Food Safety Challenges

Texas Agricultural Experiment Station
THE TEXAS A&M UNIVERSITY SYSTEM

Proliant MEAT INGREDIENTS
The Art of Service. The Science of Protein.

TRUMARK INC

51st International Congress of Meat Science and Technology
2005

USDA
Bo Reagan,
National Cattlemen’s Beef Association
Elsa Murano,
former USDA Undersecretary for Food Safety, Texas A&M University
College Station, Texas USA
Food Safety:
A Government Perspective

- Where we’ve been and where we are.
- Challenges ahead.
- Advice from a former bureaucrat.

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1991: Meat Safety Becomes a National Issue

- Jack-in-the-Box Outbreak
  - ~500 ill, 4 deaths
  - Seminal event for consumers, industry, government, and academia

The many faces of a killer
Immediate U.S. Government Actions (1990s)

- **Focus on Mandating HACCP:**
  - All meat and poultry plants required to have plans, but not government “approval” of plans.
  - Inspectors trained in new regulations, not in HACCP.

- **Performance standards for salmonellae.**
  - Three strikes, you’re out!

- **Zero-tolerance Policy for *E. coli O157:H7.***
  - Absence of evidence…
Results: The *E. coli* O157:H7 Illness Rollercoaster Ride
Results: Annual Multi-million-pound Recalls

- Hudson
- Thorn Apple Valley
- Bil-Mar
- Cargill
- Bar-S
- ConAgra AND Pilgrim’s Pride


Millions of pounds:
Dr. Louis Pasteur had it right.

Science must be used to improve the lives of others.

Louis Pasteur
1822-1895
Focus on the **Science** of HACCP:
- Critical reassessment of HACCP plans: is *E. coli* O157:H7 “a hazard reasonably likely to occur”?
- Improved training of FSIS inspectors and creation of HACCP experts.
- First-ever substantive audits of HACCP plans.

Focus on the **Appropriate** Use of Standards
- Application as a diagnostic, not as proof of safety.

Focus on **Monitoring** of Zero-tolerance
- Shift from mostly testing at retail (too late).
Results: Declines in Prevalence of *E. coli* O157:H7 in FSIS Regulatory Samples.
Results: Decreases in **Number** and **Volume** of Recalls
Results: Annual Multi-million-pound Recalls Halted
Results: Rollercoaster running out of gas?
Results: Achieving Targets Set by Healthy People 2010

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<th>Pathogen</th>
<th>California</th>
<th>Colorado</th>
<th>Conn.</th>
<th>Georgia</th>
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<th>Oregon</th>
<th>Tennessee</th>
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<th>National health objective for 2010*</th>
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*National health objectives were not defined for these pathogens.
Some Challenges Ahead

1) BSE.

2) Salmonellae.
   1) Rise in contamination.
   2) Antibiotic resistance.

3) Ensuring zero-tolerance in raw products.
Challenge #1: BSE

- Results of USDA surveillance point to extremely low prevalence of 1/426,164 tests conducted (as of August 3rd, 2005).

- The probability of being struck by lightning is 1/280,000.*

- Low prevalence means miniscule risk, even from animals >30 months.

* National Lightning Safety Institute.
Considerations for USDA

- Low risk suggests need for revisions in policy.
  - Limiting the ban of small intestine to distal ileum.
  - Exemption of injured animals from downer ban.

- Surveillance protocol needs to be explained.
  - Validity of sampling some animals in target population.
  - Validity of methods being used needs to be proven.
Recommendations from Former Bureaucrat...

- Conduct third-party scientific review of all risk assessments gathered to date.
- Conduct comprehensive evaluation of statistical significance of surveillance plan.
- Conduct comparative study of testing methods and identify definitive method.
Challenge #2: Salmonellae – Increase in contamination.
Proportion of salmonellae Consisting of S. Newport in Humans and Cattle

Prevalence of *Salmonella* Newport MDR-AmpC in beef has increased from 1% in 1998, to 26% in 2001.
Challenge #2: Salmonellae – S. Newport MDR-AmpC.

- Outbreak: 47 cases (January-April, 2002).
  - 34 NY (one death)
  - 5 MI, 4 PA, 2 OH, 2 CT

- 44 isolates had indistinguishable PFGE patterns, 3 isolates differed by one band.

- First outbreak associated with ground beef.

- Sample of uncooked meatloaf prepared with ground beef from NY patient yielded S. Newport with indistinguishable PFGE pattern.
Recommendations from a Former Bureaucrat

- Conduct **reassessment** of HACCP plans at poultry operations, followed by critical audits.

- Conduct comprehensive, **definitive study** on S. Newport MDR-AmpC:
  - Seasonal prevalence at slaughter.
  - Environmental and management factors.
  - Triggers for expressing resistance gene(s).
Challenge #3: Ensuring Zero Tolerance in Raw Products

- Ensuring absence of contaminants can only be done by destroying the contaminants:
  - Prior to food preparation
  - During food preparation
Ensuring Zero Tolerance in Raw Products with Food Irradiation

![Graph showing the effect of dose on the log CFU/g of different bacteria like Salmonella, E. coli O157:H7, Listeria, and Campylobacter.](image)
Ensuring Zero Tolerance in Raw Products

Carcass Irradiation Study
* Use low energy electron beam
* Treat surface of the carcass (20mm)
* Low dose (1 kGy)
* Minimal product quality changes
* Considered a “processing aid”
Recommendations from Former Bureaucrat...

- Engage in dialogue with American consumers.
- Approve use of carcass irradiation to control *E. coli* O157:H7.
- Don’t be afraid to apply irradiation to high-risk foods procured by federal government.
Bottom Line

- Being proactive is the best way to meet these challenges.
- Government needs to use science and not “cave” to pressure from uninformed sources.