Slide 1

SafeBites

In order to listen to the webinar,

Please call 800 201 9405

Access code 3238855

There will be a Q&A session at the end of this webinar. If you have questions for our presenters, please type them in the chat box.

If you have any technical questions, please use the chat box.

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Slide 2

SafeBites

MEET OUR FOOD SAFETY EXPERTS

DR. KEVIN ROBERTS
PhD

DR. CATHERINE STROHBEHN
PhD, RD

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Slide 3

MEET OUR PRESENTER

FoodHandler

- Dr. Paez is a Research Associate Professor with The Center for Food Safety in Child Nutrition Programs at Kansas State University.
- She completed her Master of Science and PhD at Iowa State University and was a member of the Food Safety Project team.
- Dr. Paez returned to the University of Costa Rica to teach and conduct research before returning to the U.S.
- Her research focuses on food safety practices in foodservice establishments and training and motivating foodservice employees to follow safe food handling practices.

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Slide 4

SafeBites *presents*

CHILL OUT! IMPLEMENTING SAFE COOLING PRACTICES

presented by **Dr. Paola Paez, PhD**

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Slide 5

PURPOSE

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The webinar will discuss best practices for cooling food, including recommended cooling methods, time, and equipment.

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Slide 6

OBJECTIVES

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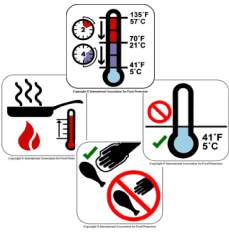At the end of the webinar, participants should be able to:
1. Recognize the food safety and quality risks associated with improper cooling of foods.
2. Implement effective cooling strategies for selected food items.
3. Identify resources to use in developing standard operating procedures addressing cooling practices.

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CDC FIVE RISK FACTORS

1. Improper temperature control
2. Inadequate cooking
3. Cross contamination
4. Poor employee health and hygiene
5. Food from unsafe sources

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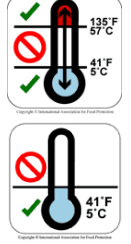## IMPROPER TEMPERATURE CONTROL

- Lack of temperature control
- Improper cold holding
- Improper hot holding due to equipment malfunction
- Improper hot holding due to procedure
- Improper adherence to approved plan to use time as a public health control.
- Improper or slow cooling
- Improper reheating

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IMPORTANCE OF PROPER COOLING

- Improper cooling is considered a proliferation risk factor by CDC.
  - Consider a control to prevent germination of spores.
- FDA has consistently identified time/temperature control as a critical control point for preventing foodborne illness.
- Cooling food is an important part of the food preparation process in some foodservice operations.
  - Accurate forecasting
  - Cook to order

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PATHOGENS: COOLING AS A CONTROL MEASURE

- *Bacillus cereus* - Meat, poultry, starchy foods (rice, potatoes), puddings, soups, cooked vegetables
- *Clostridium botulinum* - Vacuum-packed foods, reduced oxygen packaged foods, under-processed canned foods, garlic-in oil mixtures, time/temperature abused baked potatoes/sautéed onions
- *Clostridium perfringens* - Cooked meat and poultry, cooked meat and poultry products including casseroles, gravies
- *Staphylococcus aureus* - RTE TCS foods touched by bare hands after cooking and further time/temperature abuse
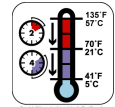
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Poll Question

- Which is the proper cooling procedure?
  - a) Hot, temperature controlled for safety foods be lowered from a temperature above 135°F to below 70°F in three hours, and then reach below 41°F within a combined total of six hours.
  - b) Hot, temperature controlled for safety foods be lowered from a temperature above 135°F to below 41°F within four hours.
  - c) Hot, temperature controlled for safety foods be lowered from a temperature above 135°F to below 70°F in two hours, and then reach below 41°F within a combined total of six hours.
  - d) Hot, temperature controlled for safety foods be lowered from a temperature above 135°F to below 41°F within six hours.

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FDA 2017 FOOD CODE

- FDA defines cooling as a critical control point in preventing foodborne outbreaks.
- 3-501.14 Cooling
  - Cooked potentially hazardous food (time/temperature control for safety food) shall be cooled within 2 hours from 135°F to 70°F; AND
  - Within a total of 6 hours from 135°F to 41°F or less.
  - Time/temperature control for safety food shall be cooled 4 hours to 5°C (41°F) or less if prepared from ingredients at ambient temperature, such as canned tuna.

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FACTORS THAT CAN AFFECT THE COOLING PROCESS

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- Size of the food
- Density of the food
- Type of container used for cooling the food
- Size/volume capacity of the container

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FDA 2017 FOOD CODE

FoodHandler

3-5013.15   Cooling Methods

A) Use one of the following methods
- Placing the food in shallow pans;
- Separating the food into smaller or thinner portions;
- Using rapid cooling equipment;
- Stirring the food in a container placed in an ice water bath;
- Using containers that facilitate heat transfer;
- Adding ice as an ingredient;
- Other effective methods.

Food Code

U.S. Public Health Service

U.S. FOOD & DRUG

2017

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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FDA 2017 FOOD CODE

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3-5013.15   Cooling Methods, continued
- (B) When placed in cooling or cold holding equipment, food containers in which food is being cooled shall be:
  - Arranged in the equipment to provide maximum heat transfer through the container walls; and
  - Loosely covered, or uncovered if protected from overhead contamination during the cooling period to facilitate heat transfer from the surface of the food.

Food Code

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2017

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TWO COOLING STUDIES

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- 2011 Passive Cooling
  - **Endpoint cooking temperatures**
- 2015 Passive Cooling
  - **Hot holding temperatures**
- Both Studies used three replications
- https://www.cnsafefood.k-state.edu/research/

Roberts, K.R., Olds, D.A., Shanklin, C., Sauer, K., & Sneed, J. (2012). Cooling of foods in retail foodservice operations. *Food Protection Trends*, 32(1), 27-31.
Olds, D. A., Roberts, K. R., Sauer, K., Sneed, J., & Shanklin, C. (2013). Efficacy of beef taco meat and steamed rice in United States foodservice operations. *Food and Nutrition Services*, 4(7), 735-740.
Beardal, L., Paez, P., Phebus, R., Watkins, T., & Gragg, S., (2019). Control of *Bacillus cereus* populations in brown rice by use of common foodservice cooling methods. *Food Protection Trends*, 28(2), 145-153.
Beardal, L., Paez, P., Phebus, R., Watkins, T., & Gragg, S. (2019). Control of surrogate *Escherichia coli* populations in three food products using common foodservice cooling methods. *Food Protection Trends*, 28(3), 200-211.

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HOW WE ENSURED ACCURATE RESULTS

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1. Calibrate the thermometers.
2. Portion the product.
3. Find the center of the product.
4. Chill the product.

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2011 COOLING STUDY

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- **Products** tested were chili con carne, taco meat, meatless marinara sauce, and steamed rice.
- Products were cooled starting at temperatures of **165°F** for all cooling methods :
  - 2" and 3" depths in full-size steam table pans
  - Refrigerated cooling methods:
    - Steam table pan
    - Ice bath
    - Frozen chill stick in a stock pot for the chili and marinara only
  - Freezer cooling method:
   - Steam table pan

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MET FOOD CODE REQUIREMENT AT 165°F

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Treatments	Rice	Chili	Taco Meat	Marinara
Chill Stick in Stock Pot				
2-in, ice bath, refrigerator	✓			
3-in, Ice bath, refrigerator				
2-in, Refrigerator				
3-in, Refrigerator				
2-in, Freezer		✓	✓	✓
3-in, Freezer				

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2015 COOLING STUDY

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- **Products** tested were chili con carne, taco meat, meatless marinara sauce, and steamed brown rice.
- Products were cooled starting at temperatures of **135°F** for all cooling methods tested:
  - 2" and 3" depths in full-size steam table pans
  - Ice bath in refrigerator and freezer
  - Pan covering-
   - None
    - Single cover
    - Double cover

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MET FOOD CODE REQUIREMENT AT 135°F

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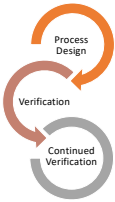| Treatments	Rice	Chili	Taco Meat	Marinara
2-in, Freezer, Covered	✓			
3-in, Freezer, Covered				
2-in, Ice Bath, Refrigerator, Uncovered	✓	✓		
3-in, Ice Bath, Refrigerator, Uncovered	✓	✓	✓	
2-in, Freezer, Uncovered	✓	✓	✓	
3-in, Freezer, Uncovered				
2-in, Ice Bath, Refrigerator, Covered				
3-in, Ice Bath, Refrigerator, Covered				

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VALIDATION

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- The action of checking or proving the validity of something.

- Steps for validation
  1. Process Design: Based on the operation
  2. Process Verification: Test
  3. Continued Process Verification: Use of logs

Process Design

Verification

Continued Verification

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Poll Question

Which of the following approaches to testing the cooling of hot TCS foods has been used in your operation?
- Tested the cooling process multiple times to ensure it met the cooling benchmarks.
- Adopted the process recommended by our inspector without testing the cooling curves.
- Adopted the process recommended by the parent company or other operations in our company.
- We did not test the cooling process for our operation.

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TIPS FOR VALIDATING COOLING PROCEDURES

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- Use **your process**, remember to use your SOP for cooling food.
- Validate for **each food** product.
- Use proper equipment.
- Select thermometer or data logger based on the method/budget .

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VALIDATION TIPS

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- Test cooling method multiple times.
- Keep records.
- Review and adjust as necessary.
- In the instance that you find **your process did not work,** try again and take corrective action as specified in your SOP.

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VALIDATION TIPS

FoodHandler

- Calibrate your equipment.
- Find geometric center of your food for placement.
- Secure the probe in place.
- Be creative and adapt.

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Poll Question

A pork roast is cooked in the oven for pulled pork sandwiches; it is left on the counter overnight. What actions should the employee who finds the pork roast the next morning take?

   a) Reheat the pork roast to 165°F and rapidly cool the pork.

   b) Place the pork roast in the cooler until later use.

   c) Discard the pork roast.

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WE MUST...

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- Validate the cooling process.
- Develop a SOPs for cooling food.
- Monitor the cooling process.
- Keep records.
- Train staff.

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EXAMPLE COOLING SOP

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EXAMPLE COOLING LOG

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RESORCES

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- Food and Drug Administration: Food Code
  https://www.fda.gov/food/fda-food-code/food-code-2017
- Iowa State University Extension and Outreach Food Safety Web Site:
  https://www.extension.iastate.edu/foodsafety/HACCP
- The Center for Food Safety in Child Nutrition Programs:
  https://cnsafefood.k-state.edu/research/
- The ICN: Validating and monitoring the cooling process
  https://theicn.org/icn-resources-a-z/cooling-food-safely/
- The ICN: Standard Operating procedures: https://theicn.org/icn-resources-a-z/standard-operating-procedures/

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QUESTIONS?

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CERTIFICATES

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COMPLETED

Certificates will be emailed out within **5-7 business days**, following today's webinar.

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WEBINAR RESOURCE

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For more information about our webinars and registration:

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2021 WEBINARS

Stay tuned for our NEW SafeBites Webinar Schedule!

Each is preapproved for 1 hour of Continuing Education Credit by the School Nutrition Association (SNA) and the Certifying Board for Dietary Managers (CBDM)

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FOODHANDLER FOOD SAFETY RESOURCES

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Downloads
- Restaurant Re-Opening Guidelines
- Daily Temperature Logs
- Temperature Chart For Safe Food
- Refrigerator Storage Chart
- Food Safety Doesn't Happen By Accident

Videos
•Handwashing
•Why To Glove
•When To Glove
•How To Glove

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FOODHANDLER FOOD SAFETY RESOURCES

Past Blogs
- Emergency Preparedness
- Hand Hygiene
- Reopening Best Practices
- Allergies in Foodservices
- Identifying a Foodborne Illness
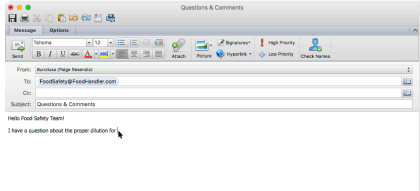
Upcoming Blogs
- Holiday Food Safety

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FOODHANDLER FOOD SAFETY RESOURCES

Please send us your questions or comments at:
FoodSafety@foodhandler.com

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THANK YOU FOR JOINING US!

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