

Module 10 Overview:



Safe Cooling



TRAINER: Read this page ahead of time to prepare for teaching the module.

PARTICIPANTS WILL:

1. Understand the reason for rapid cooling.
2. Explain proper cooling times and temperatures.
3. Implement proper cooling methods.

TIME: 15 minutes

TEACHING LOCATION: Kitchen

MATERIALS NEEDED:

- Activity: Cooling Methods
 - Pans - metal and plastic, deep and shallow
 - Ice wands
 - Utensils for stirring
 - Ice
 - Food preparation sink
 - Thermometer
 - Food
 - Cooling Log (p. M10-13)

COPIES REQUIRED:

- Pre and Post Quiz
- Talking Points (p. M10-4)
- Activity: Cooling Methods (p. M10-5)
- Fact Sheet: Cooling Methods (p. M10-6)

GLOSSARY TERMS:

- DANGER ZONE
- POTENTIALLY HAZARDOUS FOOD



Pre Quiz

Module 10: safe Cooling

1. List three ways to rapidly cool hot foods.

2. How long should it take to cool chili from 135°F to 41°F?



Module 10 Presentation:

Safe Cooling



TRAINER: Read aloud to prepare participants for training.

Today We Are Learning About Safe Cooling. Before our training begins today there will be a short quiz. The quiz helps the Health Department assess training effectiveness and success. You do not need to write your name on the quiz and you will not be graded. Try your best to answer all the questions and don't share your answers with coworkers. We will be taking the same quiz at the end of training so if you don't know the answers, you'll be learning them today. After the training presentation we will do an activity together followed by some review questions. The training will take about 15 minutes and all of you will be participating.



TRAINER: Read aloud.

What's the Risk?

Slow cooling of POTENTIALLY HAZARDOUS FOODS is a leading cause of foodborne illness. Bacteria grow rapidly in the DANGER ZONE from 41°F to 135°F. When foods are cooled too slowly this becomes a perfect environment for the growth of disease-causing bacteria. Rapid cooling is essential to the prevention of foodborne illness.



TRAINER: Read aloud.

What's the Law?

POTENTIALLY HAZARDOUS FOODS must cool from 135°F to 41°F in six hours, provided that within the first two hours the food is cooled from 135°F to 70°F.

POTENTIALLY HAZARDOUS FOODS prepared from ingredients at room temperature must cool to 41°F within 4 hours.



TRAINER: Give participants a copy and have them take turns reading aloud.

Talking Points

- **DANGER ZONE:** The DANGER ZONE is when the temperature of food is between 41°F and 135°F. Bacteria will grow quickly between these temperatures.
- **POTENTIALLY HAZARDOUS FOODS:** Foods bacteria will grow in when the temperature is in the DANGER ZONE between 41°F and 135°F.
- Many factors, like portion size, type of container used, and the type of food determine how long it may take a food item to cool.
- Thick foods like mashed potatoes, refried beans, and large roasts take longer to cool than liquid foods like broth soups.
- Large quantities of food in containers like 5-gallon stockpots or 6-8 inch deep pans will cool too slowly.
- For best cooling, place food in shallow, stainless steel pans at a depth no greater than 2 inches. Cut large portions of meat into smaller pieces and layer no more than 2 inches deep.
- Place pans on the upper wire shelves of the walk-in cooler where the airflow will move across the pan.
- For fastest cooling, pans should remain uncovered until the food reaches 41°F. Then, all food must be covered during storage.
- Insert the hot food container into an ice bath containing half water and half ice in a clean sink compartment. The ice should be at the same level as the food in the container. Stir the food frequently.
- Special plastic bottles that have been filled with water and frozen are called ice wands. Ice wands can be inserted directly into the hot food and can also be used to stir the food. Change the wand when the ice melts. These work well with an ice bath.
- Add ice as an ingredient: 8.5 lbs of ice = 1 gallon of water.
- Place cooling foods immediately in the walk-in cooler or ice bath.
- Whenever possible, avoid preparing food in quantities that produce leftovers.
- Safe cooling requires food to cool from 135°F to 41°F in six hours, provided that within the first two hours the food is cooled from 135°F to 70°F.



Module 10 Activity:

Cooling Methods



TRAINER: Give participants copies of activity sheet and corresponding fact sheet(s). Have participants complete individually or as a group.

- Test various cooling methods on a hot food that is cooled at your establishment
 1. Prepare a hot food item.
 2. Use several methods to cool the food item.
 3. Have your food employees guess which method will cool the product fastest.
 4. Record the time and temperature on a log until the food reaches 41°F.
 5. Compare results and evaluate which method results in the fastest cooling.
- Example: Cream-based soup

Method 1: Keep the soup in the stockpot used to cook the product, place in the ice bath and stir. Keep in the ice bath for 2 hours then place into the walk-in in the stockpot and cover. Document the quantity of the product.

Method 2: Use the same method, but use an ice wand and stir frequently. Place in the stockpot in the walk-in cooler and keep uncovered. Document the quantity of the product.

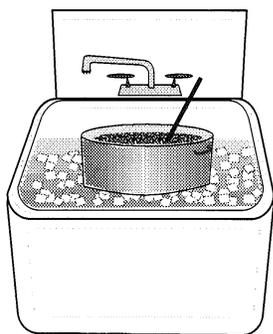
Method 3: Carefully pour the hot soup in 2-4 inch deep metal pans and place in the walk-in uncovered. Stir periodically.



Fact Sheet:

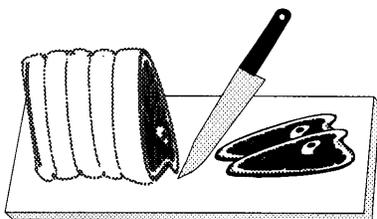
cOOLING mETHODS

All cooked foods must be rapidly cooled from 135°F to 41°F in six hours, provided that within the first two hours the food is cooled from 135°F to 70°F.



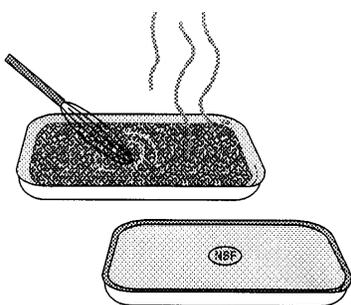
Ice Bath Method

- Ice/water mixture should be the same level as the food
- Stir frequently
- Use ice wands



Smaller Portions

- Cut solid foods into smaller pieces



Shallow Metal Pans

- Divide food into smaller pans:
 - 2-inch depth for thick food
 - 4-inch depth for thin liquids
- Use metal pans not plastic
- While cooling keep uncovered or loosely covered
- Don't stack hot containers

Graphics Courtesy of DuPage County Health Department

City of Wauwatosa Health Department (06/08)



TRAINER: Share one or more of the following “Tales from the Kitchen.”

Tales from the Kitchen

1. A few years ago the Madison Department of Public Health investigated a foodborne illness outbreak at a local restaurant. A group of co-workers shared a lunch together, 5 out of 8 people became sick with diarrhea and cramping about 11 hours after eating the meal. It was determined through interviews that all five sick people had eaten shrimp creole. The restaurant prepared the shrimp creole the day before and had cooled it in 4-inch deep, covered, stainless steel pans in the walk-in cooler. The hot holding temperature in the steam table of the shrimp creole was 168°F. No leftovers were available in the walk-in cooler at the time of the inspection, but the inspector found navy bean soup cooling in a 4-inch container that was at 60°F after 17 hours. This suggests the shrimp creole may have also cooled slowly considering the consistency of the food is similar to the navy bean soup. Laboratory results from stool samples from 3 of the sick people were positive for *Clostridium perfringens*, bacteria that cause diarrhea and cramping, and grow in food that is cooled too slowly.

Solution: Procedures for rapid cooling and temperature monitoring should have been verified in this food establishment. Proper cooling requires removing heat from food quickly enough to prevent bacteria from growing. The method and time that works for cooling one food item may not work for cooling a different food item. Reducing the volume of the food in a container can dramatically increase the rate of cooling. Ice water baths, stirring food often during cooling, and using uncovered metal pans helps to cool food more rapidly.



2. Recording thermometer studies have shown common problems with rapid cooling. Recently a recording thermometer was used to track the cool down time of vegetable stew. This thick stew was first put into an ice bath in the 5 gallon stock pot for a couple of hours then poured into 6-inch deep plastic tubs and placed in the walk-in cooler. The tubs were left uncovered. It took only 2 hours for the stew to go from 135°F to 70°F, but once the stew was removed from the ice bath, it took another 14 hours to reach 41°F.

Solution: The restaurant owner changed his cooling method by immediately pouring the cooked stew into the same tubs, but only filled them 3 inches full and placed the tubs in the walk-in freezer. The stew cooled from 135°F to 70°F in 50 minutes and then to 41°F in another 70 minutes - a total of only 2 hours. The stew was removed from the freezer after cooling and stored covered in the walk-in cooler. Using shallow food amounts helped to cool this product fast. Remember metal containers transfer heat and cold faster than plastic containers.



Module 10 Questions:

Safe Cooling Review



TRAINER: Ask participants to answer the following.

1. What is the DANGER ZONE?

Answer: Temperatures between 41°F - 135°F where bacteria multiply rapidly

2. Why is rapid cooling important?

Answer: To reduce the time the food spends in the DANGER ZONE where bacterial growth is rapid, and to prevent foodborne illness.

3. What are some effective methods for cooling foods?

Answer: Shallow metal pans, ice baths, ice wands, cooling smaller portions, frequent stirring or adding ice as an ingredient.

4. What are the proper cooling times and temperatures?

Answer: All cooked foods must be rapidly cooled from 135°F to 41°F in six hours, provided that within the first two hours the food is cooled from 135°F to 70°F.



Post Quiz

Module 10: safe Cooling

1. List three ways to rapidly cool hot foods.

2. How long should it take to cool chili from 135°F to 41°F?



Post Quiz Answers

Module 10: safe Cooling

1. List three ways to rapidly cool hot foods.

Shallow metal pans, ice baths, ice wands, cooling smaller portions, frequent stirring or adding ice as an ingredient.

2. How long should it take to cool chili from 135°F to 41°F?

No more than 6 hours provided that the food cools from 135°F to 70°F in the first 2 hours.



Module 10 Moving Ahead:

For Managers/Trainers



TRAINER: Do not read aloud. These are your next steps, additional activities and resources.

After the Training

- Have participants sign Training Verification Log (p. 9), a requirement for Safe Food Crew Recognition Program.
- Complete the Trainer's Evaluation Form (p. 10), a requirement for Safe Food Crew Recognition Program.
- Present participants with Certificate of Completion (p. 12).
- Track all trainings an employee receives on the Employee Attendance Record (p. 13).
- Review your food handling procedures to reduce or eliminate the need for cooling.
- Contact your Health Inspector to discuss how you can do a cooling study.
- Review cooling procedures when problems are discovered.
- Post the Cooling Methods fact sheet (p. M10-6) in the kitchen for quick reference.

Resources

- FDA 2001 Food Code and Wisconsin Food Code: 3-501.14, Cooling and 3-501.15, Cooling Methods.
- Recording Thermometers - www.ibutton.com*

*Reference to commercial or trade names does not imply endorsement by the City of Wauwatosa Health Department or bias against those not mentioned.



Cooling Log

FOOD PRODUCT							
DATE							
Time at 135°F		:	:	:	:	:	:
After 1 Hour	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
After 2 Hours (must be 70°F or below)	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
After 3 Hours	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
After 4 Hours	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
After 5 Hours	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
After 6 Hours (must be 41°F or below)	Temperature	°F	°F	°F	°F	°F	°F
	Time	:	:	:	:	:	:
Critical Limits				Corrective Action			
All cooked foods must be rapidly cooled from 135°F to 41°F in six hours, provided that within the first two hours the food is cooled from 135°F to 70°F.				Reheat to 165°F within 2 hours and serve or reheat and start cooling process over. Discard if out of temperature more than 6 hours.			

Corrective Action Taken: _____

City of Wauwatosa Health Department (06/08)