Food Animal Chemical Residues – Issues for Diagnostic Laboratories

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Regulations for Chemical residues in food animals

• Difference between states
  ◦ Some have meat inspection programs; others do not
  ◦ Province differences?

• Very difficult to find people at the federal level to assist
  ◦ No policies or procedures developed for these cases.
- 3 of 175 calves
- Acute neurologic signs
- One died that night
- Post-mortem at UKVDL
• GC/MS analysis of rumen contents:
  ◦ Aldrin, DDD, DDE, DDT – huge peaks
  ◦ Brain sodium 2120 ppm wet weight

• Farm visit to bleed rest of cattle, inspect premise
  ◦ 175 head of cattle

• Found large sink hole filled with old garbage and debris
  ◦ Hundreds of items
  ◦ Selected most suspicious items to test
Blood testing

- **Review of literature and regulatory documents**
  - To determine methods, tolerances, MLQs
  - Help from other vet diagnostic labs
  - No one at state or federal level to help

- **Serum and plasma analysis**
  - GC/MS SIM mode (see Lori for details)
  - 9 animals had 3 or more detectable OC (aldrin, dieldrin, DDE, DDD, DDT) > 10 ppb, or 1 OC >> 10 ppb
Fat biopsies

- Fat biopsies obtained for animals with blood OC concentrations > 10 ppb
  - Fat MLQ set at 0.1 ppm – from literature (and later approval from USDA FSIS)
  - Repeated in a month
  - Will repeat again in 3-4 months

- State veterinarian cleared animals for sale or slaughter based on our tests
  - We spent days on the phone trying to find the right USDA people to provide input
US National Residue Program

- **2011 document has MLQ information in Appendix II**

- **2012 document**
Provides various USDA FSIS approved methods for residue analyses in meat, poultry, egg
Helpful FSIS people

- Emilio Esteban – Head honcho from DC
- Charles Pixley – Director of lab quality
- Joseph Hill – Scientific Advisor
- Jim Holterman – Policy division
- Louis Bluhm – Lab quality assurance
- Catalina Yee – supervisory chemist
- Patty Bennet – Public health residue program
Future direction

- Further discussion later in the meeting
- Get information re: how other states and provinces handle these cases
- Develop possible solutions to dilemma
- Create white paper/recommendations for FSIS
The case of the suspicious toy
Metal analyses

- **Black rubber**
  - Small amount of lead (1.73 ppm) and arsenic (0.34 ppm)
  - Zinc: 2590 ppm

- **Yellow fuzz and Print on yellow fuzz**
  - Trace amounts of lead and arsenic
  - Zinc: 73.6 ppm

- **White rubber**
  - Small amounts of lead (9.73 ppm) and arsenic (8.99 ppm)
  - Zinc: 20,4000 ppm
**Company response**

- No regulations other than lead testing required
- Zinc in white rubber was zinc oxide
- Will pull the toys from marketing and collect previously distributed toys
- Will change their policy for testing promotional toys