



Food Safety Training for Home-based Food Processors

New Mexico State University



New Mexico Environment Department
Environmental Health Division

Module 4: Process control

- Learning objectives
 - Food/Process Flow
 - Temperature measurement
 - Storage
 - Receiving ingredients
 - Temperature zone
 - Preparation
 - Sanitation
 - Chemical storage and handling



Flow of Food

Contamination and/or growth of bacteria can occur at any point along the flow of food.

Steps:

- Receiving/storage
- Preparation
- Cooking
- Holding
- Cooling
- Reheating
- Cross-Contamination/Cleaning/Sanitizing



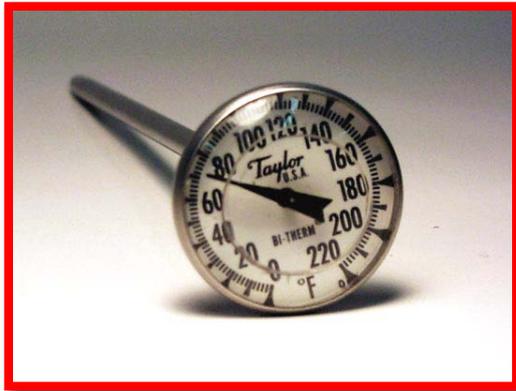
Handle food safely from the time it is received until it is served

Thermometers

Use & Care:

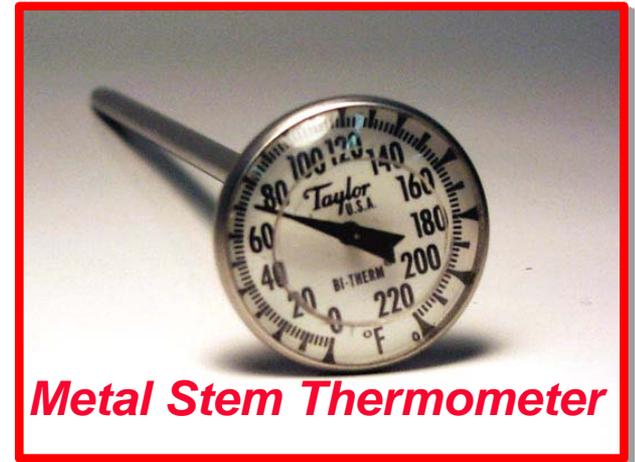
- Use a clean and sanitized thermometer
- Single use alcohol wipe or other approved sanitizer may be used

Use a metal stem thermometer, digital thermometer or thermocouple unit



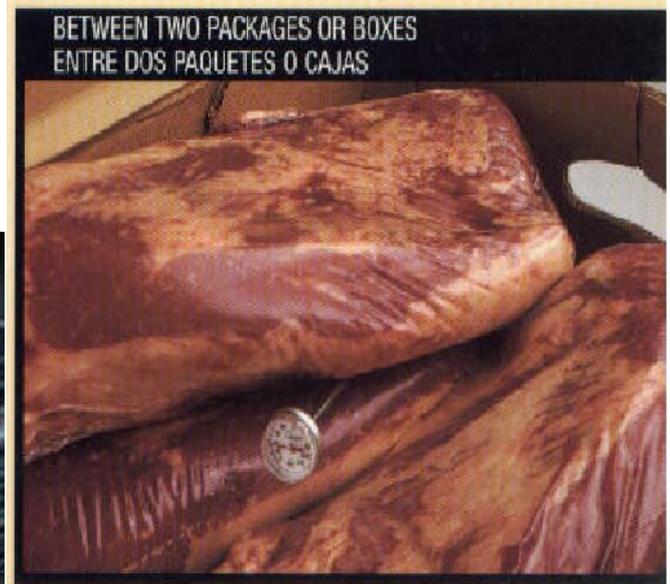
Calibrating Stem Thermometers:

- Calibrate thermometers frequently
- Insert sensing area into a cup of ice slush
- Allow indicator to stabilize
- Adjust calibration nut to 32°F while in ice
- Digital thermometer and thermocouple units can be checked for accuracy using this method



Taking Temperatures:

- Place the probe in the center or thickest part of the food
- Between the fold of the flexible packaged food or between packages of food not puncturing the packaging
- Allow time for the thermometer to register and record the temperature



RECEIVING

Safe and approved food source:

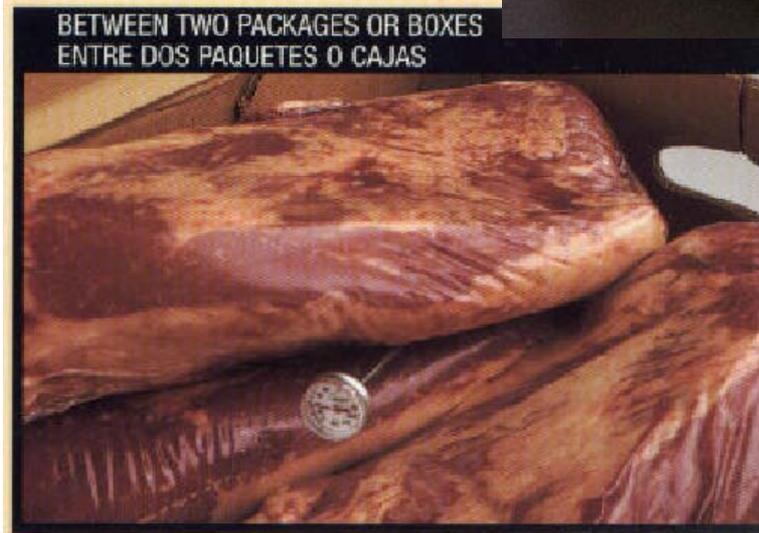
- Sources must comply with applicable laws and regulations
- Home prepared food cannot be used or served in a food establishment
- Whole produce can come from any source
 - Farmers/farmers markets
 - Home or restaurant garden
 - Produce distributors



Check Foods at Receiving

Inspect before you accept:

- Check transportation vehicle
- Inspect the food for
 - Proper temperature
 - Wholesomeness
 - Quality



Protecting stored food

Frozen storage:

- food at 0°F/ freezers not intended for cooling/do not overload

Refrigerator storage:

- food at 41°F/ store to prevent cross-contamination/cover (except during cooling)

Dry storage:

- Keep food storage areas clean and sanitary

Improper Storage Practice



Dry storage

- Use **First In First Out (F.I.F.O.)**
- **Date** mark refrigerated RTEs once opened/
PHFs held over 24 hrs
- Properly store foods away from toxic items such as cleaning agents
- Prevent insect and rodent infestation
- Prevent leakage from overhead pipes
- All storage is kept min. 6 inches off floor

Food Must Be Date Marked If It Is:

- Prepared on-site and refrigerated, or commercially processed after the original container is opened
- Potentially hazardous
- Ready-to-eat
- Held for more than 24 hours



Mark With the Date To Be Consumed By or Discarded:

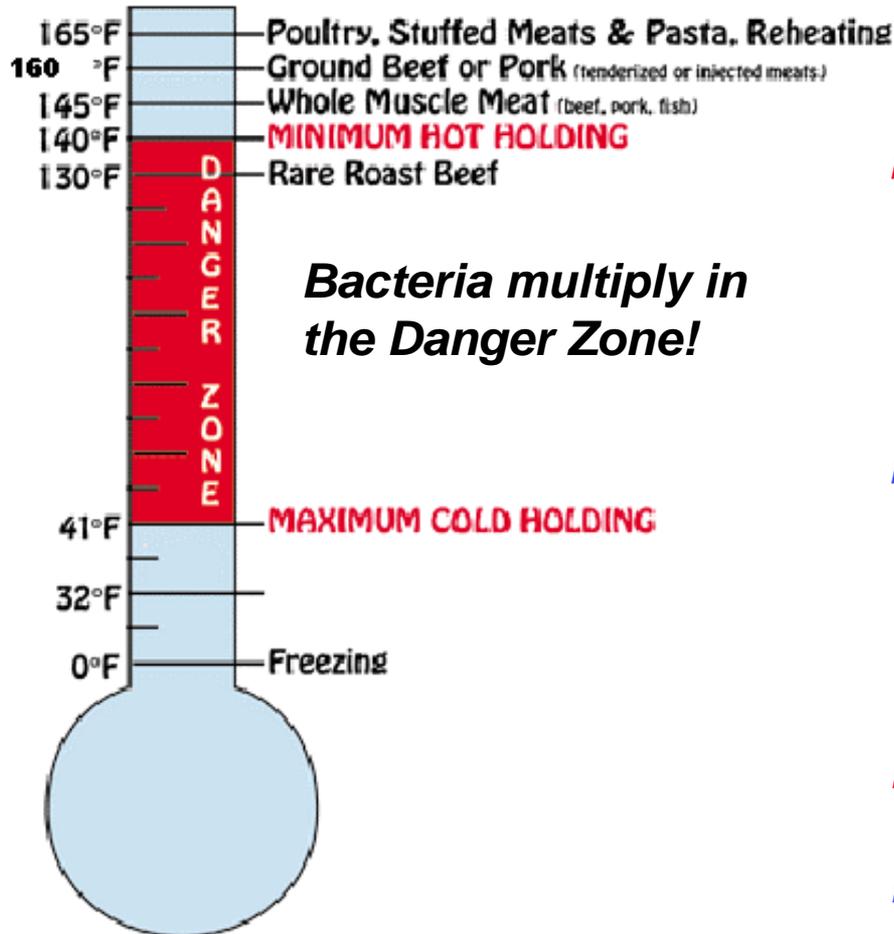
- Allow seven (7) days if held at 41°F or less
- Allow four (4) days if held between 41°F and 45°F

When in Doubt, Throw it Out!

Food Preparation

- Work quickly while handling food in the Temperature Danger Zone to limit the chance for bacteria to multiply in the food.
- The Temperature Danger Zone is the temperature between 41°F and 140°F.
- Use batch preparation methods – remove small portions of food from refrigeration; do the food preparation; and return to refrigeration until all has been prepared and is ready for cooking or service.

FOOD PREPARATION CRITICAL TEMPERATURE



Minimum Hot Holding Temperature is 140°F

Maximum Cold Holding Temperature is 41°F

Keep HOT foods HOT

Keep COLD foods COLD!

4 WAYS TO THAW FOOD SAFELY



In a Cooler or Refrigerator at 41°F or Less



During the Cooking Process, Continuous Cooking with No Interruption



In Cold (70°F) Running Water for Two Hours or Less



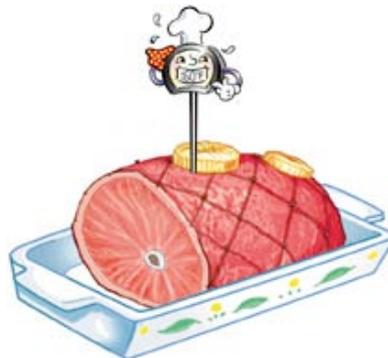
By Microwaving as the First Step in a Continuous Cooking Process

NEVER THAW FOODS AT ROOM TEMPERATURE

The thawed portions on the outside will support bacterial growth and can result in an unsafe product!

Final cooking temperatures

- Poultry and stuffed meats: 165°F
- Ground or chopped beef, pork & other chopped meats: 160°F
- Pork, ham, sausage and bacon: 160°F
- All other potentially hazardous foods: 145°F



How to Safely Hold Hot and Cold Food



Cold Foods Must be Maintained at an Internal Temperature of 41°F or Below

- Date mark foods appropriately
- Cover foods after completely cooled
- Cover foods to maintain cold holding temperature



Hot Foods Must be Maintained at an Internal Temperature of 140°F or Higher

- Use proper equipment for hot holding
- Stir frequently to distribute the temperature
- Covered foods maintain temperature longer

Proper Holding Temperatures Must be Maintained During Transportation

Cool Quickly & Safely

Cooked potentially hazardous foods need to move quickly through the temperature danger zone to limit microbial growth:

- Method 1: Cool foods from 140°F to 41°F within 4 hours
- Method 2: Cool foods from 140°F - 70°F in 2 hours (record time) & continue cooling from 70°F - 41° within the next 4 hours

Cooling Methods:

Shallow metal pans - 2" - 4" deep

Leave pan partially uncovered

Refrigerate immediately

DO NOT stack hot pans - allow for air flow



Small Portions - reduce the mass/volume

Divide food into smaller pans

Separate food into smaller or thinner portions (2" depth for thick foods/ 4" for thick liquids)

Cut or slice portions of meat no larger than 4 inches or 4 pounds

Cooling Methods

Ice Bath

Fill a clean sink or large pan with ice & cold water

Divide product into 1 gallon containers

Immerse product pan to depth of product in sink or larger pan until it is level with ice

Agitate/stir every 10 minutes using an ice paddle or other equipment

Drain water and replenish ice as it melts

Use a clean thermometer to monitor the temperature of the food

After the food has cooled to 41°F, refrigerate immediately

Hints:

Add ice directly to the product as an ingredient

Use rapid chill refrigeration equipment that encourages quick cooling

Never try to cool foods in plastic containers

Never allow foods to cool at room temperature



Re-heat Foods Quickly & Safely

Key Elements:

- Reheat previously cooled foods to an internal temperature of 165°F or above
- Rapid reheating rapidly in 2 hours or less
- Stir foods frequently to distribute the heat
- Measure the internal temperature with a thermometer
- After reaching 165°F, the food must be held hot at 140°F or above



Reheating Methods:

- Direct heat (stove top) is best... may also use steam cookers, ovens and microwave if reheating achieves 165°F within 2 hours
- Reheating in steam tables and crock pots is unsafe and not allowed

Do Not Mix New/Fresh Food with Leftover Items

Cross - contamination

- Cross-contamination is the transfer of a harmful substance from one food to another food by vehicles such as human hands, contaminated food contact surfaces of equipment, utensils, or directly from a raw food to a ready-to-eat food.
- Maintain a clean environment by cleaning & sanitizing before, after, and during food preparation
- **Wiping cloths: Rinse and store your wiping cloths in a bucket of sanitizer.**
 - For example: 1/2 teaspoon of bleach for each gallon of cool water. This is equivalent to 100ppm chlorine
- **Change the solution every 2 hours or as soon as it becomes dirty, whichever comes first.**

Avoid the Risk of Cross-Contamination

No bare hand contact with ready-to-eat food or ice

Use proper utensils or single-use gloves

Practice good handwashing and hygienic habits

Store raw meat, raw poultry, and raw shell eggs below cooked or ready-to-eat foods in the cooler

Clean and sanitize all utensils and surfaces that touch food:

- after each use

- when changing product

- frequently when preparing large amounts

- between raw meats and cooked or ready-to-eat foods

Correct



Incorrect



Use Separate Cutting Boards for Raw Meats & Cooked or Ready-to-Eat Foods

Cleaning & sanitizing

Manual Warewashing Steps:

1. Wash:

Clean and sanitize sinks and drain boards

Pre-soak/pre-rinse all eating utensils and equipment

Use hot soapy water

2. Rinse:

Use clean hot water

3. Sanitize:

Use 50-200 ppm chlorine; mix with cool water (1oz to 3 gal)

Or 200 ppm quaternary ammonia; mix with 75°F water

Immersion time is 60 seconds

Air dry utensils and equipment

Use appropriate test strips to check concentration

4. Air Dry



Cleaning & Sanitizing

Mechanical Dish machines: *(Pre-rinse before loading any machine)*

HIGH TEMPERATURE:

1. Wash Temperature:

- Single tank, stationary rack, dual temp. machine 150°F
- Single tank, conveyor machine... 160°F

2. Hot Water Sanitization:

- 180°F at manifold
- 160°F at plate level (use test kit to validate)

LOW TEMPERATURE:

1. Chemical Sanitization Required
2. Water Temperatures Set According to Manufacturer
3. Chemicals Must Be Auto dispensed into Final Rinse Water;
4. Check Daily with Test Kit
5. Must Have a Visual or Audible Low Sanitizer Indicator

TOXIC MATERIALS

These Items Can Be Poisonous Or Toxic If Ingested

- Detergents & Sanitizers
- Polishes & Cleaners
- First Aid Supplies & Personal Medication

Storage, Labeling & Use

- Store separately from foods & food-contact surfaces
- Never store above foods or food surfaces
- Label all toxins
- Use only approved chemical in food areas
- Keep away from children's reach



Incorrect

NEVER store
chemicals
ABOVE
sinks.
ALWAYS
store
BELOW.



Correct

Insect & Rodent Control

Insects and rodents (cockroaches, flies, mice, rats, etc.) carry diseases and can contaminate food and food-contact surfaces.

Utilize measures to minimize their presence



- Protect outer openings by keeping outer doors closed, repair screens, maintain tight fitting doors & openings, use air curtains
- Eliminate harborage conditions
- Exterminate regularly

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