

**НАССР**

# HACCP

- Hazard Analysis and Critical Control Points system
- Is Preventative, not Re-Active
- Is a management tool designed to protect the food supply from bacterial, chemical, and physical hazards
- Science based
- Not a ZERO TOLERANCE program
- Designed to minimize risks

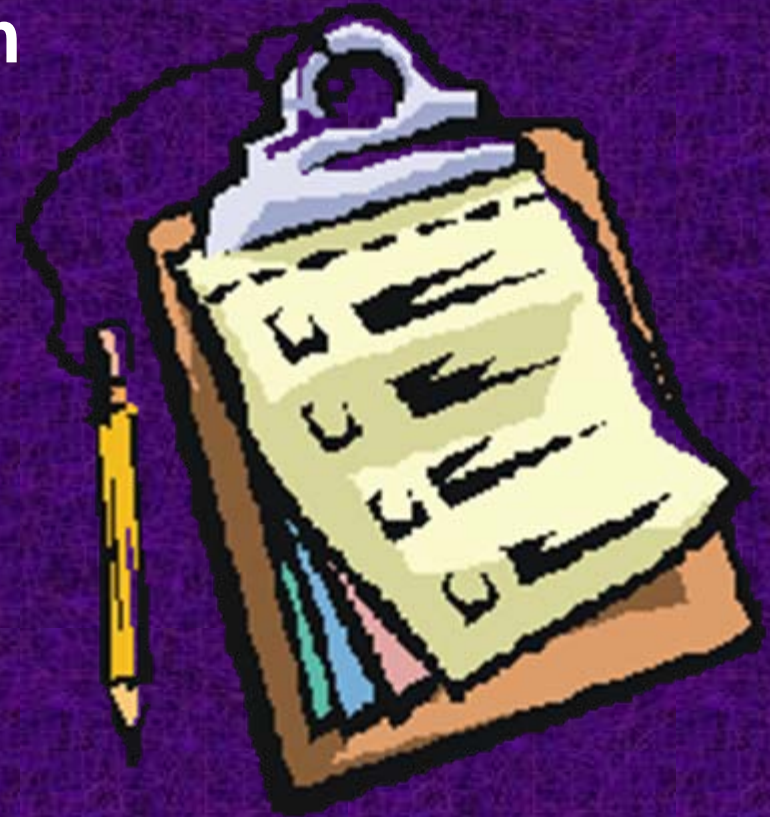


# HACCP & His Buddies

- **HACCP cannot stand alone**
- **Pre-requisite programs:**
  - **GMP (Good Manufacturing Practices)**
    - Broad practices that cover the whole plant; inside and out
  - **SSOP (Sanitary Standard Operating Procedures)**
    - A little more narrow
    - Covers the general cleanliness of the plant, equipment, and employees

# What are GMP's?

- **GMPs are the minimum sanitary and processing requirements applicable to all companies processing food to ensure wholesomeness**





# What does it involve?

- **Building and Facilities**
- **Pest Control**
- **Personnel**
- **Equipment**
- **Plant Sanitation**
- **Production and Process Control**



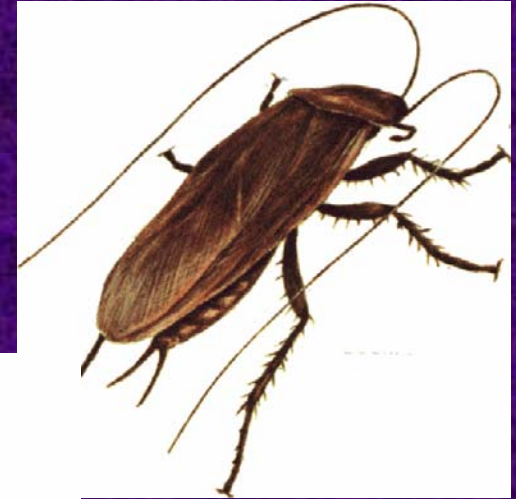
# Building and Facilities

- Where do I build my plant?
- Water
- Zoning Regulations
- Build it next to nuclear waste dump or a landfill?
- Facility design
- Transportation



# Pest Control

- Who does my pest control?
- How often?
- Fence around the property?
- Rodents (Tin Cats)
- Bait Traps
- Approved Chemicals





# Personal

- Training
- Education
- Cleanliness
- OSHA (Occupational Safety and Health Administration)
- Clothing





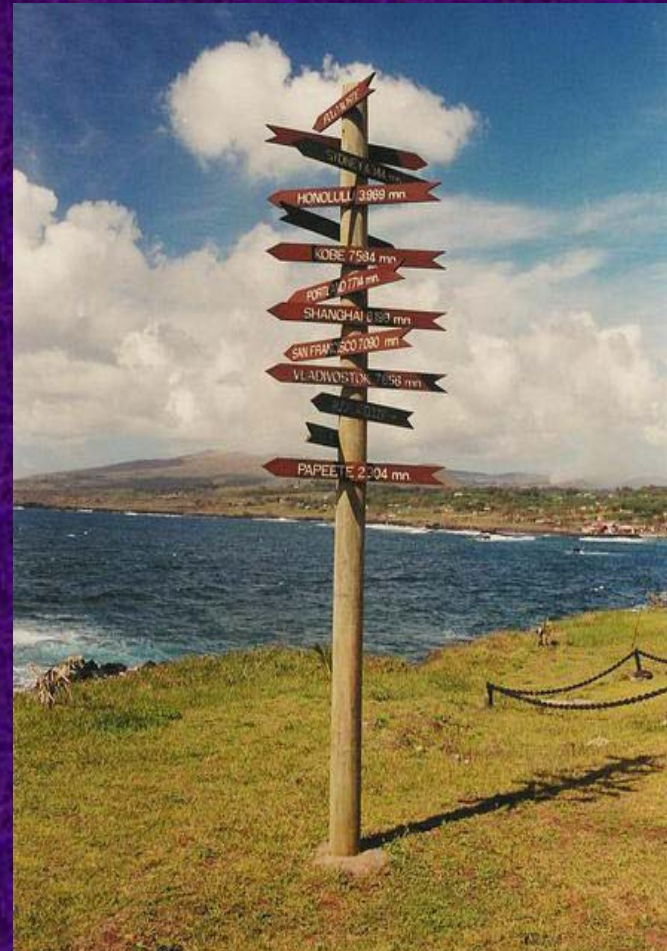
# Other Stuff

- **Equipment**
  - Appropriate design, function, and ability to be sanitized
- **Plant Sanitation**
  - SSOP
- **Production and Process Control**
  - What we going to make and how



# SSOP's

- **Sanitary Standard Operating Procedures**
- **Who, What, When, Where, Why, and How**
- **Specific sequence of events**





# SSOP's

- Focuses on the sanitary aspect of food safety
- General cleanliness
- Involves everyone in the plant
- Written set of procedures
- Documentation, Documentation, Documentation





# Guidelines

- **Every SSOP program is specific to a plant**
- **Outline management structure**
- **Write SSOP for:**
  - **Equipment and Facilities**
  - **Frequency of monitoring**
  - **Who monitors**
  - **Record keeping**
  - **Employee Hygiene**

# Equipment and Facilities

- Specify type of detergent and sanitizer to use
- Equipment & Facilities
  - Lock-out, Tag-out
  - Protective clothing
  - When to clean and who cleans
  - Monitoring (how often)
  - Critical limits
  - Corrective Actions



# General Frequency of Monitoring

- **What procedures will be monitored:**
  - **Daily**
  - **Before operation (pre-op)**
  - **During operation**
  - **After operation?**

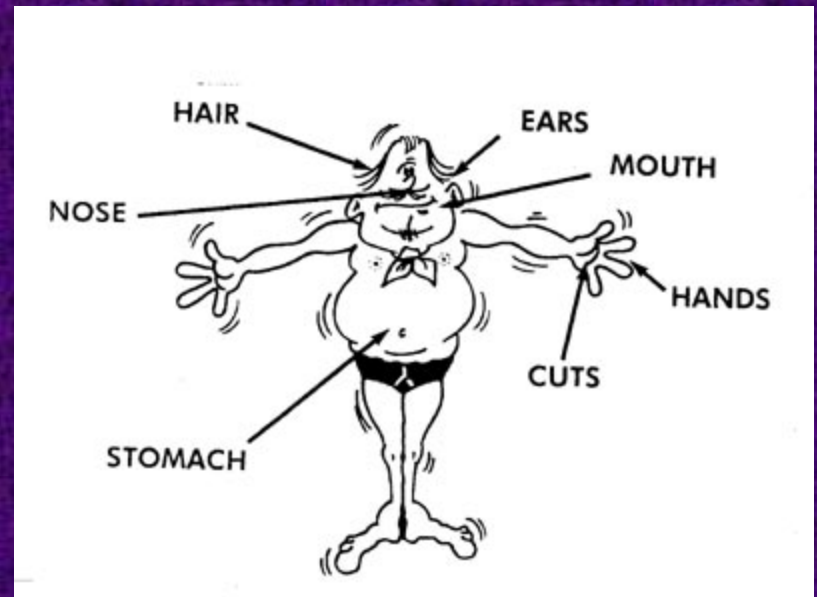


# **Who Monitors and Record Keeping**

- **SSOP plan should spell out who monitors**
- **All documents should be signed and dated, with the appropriate actions and corrective actions**

# Personal, Employee Hygiene

- The most important aspect
- All cleanliness could be nullified by a “dirty employee”
- Should spell out:
- General appearance
- Clothes (frocks, aprons, overalls)
- Hat, hairnet, hard hat



# Personal, Employee Hygiene

- **Hands/ Arms**
  - **Gloves**
  - **Rings**
  - **Watches**
  - **Bracelets**
  - **How often to wash hands and with what?**
- **Foot ware**
  - **Street ware or “in plant only”**





# Food Borne Outbreaks

- Jack in the Box
- Hudson Foods
- Odwalla Juices
- Spinach
- Taco Bell
- Food Recalls
  - Topps Meats 22 million pounds
  - Hallmark Westland



# Food Recalls

- **Voluntary, cannot be forced by USDA or FDA**
- **Class I Recall**
  - Health Hazard, a reasonable probability that eating the food will cause a serious health hazard
  - Listeria or E-coli 0157:H7
- **Class II Recall**
  - Potential health hazard
  - Allergen not listed on package
- **Class III Recall**
  - Not likely to cause a health hazard
  - 1 pound of product in a package labeled 1.5 pounds

# History of HACCP

- Pillsbury Company
- NASA (National Aeronautics and Space Administration)
- Last place to have a food born illness!
- No food born illness have occurred in space
- HACCP Final Rule 1997





# HACCP

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- **Not a ZERO TOLERANCE program**
- **Designed to minimize risks**

# HACCP

- **The safety of manufacturing one specific product**
- **A Hazard is a bacterial, chemical, or physical agent that is reasonably likely to cause illness or injury, if not controlled**
- **Not to be confused with Quality Control or Quality Assurance**

# HACCP

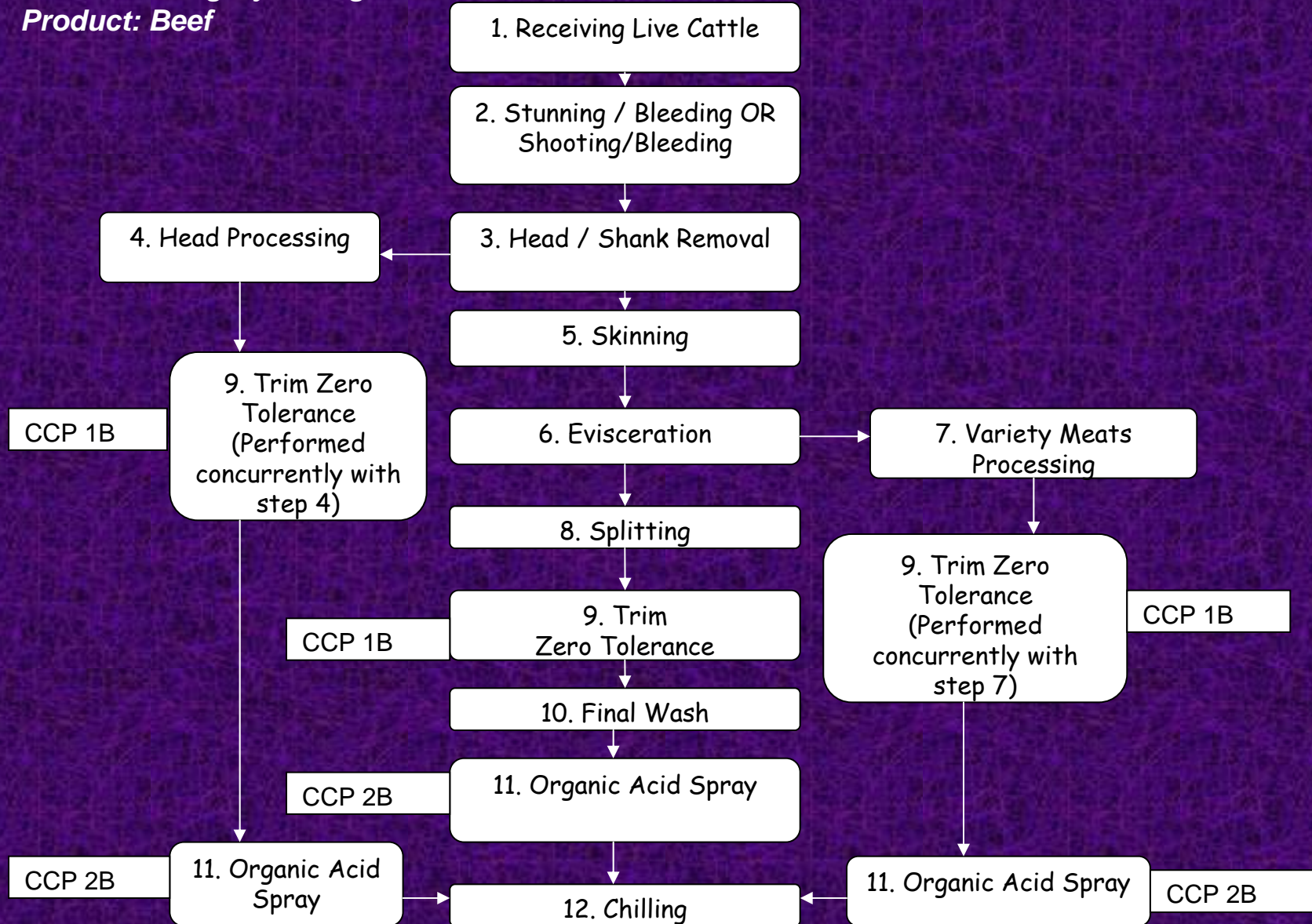
- **7 Principles of HACCP**
- **Talk about them this afternoon**
- **Why HACCP?**
  - **Ensure the safety of our food supply**
  - **Protect our loved ones**
  - **Some protection from being sued**
    - **Record keeping**



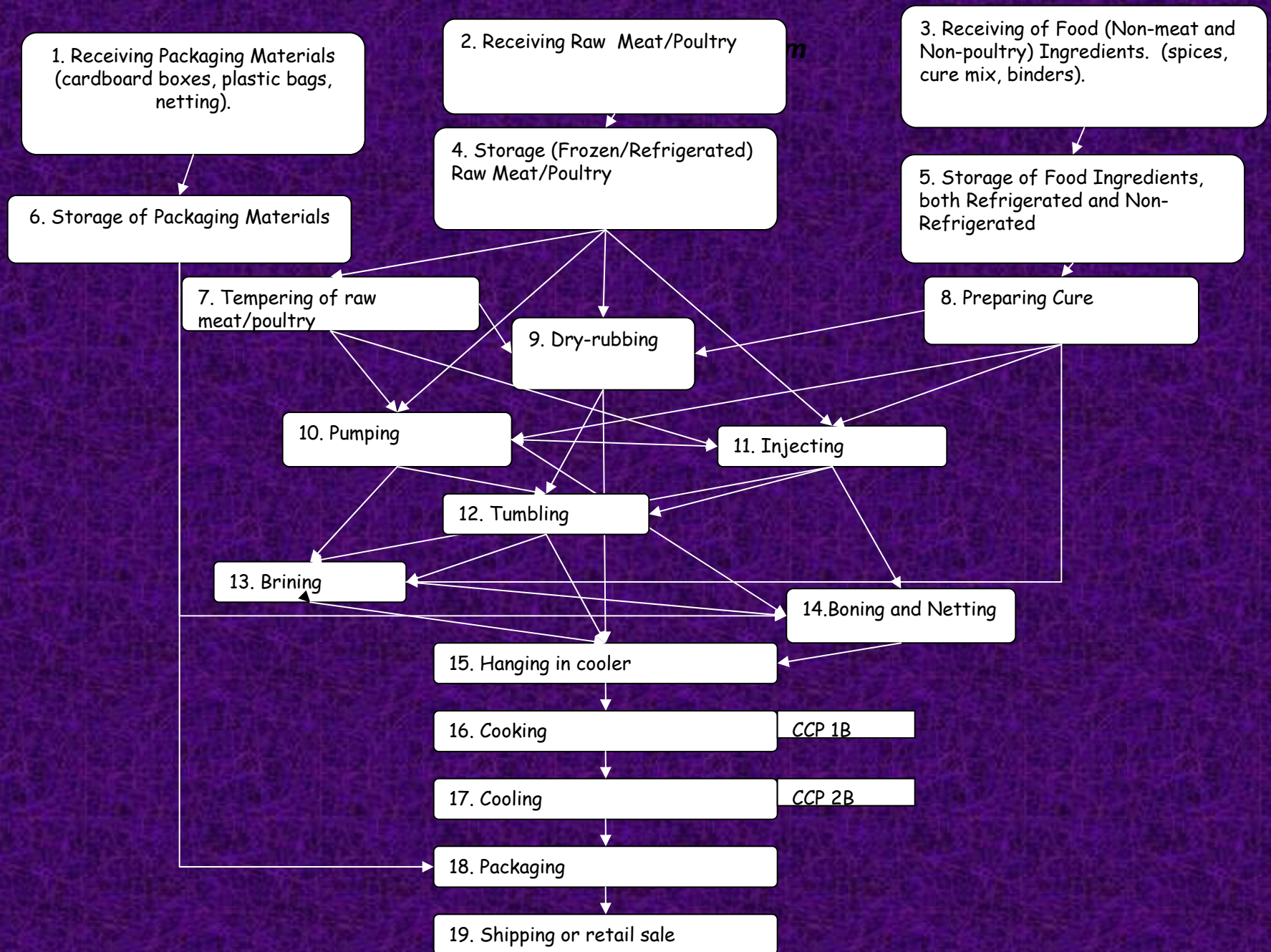
# Principle # 1

- **CONDUCT A HAZARD ANALYSIS**
- **Flow chart**
- **Identify areas within the flow chart where significant hazards can occur**
  - **Chemical**
  - **Physical**
  - **Biological**
- **Describe preventative measures**

**Process Category: Slaughter**  
**Product: Beef**



Fully Cooked, Not Shelf Stable: cured whole muscle e.g. ham





# Principle #2

- **IDENTIFY THE CRITICAL CONTROL POINTS IN THE PROCESS**
- **Control Point = any step where biological, physical, or chemical contamination can occur**
- **Critical Control Point = a step in the flow chart where control can be applied to prevent, eliminate, or reduce to acceptable levels**

# Principle #2

- CCP decision tree
- A series of questions
- Example;
- Q1. Do preventative measures exist?

↓  
Yes

↓  
No; not a CCP

Q2. Does this step eliminate or reduce the likely occurrence of a hazard to an acceptable level?

↓  
Yes

↓  
No; not a CCP

# Principle #2

- **Q3. Could contamination with identified hazard occur in excess of acceptable levels or could these increase to unacceptable levels?**



**Yes**



**No; not a CCP**

**Q4. Will subsequent step, prior to consuming food eliminate hazard or reduce?**



**Yes, CCP**



**No; not a CCP**



## HAZARD ANALYSIS – BEEF SLAUGHTER – Carcass halves and quarters, head meat, heart, liver, tongue

1. Process Step	2. Food Safety Hazard	3. Reasonably likely to occur	4. Basis of Reasonably likely to occur	5. If Yes in Column 3, What Measures Could be Applied to Prevent, Eliminate, or Reduce the Hazard to an Acceptable Level?	6. Critical Control Point
1. Receiving live cattle	Biological – Pathogens (Salmonella, Escherichia coli O157:H7) carried on hide and in intestinal tract., Prions (if animal has BSE).	Yes (Pathogens) No (Prions)	Cattle are a known source of Salmonella. Elder et al data (supplied by FSIS) states that E. coli O157:H7 is reasonably likely to occur in beef cattle. Non-ambulatory animals are not accepted for slaughter, per 9 CFR 309.3(e).	Trim Zero Tolerance and Organic Acid Spray steps (CCP's later in the process) control pathogens.	
	Chemical – Drug residues	No	Low risk according to USDA Residue Monitoring Program		
	Physical – Buckshot, needles, bullets	No	No reported incidences at this facility (must be supported with evidence); visual observation for foreign materials during processing, inspection of equipment during cleaning make hazard unlikely.		

# Principle # 3

- **ESTABLISH CRITICAL LIMITS FOR EACH CCP**
- **Minimum or maximum**
- **Temperature**
- **PPM, PPB**
- **Logs/ CFU**
- **Zero Tolerance**
- **All the aforementioned must be backed up with science!!**
  - **Actual Research**
  - **Peer Reviewed Research Paper**

# Principle # 4

- **ESTABLISH CCP MONITORING REQUIREMENTS**
- **Above or below a temperature**
- **Time; cooking time**
- **Physical measurements; pH, Aw, Logs/CFU, salt content**
- **Frequency of monitoring**
- **Documentation for each**
- **Lot testing**



# Principle # 5

- **ESTABLISH CORECTIVE ACTIONS**
- **What will you do if CCP is “out”**
- **Temperature; could leave until temperature is reached (HOLD)**
- **Bacterial; “tank”, “new home”, find ways to reduce numbers**
- **Modify step**

# Principle #6

- **ESTABLISH RECORDKEEPING PROCEDURES**
- **Proves the system is working**
- **All should contain:**
  - **Title**
  - **Date**
  - **Product**
  - **Operation**
  - **Limits**
  - **Corrective action taken**
  - **Name**

# Principle #6

- **Why?**
  - Irrefutable evidence
- **Types?**
  - CCP Records
  - Establishment of Critical Limits
  - Monitoring CCP
  - Deviations

# Principle #7

- **VERIFICATION THAT THE HACCP SYSTEM IS WORKING**
- **Evaluate**
- **Revise**
- **Review**
- **External Verification**
- **USDA-FSIS (EIAO)**



# **Ready to Eat; Listeria Protocol**

# Listeria Protocol

- Ready to Eat
- What is ready to eat?
  - A meat or poultry product that is in a form that is edible without addition preparation to achieve food safety
- Tear open the package and eat



# Alternative 1

- **Alternative 1**
  - Post – Lethality Treatment and an Antimicrobial Agent or Process
- **Post-lethality**
  - Pasteurization
  - Ozone
  - Pulse electrical field
  - Organic acids
- **Antimicrobial Agents**
  - Sodium Lactate, Potassium diacetate
  - $A_w$  or pH

# Alternative 2 & 3

- **Alternative 2**
  - Use either a Post – Lethality step or an Antimicrobial Agent
- **Alternative 3**
  - Sanitation
  - Must test more frequently than 1 or 2