



THERMAL PROCESSING  
TRAINING

# Module 1. Course Overview and Introduction to Thermal Processing

## Thermal Processing for Meat and Poultry Products Training



# Reason for Thermal Processing Course



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- Welcome
- Why are we here today?

In the summer 2007, for the first time in 33 years, the **commercial** canning industry had a botulism outbreak that sickened 8 people and resulted in the recall of millions of canned food products.



# Reason for Thermal Processing Course



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- How did the botulism outbreak occur?

No sole cause for the outbreak, rather, it was the result of numerous errors and lack of attentiveness (complacency) on the part of the establishment.



# Errors at the Canning Establishment



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- Many retort maintenance problems
  - Damaged steam spreaders
  - Leaking water valves
  - Damaged door gaskets or seals
- Condensate bleeders on Malo system not located where they could be easily seen



# Errors at the Canning Establishment



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- Not enough personnel on duty to monitor the retort operation
- Modifications to retort valves and piping not evaluated by PA
- Disposed of abnormal containers without notifying CSI



# Purpose of the Course



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- Provide scientific, technical and practical information for assessing the production of canned product
- Provide detailed information on thermal processes and thermal processing systems



# Purpose of the Course



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- Provide guidance on the application of the regulations
- Improve inspection personnel job performance



# Canning Definition



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Placing food in a container, hermetically sealing the container so that it is airtight and impervious to the entrance of microorganisms, and then giving the container a thermal process that achieves commercial sterility.





# Canning



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- Probably the most critical and complex food process verified by FSIS
- Critical elements in operation must be strictly adhered to or there is a great potential to affect human health
- Described as a very diversified activity



# Canned Product



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A meat or poultry food product with a water activity above 0.85 which receives a thermal process either before or after being packed in a hermetically sealed container.



# Commercial Sterility



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- The condition achieved by application of heat, sufficient, alone or in combination with other ingredients and/or treatments, to render the product free of microorganisms capable of growing in the product at nonrefrigerated conditions (over 50°F or 10°C) at which the product is intended to be held during distribution and storage.



# Classes of Canned Product



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- Low acid canned foods (LACF)
- Acidified low acid foods
- Acid foods (no meat or poultry products)



# Low Acid Canned Food (LACF)



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- A canned product in which any component has a pH value above 4.6 (includes meat and poultry)



# Acidified Low Acid Canned Food



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- A canned product which has been formulated or treated so that every component of the finished product has a pH of 4.6 or lower within 24 hours after the completion of the thermal process.



# Conventional Canning



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- Place the food in a container
- Hermetically seal container
- Thermal process container under high heat and pressure
  - If the  $\text{pH} \leq 4.6$  can treat with lower heat and no pressure



# Aseptic Processing Systems



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- Commercially sterilize the food and container separately
- Fill and seal container in commercially sterile environment





# Canned Product Containers



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- cans
- glass jars
- plastic containers
- laminated pouches
- paperboard containers



# Types of Canned Products



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- Uncured
  - Beef stew
  - Whole chicken
  - Meat sauces and gravies
  - Meat spreads
  - Soups
  - Entrees



# Types of Canned Products



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- Acidified low acid
  - Spaghetti sauce with meat
  
- Cured products
  - Vienna sausages
  - Canned hams
  - Canned luncheon meats



# Questions



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*Questions?*



# Tour of Canning Establishment



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## Video of a Typical Canning Operation

