZ

9. Which of the following is a time/temperature control for safety food?
- a) Orange juice
  - b) Deli ham
  - c) Bread loaf
  - d) Diced cucumbers

# QUIZ

10. The safest way to thaw foods is:

- a) In the steam table
- b) In a pot of warm water
- c) At room temperature
- d) In the refrigerator



# QUIZ

11. The best method for cooling hot foods is:
- a) Leave out at room temperature for one hour, then cover
  - b) Remove from hot stove, leave on prep table overnight
  - c) Cool small batches rapidly in shallow pans in an ice bath
  - d) Transfer to a large pot, cover and place in cooler

# QUIZ

1. 1 in 6 Americans get sick each year from a foodborne illness
2. Name one of the “Big 5” illnesses:  
Salmonella, Shigella, E.coli, Hepatitis A, Norovirus
3. Handwashing should take 20 seconds
4. Open/Prep + 6 Days = Use by Date

# QUIZ

5. True or False: You should avoid touching ready-to-eat foods with your bare hands
6. True or False: Poultry should be cooked to a minimum internal temperature of 155°F **(165°F)**
7. True or False: A thermometer should be calibrated to 32°F
8. True or False: Foods prepared in house should be rapidly reheated to 165°F

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OAKGOV.COM/HEALTH @PUBLICHEALTHOC



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*The Oakland County Health Division will not deny participation in its programs based on race, sex, religion, national origin, age or disability. State and federal eligibility requirements apply for certain programs.*