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Poultry Product Protection

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Overview
- The Poultry Production & Processing System
- Hazards Associated with Poultry Products
- Hazard Intervention Strategies & Programs
The Poultry Production and Processing System

The Alabama Poultry Industry

- Industry Structure and Organization
- Magnitude of the Industry
- Economic Impact

Vertical Integration

- Owned by grower
- Owned by integrator (including birds)

Products:
- Whole carcass
- Parts
- Further processed

Processing plant
- Products
- Sales
- Marketing
- Distribution
- Labor
- Utilities
- Material

Breeder Farm
- Hatchery
- Chick
- Broilers

Growout Farms
- Market Feed
- Feed Mill

Breeder Farms
- Hatchery Feed

Owner by grower
Alabama Poultry Industry

- $2.69 Billion in Direct Cash Receipts
  - $2.41 B for Broilers
  - $282 M for Eggs
- $9.0 - $10 Billion Total Economic Impact
  - One-eighth of Alabama economy
- 20 Million Broilers Produced Weekly
  - 3rd largest poultry state in the USA

Hazards Associated with Poultry Products

- Physical
- Chemical
- Biological

Poultry-borne Hazards
CHEMICAL HAZARDS

• Chemical Intoxications
  – account for 20 - 30% of acute foodborne illness

Chemical Hazards

• Live Production Origin
  – Residues in tissues of the animal
    • Feed additives, drugs
    • Pesticides, heavy metals, etc.

• Processing Origin
  – Approved (FDA) additives
    • GRAS / Restricted / Illegal / Undeclared (Allergens)
  – Inadvertent additives

Agricultural Chemicals

• Pesticides
  – Insecticides
  – Herbicides

• Feed Additives

• Drugs
PESTICIDES

- Accumulate in Animal Tissues
  - Fat
  - Organs: kidney, liver
  - To lesser extent in muscle

Chemical Hazards

- Chemical Contaminants
  - Food (FDA) additives
    - GRAS
    - Restricted
    - Illegal
    - Undeclared
  - Inadvertent additives

Approved Additives

- Generally Recognized As Safe
  - Routine use prior to 1958
- FDA Approved
  - Food additive petition
  - Toxicology data
- Examples
  - Spices, flavors, acidulants, stabilizers, etc.
Restricted Additives

- Nitrate/Nitrites
- Phosphates
- Some Toxicity

Undeclared Ingredients

- Labeling Issue
  - All ingredients must be declared on label
- Allergens
  - Eggs
  - Milk
  - Peanuts
  - Sulfites

Biological Hazards

- Foodborne Pathogens (Bacteria)
  - Salmonella
  - Campylobacter
  - *Listeria monocytogenes*
  - *Clostridium perfringens*
  - *Clostridium botulinum*
**Salmonella**
- Common in Raw Poultry
  - USDA regulatory limits
  - But lots of other sources
- Wide Range in Pathogenicity
  - Mild to severe gastroenteritis
  - Generally a limited infection
- Seasonal Occurrence
  - Often seen as an “outbreak”
- Good Analytical Methods

**Campylobacter**
- Very Common in Raw Poultry
  - Poultry considered primary source
  - No regulatory standards
- Wide Range in Pathogenicity
  - Mild to severe gastroenteritis
  - Generally a limited infection
  - Some long-term effects can occur
- Seasonal Occurrence
  - Often seen as “sporadic cases”
- Poor Analytical Methods

**Listeria monocytogenes**
- An Issue in Fully Cooked Poultry Products
  - Products eaten without further heating or cooking
  - Low incidence or prevalence
  - USDA: Zero-tolerance in these products
  - Leading cause of product recalls
- Grows at Refrigeration Temperature
- Highly Virulent for At-Risk Populations
  - Immuno-competency the major determinant
- Good Analytical Methods
  - Poor sampling approaches
*Clostridium* species

- *Clostridium perfringens*
  - Institutional preparation
  - Mild to moderate gastroenteritis

- *Clostridium botulinum*
  - Rare, but severe consequences
  - Canned or sealed products
  - Temperature abuse

Hazard Entry Points

- Breeder Farm
  - Drinker
  - Feeder

- Hatchery
  - Eggs
  - Chicks

- Growout Farms
  - Broilers

- Processing plant
  - Products

- Sales,
  - Marketing,
  - Distribution

Hazard Intervention Strategies and Programs
Measures to Reduce Risks

- Traditionally Driven by Regulation
  - FDA-CVM
  - USDA-FSIS
- Now, (more) Driven by Industry to Meet Regulatory and Consumer Standards
  - HACCP
  - (S)SSOP (HACCP Prerequisites)

Federal Regulatory Oversight

- FDA
- USDA

Feed Additives & Medications

- FDA Regulated
  - Approved list
  - Defined usage
- Any drug given must be withdrawn a specified amount of time prior to slaughter to prevent drug residues in the human food supply
- Residue Avoidance Programs
9 CFR Part 304 et al.

- Requirements for Poultry Processing Plants
- USDA-FSIS Regulations - PR/HACCP
- Pathogen Reduction; Hazard Analysis and Critical Control Point (HACCP) Systems

PR/HACCP Philosophy

- Process Control
- Food Safety Focus
- Shift Responsibility to the Industry
- USDA Oversight

PR/HACCP Provisions

- Sanitation Standard Operating Procedures (SSOPs)
- HACCP
- Microbiological Performance Standards
HACCP
A systematic approach to the identification and assessment of hazards and risks, and the definition of controls.

HACCP
Seven Principles
• Hazard Identification
• Determination of Critical Control Points
• Specification of Criteria for CCPs
• Procedures to Monitor Criteria
• Record Keeping
• Corrective Action
• Verification of the HACCP Plan

HACCP
Part 417.2: Hazard Analysis
• Food Safety Hazards Might be Expected to Arise from the Following:
  - Natural toxins
  - Pesticides
  - Microbial contamination
  - Drug residues
  - Chemical contamination
  - Zoonotic disease
  - Decomposition
  - Parasites
  - Physical hazards
  - Inapproved use of direct or indirect food additives
HACCP Prerequisite Programs

- Each segment of the food industry must provide conditions to protect food while it is under their control. These conditions are prerequisite to the development and implementation of HACCP (NACMCF, 1998).

Definition & Purpose

- Prerequisite programs provide the basic environmental and operating conditions that are necessary for the production of safe, wholesome food (NACMCF, 1998).

Prerequisite Programs

- Not Part of Formal HACCP System
- Cross Product Lines
  - Not product or process specific
- Can Include Objectives Other Than Food Safety
Prerequisite Programs

- Facilities & Premises
- Cleaning & Sanitation
- Inbound Materials
- Equipment
- Processing Procedures
- Personnel
- Pest Control
- Traceability & Recall

Definitions

- Recall
  - Legal significance
  - Refers to product that does not comply with law
  - Adulteration & misbranding
- Retrieval/Recovery/Removal
  - Relates to product that complies with law

“Voluntary Recall”

- At present, all recalls are voluntary
- Regulatory “request”
- Other regulatory actions
  - Seizure of product
  - Court issued injunction
  - Publicity
Recall Plan

- Product Identification
- Depth of Recall
- Notice
- Product Disposition
- Effectiveness Checks
- etc.

Recall Plan: Other Considerations

- Replenishment
  - Replace affected product with good product
  - Clear identification to avoid confusion
- Assistance
- Reimbursement
- Public Relations/Crisis Management
- Termination
  - Promptness is key
  - Notice

Summary

- Specific security programs often build around the existing food safety & related programs and systems.
- Add-ons:
  - Premise security (cameras, alarms, locks, etc.)
  - Visitor control (sign-in/out, restricted areas, etc.)
  - Securing of dangerous chemicals
  - Employee screening