Food Safety and Inspection Service
Protecting Public Health and Preventing Foodborne Illness
Update on the National Residue Program

Kis Robertson Hale
CAPT, US Public Health Service
Deputy Assistant Administrator, Office Public Health Science
Food Safety and Inspection Service

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Food Safety and Inspection Service:
Mission in Action

We are the public health agency in the USDA responsible for ensuring that meat, poultry, and processed egg products are safe, wholesome, and accurately labeled.

Our Authority
Through a series of Acts, Congress empowers FSIS to inspect all meat, poultry, and processed egg products in interstate commerce.

- Federal Meat Inspection Act (FMIA), 1906
- Agricultural Marketing Act (AMA), 1946
- Poultry Products Inspection Act (PPIA), 1957
- Humane Methods of Slaughter Act (HMSA), 1958
- Egg Products Inspection Act (EPIA), 1970
Food Safety and Inspection Service: 
National Residue Program (NRP)

- Established in 1967
- Designed to identify, rank, and analyze chemical contaminants in meat, poultry, and egg products
  - Animal drugs
  - Pesticides
  - Environmental contaminants
- Administered by FSIS in collaboration with FDA and EPA
Food Safety and Inspection Service:

**NRP Objectives**

- Test for chemical compounds in meat, poultry, and egg products
- Evaluate chemical compounds of concern in food animals
- Limit consumer exposure to chemical residues through regulatory action
Food Safety and Inspection Service:
Residue Sampling Plans

- Domestic scheduled sampling
- Inspector-generated sampling
- Import sampling
Food Safety and Inspection Service:  
**Domestic Scheduled Sampling**

- FSIS inspectors routinely sample carcasses at federal slaughter establishments
- Sampling frequency for each animal class set annually
- Carcasses are held pending results (except poultry)
- Multiple chemical tests performed on each sample
Food Safety and Inspection Service: Inspector-Generated Sampling

- FSIS inspectors can also sample carcasses when they find indications of violative drug use.

- These indications can be found during antemortem or postmortem inspection, and include evidence of:
  - Acute or subacute disease conditions (e.g., mastitis)
  - Injection sites
  - Recent surgery
  - Beta-agonist use (e.g., heavy muscle development)
  - Signs of recent treatment

- Other indications: herd history, production practices, environmental exposures, and threats to homeland security.
Food Safety and Inspection Service:
Inspector-Generated Sampling (cont.)

- Carcasses selected for sampling are first screened using the Kidney Inhibiting Swab (KIS™) test
- Screen positive samples are sent to laboratory for confirmation
- Carcasses are held pending results
- Violative results subject to same actions as routine sampling
Food Safety and Inspection Service: Import Sampling

• Scheduled annually
• Samples collected at the U.S. port-of-entry
• Chemical methods/compounds selected for analysis in import plan may differ from those in the U.S. domestic plan
Food Safety and Inspection Service: Evolution of Multi-Class Residue Screen Capability

- 2012: 51 Veterinary drug classes
- 2013: 53
- 2014: 53
- 2015: 89
- 2019-20: 108

Species:
- Beef
- Pork
- Poultry
- Goat
- Sheep
- Catfish
- Eggs
Food Safety and Inspection Service: 
**Recent Changes to the NRP**

- **2012**: Adoption of multi-residue method; mandatory test and hold
- **2016**: *Siluriformes* fish
- **2017**: Carbadox in Roaster Swine
- **2018**: Pesticides in Feral Swine
- **2019**: Domestic egg Products
Residue Findings

* FY19 results are preliminary and subject to change
Food Safety and Inspection Service: Domestic Scheduled Sampling (Federal Establishments)

All Animal Classes

<table>
<thead>
<tr>
<th></th>
<th>FY 2015</th>
<th>FY 2016</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Samples</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Violative Drug Residues in Bovine Classes, 2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Animal</th>
<th>Result</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desfuroylceftiofur</td>
<td>Beef Cow</td>
<td>0.528 ppm</td>
<td>0.4 ppm</td>
</tr>
<tr>
<td>Doramectin</td>
<td>Beef Cow</td>
<td>144.5 ppb</td>
<td>100 ppb</td>
</tr>
<tr>
<td>Florfenicol</td>
<td>Bob Veal</td>
<td>3.42 ppm</td>
<td>3.7 ppm</td>
</tr>
<tr>
<td>Florfenicol</td>
<td>Non Formula-fed Veal</td>
<td>8.98 ppm</td>
<td>3.7 ppm</td>
</tr>
<tr>
<td>Gentamycin Sulfate</td>
<td>Dairy Cow</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Meloxicam</td>
<td>Dairy Cow</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Piperonyl Butoxide</td>
<td>Steer</td>
<td>0.1512 ppm</td>
<td>0.1 ppm</td>
</tr>
<tr>
<td>Salbutamol</td>
<td>Beef Cow</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>Dairy Cow</td>
<td>3.4 ppm</td>
<td>2.0 ppm</td>
</tr>
</tbody>
</table>
Food Safety and Inspection Service:
Domestic Scheduled Sampling (cont.)

Swine Classes, 2019

- Market Swine: # of Carcasses = 800, Violations per 1000 Carcasses = 10
- Roaster Swine: # of Carcasses = 500
- Sows: # of Carcasses = 1000, Violations per 1000 Carcasses = 0
- Feral Swine: # of Carcasses = 100, Violations per 1000 Carcasses = 0

Legend:
- # of Carcasses
- Violations per 1000 Carcasses
### Violative Drug Residues in Swine Classes, 2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Animal</th>
<th>Result</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbadox</td>
<td>Roaster Swine</td>
<td>207.22 ppb</td>
<td>30 ppb</td>
</tr>
<tr>
<td>Carbadox</td>
<td>Roaster Swine</td>
<td>40.8 ppb</td>
<td>30 ppb</td>
</tr>
<tr>
<td>Carbadox</td>
<td>Roaster Swine</td>
<td>375.8 ppb</td>
<td>30 ppb</td>
</tr>
<tr>
<td>Clothianidin</td>
<td>Feral Swine</td>
<td>Detected</td>
<td>0</td>
</tr>
</tbody>
</table>
Food Safety and Inspection Service:
Domestic Scheduled Sampling (cont.)

Other Classes, 2018

- Eggs
- Goats
- Lamb
- Mature Sheep
- Siluriformes
- Young Chickens
- Young Turkeys

# of Carcasses
Violations per 1000 Carcasses
### Violative Drug Residues in Other Classes, 2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Animal</th>
<th>Result</th>
<th>Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atrazine and Metabolites</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Atrazine and Metabolites</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>HCB</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Metolachlor</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Metolachlor</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Metolachlor</td>
<td>Siluriformes</td>
<td>Detected</td>
<td>0</td>
</tr>
<tr>
<td>Moxidectin</td>
<td>Mature Sheep</td>
<td>85.3 ppb</td>
<td>50 ppb</td>
</tr>
<tr>
<td>Moxidectin</td>
<td>Goat</td>
<td>35.5 ppb</td>
<td>0</td>
</tr>
<tr>
<td>Piperonyl Butoxide</td>
<td>Mature Sheep</td>
<td>0.2189 ppm</td>
<td>0.1 ppm</td>
</tr>
</tbody>
</table>
Food Safety and Inspection Service:
Inspector-Generated Sampling (cont.)

All Animal Classes

<table>
<thead>
<tr>
<th>Year</th>
<th># of Carcasses</th>
<th>Number of Samples Tested in FSIS Labs (include in-plant KIS™ screens positive)</th>
<th>Violations per 1000 Carcasses</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2015</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>FY 2017</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FY 2019</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# of Carcasses
- Number of Samples Tested in FSIS Labs (include in-plant KIS™ screens positive)
- Violations per 1000 Carcasses
Top 3 residues in dairy cattle and beef cows:
- Desfuroylceftiofur
- Penicillin
- Sulfadimethoxine

In bob veal, neomycin accounted for a large percentage of violations

In steers, penicillin and flunixin most common
Swine Classes, 2019

- Market Swine
- Sows
- Roaster Swine
- Boar/Stag Swine
- Feral Swine

# of Carcasses

Number of Samples Tested in FSIS Labs (include in-plant KIS™ screens positive)

Violations per 1000 Carcasses
Number of Violative Drug Residues in Swine Classes, 2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Market Swine*</th>
<th>Roaster Swine</th>
<th>Sow</th>
<th>Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentamycin Sulfate</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Penicillin</td>
<td>1</td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

*Multiple violative residues were associated with a single carcass sample.
Small Ruminant Classes, 2019

- Lamb
- Goats
- Mature Sheep

- # of Carcasses
- Number of Samples Tested in FSIS Labs (include in-plant KIS™ screens positive)
- Violations per 1000 Carcasses
Number of Violative Drug Residues in Small Ruminants, 2019

<table>
<thead>
<tr>
<th>Analyte</th>
<th>Goat</th>
<th>Lamb</th>
<th>Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florfenicol</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Flunixin</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Oxytetracycline</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

*Multiple violative residues may be associated with a single carcass sample.
Food Safety and Inspection Service:
FSIS Website Resources on NRP

- Sampling plans and results
  - “Blue Book” describes annual sampling plans
  - “Red Book” describes annual results
  - Quarterly residue reports

- Repeat Violator List

- Residue Related Policies
  - FSIS Directive 10,800.1

- Guidance on KIS™ test
Food Safety and Inspection Service:

Questions?

Kis.Robertson@usda.gov