What Regulatory Programs Mean to the Poultry Industry

Suzanne Young Dougherty, DVM, MAM, MS, DACPV

Keystone Foods – Director of Veterinary Services
Overview

- Keystone Foods, LLC – Huntsville, AL
  - Owned by Marfrig – Brazil
  - 3 broiler live operations with processing plants
    - GA, AL, KY
  - 5 chicken further processing facilities

- US poultry industry has many state and federal regulations, but I will focus on a few that have the most cost and time impact on the industry recently
Overview Cont.

- Focus primarily on the broiler industry, but layers and turkeys also participate in these programs.

- Live Operations
  - NPIP
  - FDA Egg Rule
  - Antibiotic Removal

- Processing Plant
  - Food Safety Programs
  - Animal Welfare
Live Operations
National Poultry Improvement Plan (NPIP)

- **Objective** - provide a cooperative Industry-State-Federal program through which new technology can be effectively applied to the improvement of poultry and poultry products throughout the country.

- Need for national criteria & standardized terminology for breeding & disease control programs – mail orders.

- **States** started statewide Pullorum testing programs in the early 1920's
  - Vertically transmitted disease
NPIP-Participants

- A **Voluntary** Program but must agree to meet certain disease control standards

- Plan focuses on Avian Influenza, Mycoplasma and Salmonella testing
  - Created for vertically transmitted diseases until AI became a significant disease 2006

- Now, Over 95% of the U.S. breeding and hatchery industry participates in the program
Provisions

- Code of Federal Regulations 9 CFR
  Parts 145, 146, 147, & 56
- Developed jointly by industry members, State, Federal officials
- Provide certification of poultry & poultry products for interstate & international shipment
NPIP-State

- NPIP is administered by Official State Agencies (OSA)
  - State requirements must be a minimal of national requirements.
  - Some states have more stringent bleeding requirements.
- OSA may be state government, poultry federation, poultry association, or a combination
General Conference Committee

- Official Advisory Committee to the Secretary of Agriculture on Poultry Health
- Members: APHIS, member-at-large, one elected member from each of 6 US regions

Biannual NPIP Conference

- Recommendations of official delegates from each cooperating State
- One official delegate for each program prescribed in each subpart
- Adopted proposals by majority vote are recommended to USDA for incorporation into NPIP Provisions
Laboratory Diagnostics

- State or Industry Laboratories must be NPIP authorized and audited annually
- USDA Laboratory Services provide assistance to authorized labs by services including:
  - Mycoplasma Diagnostic Workshop
  - Mycoplasma Diagnostic Serologic Technique Video
  - Avian Influenza Diagnostic Workshop
  - Salmonella Isolation/ID Workshop-GPIA
  - NVSL Proficiency Test-group D Salmonella
  - Three Salmonella videos-USPEA
- Supplies, reagents and antigens provided by USDA
Classifications

- Pullorum Clean
- MG Clean
- MS Clean
- MM Clean - turkeys
- MG Monitored
- MS Monitored
- Sanitation Monitored
- Salmonella Monitored
- SE Monitored
- SE Clean
- H5/H7 AI Monitored
- AI Clean
Importance of Surveillance to Industry

- Provides early warning capability
- Provides intelligence to prevent introduction and spread
- Providing earlier detection will lead to earlier eradication
- Timely serological testing plays an important role in poultry disease surveillance and disease investigation
NPIP/Poultry Industry Definitions

- **Primary** – Primary Breeding stock
  - Pedigree, GGGP, GGP, GP

- **Multiplier**
  - Vertical Integrator
    - Parent stock breeders
    - Broilers
Vertical Integration

- Primary Breeder Companies (Genetics)
- Pullets/Breeders (Parent stock)
- Hatchery
- Broiler Farms (Meat birds)
- Primary Processing
- Further Processing
- Feed Mill
- Feed Ingredients

- Company Supplier
- Company Owned
- Owner Operators/Family Farmers
MG & MS Clean - Serology

- **Mycoplasma**
  - ELISA/HI

- **Primary Breeder**
  - Qualify: 300 birds/flock at 4 months of age
  - Monitor: 150 birds/flock every 90 days

- **Multiplier**
  - Qualify: 150 birds/flock at 4 months of age
  - Monitor: 75 birds/flock every 90 days

- Most states have reporting of diseases to industry
Mycoplasma Monitored – slightly less numbers, but very similar
Avian Influenza H5/H7

- NPIP includes High Path AI and Low Path H5/H7
  - High Path – USDA
- **States must have a Low Path H5/H7 plan**
  - NPIP
- Most states have Low Path non H5/H7 plan – not NPIP
Part 56-Control of H5/H7 Low Path AI

- Cooperation with States
- Payment of indemnity
- Determination of compensation amounts
- Destruction, disposal, C&D
- Presentation of claims for indemnity
- Mortgage against poultry or eggs
- Conditions for payment
- Claims not allowed
- Initial State response & containment plan
Part 146-Avian Influenza

Commercial Poultry

- **Commercial Table-Egg Layer Flocks**
  - 11 eggs/birds AI tested 30 days before slaughter

- **Meat-Type Chicken Slaughter Plants**
  - 11 birds/flock AI tested 21 days before slaughter

- **Meat-Type Turkey Slaughter Plants**
  - 60 birds AI tested every month
AI Clean
Egg & Meat Type

- **Primary**
  - **Qualify:** 30 birds tested > 4 months of age
  - **Monitor:** 30 birds tested every 90 days & within 21 days of slaughter

- **Multiplier**
  - **Qualify:** 30 birds tested > 4 months of age
  - **Monitor:** 15 birds tested every 90 days & within 21 days of slaughter
AI Programs

AI Clean Multiplier Breeders
- Qualify: 30 birds @ > 16 weeks
- Monitored: 15 birds every 90 days & 30 days before slaughter

AI Clean Primary Breeders
- Qualify: 30 birds @ > 4 months
- Monitored: 30 birds every 90 days & 30 days before slaughter

AI Monitored Commercial Broilers
- 11 birds/farm @ <21 days before slaughter

AI Monitored Commercial Table Egg Layers
- Table Egg Layers: 11 birds or eggs/farm @ 30 days before slaughter or every 12 months

H5/H7 AI Clean Exhibition Poultry, Game Bird, Waterfowl Breeders
- Qualify: 30 birds @ > 4 months
- Monitored: 30 birds
  - Primary: every 90 days
  - Multiplier: every 180 days
State AI Backyard Flock Testing

- Critical to poultry industry
- Knowledge helps prevent spread into commercial operations, while helping the backyard flocks
- Education of poultry diseases for backyard flock owners
- Helps keep their birds healthy
Part 56 - Control of H5/H7 LPAI

- Indemnity of H5/H7 positive flocks
- Important support and component of program
2 Kifco Depopulation Units with 2 Toolboxes. Includes: socket set, hammer claw, wash brush & handle, gloves, bungee cords, pliers set, gas can, etc.

4 Inflatable Water Tanks

8 Radios & 4 Throat Mikes

2 C&D Equipment Trailers

12 Silvex Foam (55 gallon barrels & 40 gallon barrels)

3 GlobalCom Satellite Phones

3 Garmin GPS Units

1 7X14 Stealth Box Trailer
Cooperative Agreements

- Receive federal funds to manage Notifiable Avian Influenza of the National Poultry Improvement Plan (NPIP) Program for Commercial Table-Egg Layers, Broilers and Breeders.
  - Salaries
  - Lab equipment & AI Trainings
  - Subsidize lab fee for AI testing
  - Table Top Exercises
  - GIS (Geographic Information System)
  - Emergency Equipment
Diagnostic Forms

- State Laboratory or NPIP Coordinator
- NPIP Forms
  - NPIP Participation – reporting results to state NPIP
  - Report of Sales of Hatching Eggs
  - State Agency Hatchery Inspection
  - Moving Across State Line
### Reporting Lab Results to Official State Agency

<table>
<thead>
<tr>
<th>FORM APPROVED OMB NO: 0575-0007 See reverse side for additional information.</th>
</tr>
</thead>
<tbody>
<tr>
<td>REPORT NO.</td>
</tr>
</tbody>
</table>

#### FLOCK SELECTING AND TESTING REPORT

1. Name and Address of Flockowner (Include Zip-Code)

2. Location of Flock

3. Date of Preceding Test - This Location

4. Supply Flock for: (Name and address of hatchery or dealer - Include Zip Code) Approval Number

5. Breed, Variety, Strain or Trade Name of Stock Age of Birds Code Identification

6. Males (Source and Number)
   - Date of Hatch
   - Number of Males Tested
   - Number of Females Tested
   - TOTAL Number Tested
   - Number of Reactors
   - Number Sent to Laboratory
   - Laboratory Findings

7. Females (Source and Number)
   - Date of Hatch

8. Total Birds in Flock

9. PULLORUM TYPHOID

10. M. GALLISEPTICUM

11. M. SYNOVIAE

12. OTHER (Specify)

### AGREEMENT OF FLOCKOWNER

I agree to keep my poultry breeding stock segregated from other poultry and in accordance with the provisions of the plan and regulations of the Official State Agency. I further agree to flock inspection by a representative of the Official State Agency as prescribed by the provisions and regulations.

Signature of Inspector or authorized agent Date

Signature of Flockowner Date

VST FORM 5-2 (JUL 2004) Previous edition may be used. PART 1 - OFFICIAL STATE AGENCY COPY
# Report of Sales of Hatching Eggs

This report is requested by certain States for the interstate shipment of poultry products. Failure to report may result in non-acceptance of shipment.

## UNITED STATES DEPARTMENT OF AGRICULTURE

**ANIMAL AND PLANT HEALTH INSPECTION SERVICE**

**NATIONAL POULTRY IMPROVEMENT PLAN**

# REPORT OF SALES OF HATCHING EGGS, CHICKS, AND POULTS

## 1. DATE OF SHIPMENT

## 2. NAME, PHYSICAL ADDRESS, AND PHONE NUMBER OF PURCHASER

## 3. NAME, PHYSICAL ADDRESS, AND PHONE NUMBER OF PRODUCER OR SHIPPER

## 4. QUANTITY

<table>
<thead>
<tr>
<th>5. VARIETY, STRAINS, OR TRADE NAME</th>
<th>6. PRODUCT</th>
<th>7. SEX</th>
<th>8. TYPE (INTENDED USE)</th>
<th>9. CLASSIFICATION – U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chicken</td>
<td>Eggs</td>
<td>Meat</td>
<td>Pulson</td>
</tr>
<tr>
<td></td>
<td>Eggs</td>
<td></td>
<td></td>
<td>Typhlodryas</td>
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<tr>
<td></td>
<td>Turkeys</td>
<td></td>
<td></td>
<td>Gallus</td>
</tr>
<tr>
<td></td>
<td>Chicks</td>
<td></td>
<td></td>
<td>domestic</td>
</tr>
<tr>
<td></td>
<td>Poults</td>
<td></td>
<td></td>
<td>domestic</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
<td></td>
<td>domestic</td>
</tr>
</tbody>
</table>

## 10. REMARKS

(Services performed on products in shipment, e.g., vaccination, beak trimming, dubbing, etc., but not necessarily certified by State Inspector.)

## 11. SIGNATURE OF STATE INSPECTOR

## 12. DATE

(Previous editions are obsolete.)

To Accompany Shipment
State Agency Hatchery Inspection

**United States Department of Agriculture**
**Animal and Plant Health Inspection Service**
**Veterinary Services**
**The National Poultry Improvement Plan**
**Hatchery Inspection Report**

### 1. Name and Mailing Address of Hatchery (Include zip code)

### 2. Classification of Products
- U.S. Pulorum-Typhoid Clean
- U.S. AI Clean
- Other (Specify):
- U.S. M. Gallisepticum Clean
- U.S. S. Enteritidis Clean
- U.S. M. Synoviae Clean
- U.S. Salmonella Monitored
- U.S. M. Meleagris Clean
- U.S. Sanitation Monitored

### 3. Days of Week on Which Checks Are Hatched
- Mon.
- Thu.
- Sun.
- Tue.
- Fri.
- Wed.
- Sat.

### 4. Incubators

### 5. Compliance

<table>
<thead>
<tr>
<th>Compliance Item</th>
<th>SAT</th>
<th>UNSAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egg purchase (off site eggs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs and chick purchases (other sources)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selecting and testing report</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs in incubator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products sold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Products purchased</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg Cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eggs size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg shell texture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg shell color (Tint - white eggs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hatchery ventilation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General hatchery cleanliness</td>
<td>SAT</td>
<td>UNSAT</td>
</tr>
<tr>
<td>Incubator cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incubator tray disinfection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hatchery biosecurity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal of waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incubator fumigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rodent and insect control program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hatchery tray cleanliness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hatcher fumigation/disinfected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Egg/chick/poult truck biosecuir</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 6. Breeding Stock for Supply Flock Replacement

<table>
<thead>
<tr>
<th>A. Name Source of Flock of Origin</th>
<th>B. Code P: Primary Multiplier</th>
<th>C. Official Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

### 7. Remarks (Include recommendations for correction of unsatisfactory compliance)

**Signature of Hatcheryman**

**Signature of State Inspector**

**Date**

VS FORM 9-9
(JUN 2004)
Moving Across State Lines

- Complexes within 2, sometimes 3 states
- Move chicks and live haul to plant
<table>
<thead>
<tr>
<th>Age</th>
<th>Serology Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day</td>
<td>MG/MS</td>
</tr>
<tr>
<td>10 weeks</td>
<td>IBD/IBV/NDV/Reo - PDRC</td>
</tr>
<tr>
<td></td>
<td>MG/MS/AI</td>
</tr>
<tr>
<td>18 weeks</td>
<td>MG/MS/AI</td>
</tr>
<tr>
<td></td>
<td>CAV</td>
</tr>
<tr>
<td>26 weeks</td>
<td>IBD/IBV/NDV/Reo - PDRC</td>
</tr>
<tr>
<td></td>
<td>MG/MS</td>
</tr>
<tr>
<td></td>
<td>AI</td>
</tr>
<tr>
<td>34 weeks</td>
<td>MG/MS</td>
</tr>
<tr>
<td></td>
<td>AI</td>
</tr>
<tr>
<td>42 weeks</td>
<td>MG/MS</td>
</tr>
<tr>
<td></td>
<td>AI</td>
</tr>
<tr>
<td>50 weeks</td>
<td>MG/MS/AI</td>
</tr>
<tr>
<td>14 days prior to sell</td>
<td>IBD/IBV/NDV/Reo - PDRC</td>
</tr>
<tr>
<td></td>
<td>MG/MS/AI</td>
</tr>
</tbody>
</table>
GA Breeder Program Costs

- 2012 in GA Complex – 1,300,000 mil/wk
  - Grants reduce costs and partially cover costs
  - 235 samples per placement for both AI and MSMG x 16 farms = 3760 samples
  - Cost of AI testing per # of samples submitted was $0.50 per sample. = $1880
  - Cost of MSMG testing per # of samples submitted was $1.00 per sample = $3760

2012 ANNUAL BREEDER COST = $5640
KY Breeder Program Costs

2013 Cost – 1,350,000 broilers/ wk

- MG/MS cost $1.50/ sample
- AI cost is $2.50/sample
- 230 samples taken for MG/MS per placement X 15 = $5175
- 150 samples taken for AI per placement X 15 = $5625
- 20 samples taken for Spikes per placement X 15 = $750

TOTAL ANNUAL BREEDER COST = $11,550
AI Program Costs

- State AI Plans
  - Update annually with industry, federal and state participants
  - Supplies, planning and storage
    - AI trailers
AL Broiler AI Monitoring Costs

Alabama 2013 - 1,000,000/wk

- AI testing cost: $10 accession fee + $13 test = $23 per farm tested
  - 60 farms (303 houses) that will receive approximately 7 flocks per year
    7 X 60 = 420 test X $23 = $9660 or $31.88 per house

Annual AL Broiler cost ~$10,000
FDA Egg Safety Rule – July 2012

- Egg Safety Rule requires all eggs going to human consumption, including hatching eggs, to be at 45 degrees F within 36 hours of lay
  - Goal is to reduce SE growth
  - Commercial eggs
  - Broiler Breeder hatching eggs
- Broiler breeder hatching ideal temperature
  - 64-68 degrees F for embryo
- Low temperatures (45 degrees) can kill embryos
FDA Egg Safety Rule

- Broiler breeder cull eggs were being sold to egg breakers
  - All eggs go through pasteurization process
  - Kills Salmonella and almost all bacteria
- Broiler Breeder farms can not comply, not cost effective, therefore most of the industry destroying eggs
  - Land fills
  - Off haul to American Proteins type facilities
NPIP became a Food Safety Program - 1989

- NPIP – National Poultry Improvement Program
  - Industry and USDA-APHIS
  - Originally for vertically transmitted disease control
    - S. pullorum and gallinarum
    - Mycoplasma

- Salmonella enteritidis became a human pathogen transmitted in intact shell egg-NPIP added a Salmonella enteritidis

- Clean classification for meat-type chickens in 1994

* Andrew Royer, NPIP 2009
This classification is intended for primary meat-type breeders wishing to assure customers that the chicks produced are certified free of *Salmonella enteritidis*.

Maintenance of “SE–clean” grandparent breeding flocks (Primary breeders):
- restricted access, shower in
- Rodent control
- Sanitation and concrete floors
- Frequent monitoring of the house environment

Day-old multiplier pullets and cockerels sold from breeder companies to broiler integrators must be SE-clean.
SE Clean - Primary Meat Type

- Originate from SE clean stock, 7 day mortality, hatcher tray or fluff cultured
- 300 birds pullorum tested @ 4 months
- Monthly environmental samples
  - Drag/boot swabs
  - Nest swabs
  - Hatchery tray swabs
- Primary breeders must be clean to start out to keep them clean
SE Clean - Egg Type

- 300 birds pullorum tested @ 4 months
- 350 unvaccinated birds are kept until negative test for PT
- Monthly environmental samples examined for Salmonella beginning at 2-4 weeks of age
Salmonella Sanitation Monitored Multiplier Meat-Type Chickens

- Environmental samples at 4 months of age and every 90 days
- Hatchery samples every 30 days meconium or chick papers
Salmonella/SE Monitored Primary Meat-Type Chickens

- Environmental samples at 4 months of age and every 30 days
- Hatchery samples every 30 days meconium or chick papers
Salmonella & Sanitation Programs

Salmonella Monitored Primary-Meat Breeders

- Flock Sanitation, C&D, Biosecurity Practices
- Hatchery Sanitation, C&D, fumigation Practices
- Hatchery Environmental Samples (meconium or chick papers)
- Flock Environmental Samples every 30 (90) days
- Egg swab samples

Sanitation Monitored Multiplier Meat Breeders
SE Monitored

- New since 2010 GCC
  - Takes 2-3 years for new rule to be implemented
  - 2010 Approval from Bi-annual conference
    - Not approved by APHIS yet
- National Chicken Council currently keeping data until new NPIP approved
- Requirements
  - All flocks environmental testing for SE at 16-18 and 45wks
SE Monitored Program

- SE Monitored for Parent Meat-Type Chicken Breeding Flocks
  - Environmental sampling
- Result of poultry industry SE coalition – 2010
- Intended to reduce the incidence of *Salmonella* organisms in hatching eggs and chicks through an effective and practical sanitation program on farm and hatchery
Processing Plant
Poultry Inspection Timeline

- **1938**: Federal Food, Drug and Cosmetic Act
- **1957**: Poultry Product Inspection Act (PPIA)
- **1968**: Wholesome Poultry Act
- **1982-2001**: Traditional Inspection System, SIS, NELS
- **1996**: Pathogen Reduction/HACCP Systems
- **1999**: HACCP Inspection Models Project
- **2012**:
Recent Regulatory Activities

- **May 2011:** Center for Science Public Interest (CSPI) Petition to declare Heidelberg, Newport, Hadar and Typhimurium as adulterants (related to antimicrobial resistance)
- **July 2011:** Revised Salmonella Standard for Poultry and Salmonella Initiative Program (SIP) (original 2008)
- **Aug 2011:** Letter from Coalition of Consumer groups to Secretary of Agriculture supporting CSPI petition
- **Jan 2012:** Modernization of Poultry Slaughter Rule
- **Aug 2012:** Sanitary Dressing Procedures
FSIS Chicken Salmonella Incidence from 2004 - 07

- *Salmonella* (%-positive) in broilers has declined, while total *Salmonella* foodborne illnesses have remained relatively constant.

- Overall **total** Salmonella incidence is down:
  - 2005 – 16.3%
  - 2006 – 11.4%
  - 2007 – 8.5%

- FSIS verification testing showed a:
  - Decrease in the proportion of *Salmonella* that are Enteritidis in broiler carcasses
  - Increase in the proportion that are Enteritidis in ground chicken
  - Increase in the proportion of Heidelberg in all poultry classes in 2007

*John Linville, USDA, FSIS, US Poultry and Egg, Memphis TN 2010*
Salmonella Enteritidis (SE)

• The current serotype of specific concern to FSIS
• FSIS has seen SE increase (not overall Salmonella) in chicken from 2007-2010
• Since 2004, CDC has reported increase in SE outbreaks associated with chicken consumption

*John Linville, USDA, FSIS, US Poultry and Egg, Memphis TN 2010
**Salmonella Enteritidis (SE)**

*Salmonella* Positives from FSIS Verification Testing (Broilers)

<table>
<thead>
<tr>
<th>Year</th>
<th>Positive (Other)</th>
<th>Positive (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>1099</td>
<td>168</td>
</tr>
<tr>
<td>2007</td>
<td>775</td>
<td>89</td>
</tr>
<tr>
<td>2008</td>
<td>433</td>
<td>94</td>
</tr>
<tr>
<td>2009</td>
<td>384</td>
<td>97</td>
</tr>
<tr>
<td>2010</td>
<td>358</td>
<td>127</td>
</tr>
</tbody>
</table>

John W. Linville, DVM, MPH, CPH  
Office of Policy and Program Development  
Food Safety and Inspection Service  
U.S. Department of Agriculture
Salmonella Enteritidis (SE)

Percent of SE Positives from FSIS Verification Testing (Broilers)

John W. Linville, DVM, MPH, CPH
Office of Policy and Program Development
Food Safety and Inspection Service
U.S. Department of Agriculture
# Revised Salmonella Standard for Broilers -2011

## Previous Standards

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of positives in a sample set of 51</th>
<th>% positive incident rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>5 or less</td>
<td>Less than or equal to 10%</td>
</tr>
<tr>
<td>Category 2</td>
<td>6-9</td>
<td>10-20%</td>
</tr>
<tr>
<td>Category 3</td>
<td>10 or more</td>
<td>More than 20%</td>
</tr>
</tbody>
</table>

## 2011

<table>
<thead>
<tr>
<th>Category</th>
<th>No. of positives in a sample set of 51</th>
<th>% positive incident rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 1</td>
<td>2 or less</td>
<td>Less than or equal to 4%</td>
</tr>
<tr>
<td>Category 2</td>
<td>3-5</td>
<td>Less than or equal to 7.5%</td>
</tr>
<tr>
<td>Category 3</td>
<td>6 or more</td>
<td>More than 7.5%</td>
</tr>
</tbody>
</table>
Broiler Industry Perspective

- Food Safety is non-negotiable, emotional and touches EVERYONE
  - Most “at risk” groups are babies and grandparents
- Recall events influence change (content and speed)
  - Cargill ground turkey recall (*S. heidelberg*)
- One of, if not the most regulated industry
  - Inspectors in plants daily
Vertical Integration

- Primary Breeder Companies (Genetics)
  - Pullets/Breeders (Parent stock)
    - Hatchery
      - Broiler Farms (Meat birds)
        - Primary Processing
        - Further Processing
    - Feed Mill
  - Feed Ingredients

- Company Supplier
- Company Owned
- Owner Operators/ Family Farmers
Salmonella Control – Biosecurity

Vertical integration

- Salmonella Monitoring (farm, hatchery, feed)
- Water Management
  - Well versus municipal
  - Acidification with chlorination
  - Disinfection
  - Closed drinking systems
- Feed Ingredient (animal protein) and Treatment
  - Chemical treatment
    - organic acids, formaldehyde, sodium chlorate
  - Thermal treatment
Salmonella Control in Broilers
Pre Harvest

Historical Intervention Perspectives

- 1984 AAAP Salmonella Symposium
  - Reduce Salmonella from breeders
  - Reduce Salmonella in feed
  - Drinking water sanitation
  - Competitive exclusion
  - Antibiotic treatment
  - Vaccination
  - Farm cleaning and disinfection
Salmonella Control in Broilers
Pre Harvest

25 Years Later

- Reduce Salmonella from breeders
- Reduce Salmonella in feed
- Live Haul Role
- Drinking water sanitation
- Competitive exclusion
- Antibiotic treatment
- Vaccination
- Farm cleaning and disinfection

NO CHANGE
Salmonella – Specific Serotypes Control

THE CHALLENGE

- Food borne illness Salmonella serotypes are non-host specific in commercial poultry
- Non-pathogen infection (in most cases) in chickens
  - Rarely do serovars of human food-borne concern cause clinical disease in chickens
- Natural inhabitant of intestinal tract
- Age susceptibility
- Very difficult to focus on a particular serotypes with interventions
  - Vaccine only exception
- Many guidelines developed by egg industry to control SE cannot be used in broiler industry (FDA Egg Rule)
Salmonella Control - Interventions

NO SILVER BULLET
- Only aides to eradication
- Reduce load to plant
- Biosecurity essential
- Very expensive
Interventions

- Live vaccines
- Autogenous bacterin vaccine
- Competitive exclusion
- DFM/Probiotics
- Organic acids
- Litter treatments
- Antibiotics (Primary breeders at move)
Salmonella Vaccine Interventions - Live Vaccine

Live Vaccines

- Mucosal and cellular immune response
- Will not make Salmonella positive chicks negative
  - Need to give early in life
- Do not provide complete immunity to all serotypes
- Will reduce fecal shed and give cellular immunity
- Early protection almost like C.E.
  - Do not give together
Salmonella Vaccine Interventions

Killed Vaccines

- Birds respond poorly to bacterial vaccines
  - Humoral immunity
  - Pass maternal antibody
- Need 2 injections before lay
- Reduce fecal and egg shed
- Will take 1 year to be effective and see results in broilers
Salmonella Vaccine Interventions

Competitive Exclusion Intervention

- Normal Avian Gut Flora (NAGF)
- Competitive Exclusion (C.E.)
  - Defined and undefined
- Probiotics
- Direct Fed Microbials (DFM) (Bacillus)
- Magic Dust
Feed Withdrawal

- Feed withdrawal (8 hours) reduced fecal contamination (Rigby, 1981).
- Feed withdrawal (8 hours) increases Salmonella in crop (Ramirez, 1997).
- Feed withdrawal may reduce intestinal strength (Northcutt, 1997).
- 0.5% lactic acid in D.W. during feed withdrawal reduced Salmonella (Byrd, 2001).
- Organic acids can sometimes help
- Due to feed withdrawal difficult to move positive flocks to end of day
  - Incidence Status changes
Salmonella and Intestinal Health

Poor Intestinal Health increases Salmonella incidence

- Damage to intestinal mucosa = greater transmucosal bacteria passage (Kurkchubasche, 1998).
  - \( \rightarrow E. \ tenella \) & \( E. \ necatrix \)

- Coccidia
  - Incidence and outbreaks increasing
    - Resistance of ionophores and chemicals
    - Drugs pulled off market (3-nitro)

- Necrotic Enteritis
  - Clostridium perfringens
  - Related to coccidia control
  - Antibiotic free and organic production
Salmonella Control

- Ever changing based on new scientific information and regulatory policy
- Will always be a challenge in live production AND raw products because there is no lethality treatment until it reaches the consumers
- Establishments must use a combination of hurdles throughout the process – Both live and the plant
Salmonella Initiative Program - SIP

- Establishments request regulatory waivers – including OLRs
- Establishments agree to share daily & weekly microbial testing and monthly data
  - Daily: 1 post chill sample per line per shift tested for *Salmonella*
  - Weekly: 1 matched pair at re-hang and post chill for *Salmonella, Campylobacter and E. coli* (or some other indicator organism)
Common Waivers requested

- 381.66 chilling requirements for poultry carcasses and part, in process temperatures, shipping temperatures
- Finished Product Standards
- OLR- allows facilities to process potentially contaminated carcasses on line
- Off-line reprocessing
- *E. coli* testing requirements
- HIMP
Proposed Poultry Slaughter Rule

- Reduce the role of online inspection personnel and save agency money
- Increase the emphasis on offline inspection activities
- Increase establishment responsibility for carcass sorting
- Increase establishment responsibility for pathogen sampling
- Line speed limited due to equipment and live production capabilities
- Comment period closed waiting on a final rule

The system reflects an agency determination that physical observation does not identify the most significant food safety risks.
The proposed rule is **not** mandatory

Replacement of SIS, NELS, NTIS

- New Inspection System (NIS)
  - maximum line speed of 175 BPM
- Traditional Inspection 9 CFR § 381.67
  - regulatory maximum line speed of 46 BPM (23 BPM per inspector)

Each line would have only one FSIS inspector

- stop the line when observing any food safety defects (e.g., septicemic or toxemic animal diseases or fecal matter) on carcasses
Regulatory Implications

- Eliminate prescriptive time-temperature requirements for chilling of carcasses and the maximum temperature for processing (§ 381.66)
- Amend the reprocessing regulation (§ 381.91)
- Remove requirement for generic *E. coli* Testing
- Remove *Salmonella* spp. Performance Standard and Enforcement
- Remove Finished Product Standards
Regulatory Implications - NIS

- **Off-Line Inspectors** – increase in off-line staffing.

  More focus on the following:

  - document review;
  - hands-on verification of the establishment’s food safety program;
  - conduct verification checks for septicemia/toxemia;
  - fecal contamination;
  - sanitary dressing requirements;
  - ante-mortem inspection; and
  - collect samples for pathogen testing.
Establishment Responsibilities - NIS

- **Facility Requirements**
  - provide the new on-line inspection station

- **Online Carcass Inspection and Carcass Sorting**
  - Sort carcasses
    - written procedure for the handling of septicemia or toxemia
  - Dispose of contaminated carcasses
  - Conduct any necessary trimming
  - Other Consumer Protections (OCP) - eliminate dressing defects to ensure the carcasses meet the definition of “ready-to-cook” and document
Establishment Responsibilities - Traditional and NIS

- Develop, implement, and maintain procedures for the following:
  - Products contaminated with visible fecal do not enter the chiller. Proposed § 381.65(f)
  - Prevent contamination with fecal or enteric pathogens throughout the entire slaughter and dressing process. Proposed § 381.65(g)

- These programs can be incorporated into the establishment’s HACCP plan, SSOPs or a prerequisite program § 381.65(h)

- Documents generated under these programs must be available for FSIS review and retained for one year. Proposed § 381.65(h)
Establishment Responsibilities - Traditional and NIS

- Testing for Process Control – In lieu of generic *E.coli* testing, FSIS will require product testing, at least pre and post-chill, as part of the written control procedures for fecal and enteric pathogens. Proposed § 381.65 (g)

*Operate Line speeds in a manner that allows compliance (maximum line speed for young chickens is 175 BPM)*
Expected Benefits

- **Increased productivity at establishments** - $258.9 million annually (6% increase in throughput for a savings of approximately 3 cents per bird)

- **Reduction in illness costs** - $79.19 million annually (based on the *Salmonella* / *Campylobacter* spp. risk assessment)

- **Budgetary savings to FSIS** - $12.9 million / $40 million (first year vs. subsequent years) due to the reduction in on-line inspector positions

- **Industry cost increases** - $20.3 million (hiring and training sorters; and costs to meet the new facility requirements)
Potential Issues

- USDA is getting pressure from the Inspectors’ Union focused on worker safety as the NIOSH study has not been completed.
- USDA and NCC are getting pressure from consumer groups regarding food safety concerns.
- USDA is requesting worker safety information from industry.
- Media is leveraging this proposed rule against the poultry industry as a whole and linking it to arsenic, *E. coli*, etc.
- Do not see this rule being finalized until after the elections – at the earliest.
- Implementation remains a concern – must create a level playing field for all who want to participate.
Other Provisions

- SIP will remain a viable program

- Air Chilling Proposed § 381.66(e)
  - Chilled exclusively by air
  - Use of moisture in connection with application of an antimicrobial is acceptable if the application time is short and there is no moisture pickup
  - Evaporation chilling, where the chilling is accomplished through the use of a water mist, will not be eligible for an air chilled claim
Sanitary Dressing Procedures

- Directive 6410.3 – similar to beef
  - Effective sanitary dressing & process control procedures are crucial to an establishment’s ability to produce clean & safe product (i.e. no contaminated carcasses entering the chiller)
- Direction to in plant personnel on how to verify SDP
- Systematic approach- ties it all together (process control and performance)
- Effective Oct. 28, 2012
Coming next

- Final Poultry Slaughter Rule
- Poultry Parts Baseline and Standard
Animal Welfare

- USDA Animal Welfare Act – 2011
- USDA FSIS Humane Handling and Slaughter of Livestock - 2011
  - Holding sheds, hauling time limits, shackling, stunning
  - DOA’s, Cadavers
- NCC Audits, PAACO Certification
- First, 2\textsuperscript{nd} and 3\textsuperscript{rd} Party Audits
- USDA in Plant is another eye
CADAVERS

- CADAVER (POULTRY)-a bird that has died by means other than slaughter.

- Characteristics of cadavers include:
  - Signs of uniform congestion over the entire carcass including both skin and muscle tissue. The muscle tissue may have a mushy texture. If the viscera is present, it will also be congested with blood.
  - DOA’s should not be hung on the line. These carcasses will have a foul odor. Histopathologic samples may be used to verify intervascular dilitation and hypostatic congestion that are seen in cadavers.
Birds that are not Cadavers

- Have a darker meat or color to their skin. Certain nutritional programs, such as those using beta-carotinoids to produce a yellow bird, will cause carcasses to be darker in color. The fat sources also have an effect on color.

- The skin has a light reddish color. Often, cold weather will cause the feather follicles to be hyperemic from erection of erector pili muscles, and this will cause the skin to look red after picking.

  - Some killing processes facilitate a faster bleedout than others. For example, some systems require a side cut rather than the traditional straight cut resulting in a slower bleed-out.
  
  - These bird died of slaughter and should not be removed from processing even though their skin may have a reddish hue. Such carcasses will have normal muscle tissue. Questionable carcasses should be retained for review.
Other’s

- Packard’s and Stockyards
  - Audits, contracts, etc.
- Environmental – Nutrient Management Plans
Thank You

- Jennifer Hall – KY NPIP Coordinator
- Dr. Ben Johnson – GA NPIP Coordinator
- Kim Rice – Keystone Foods
- Dr. Chuck Hofacre – University of Georgia (PDRC)
Questions