Food Safety: Farm to Fork

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Objectives of the Presentation

• Discuss current issues and challenges related to food safety.

• Provide a brief history of food safety laws and regulations in the U.S.

• Look at key agencies and programs at the international, national, state and local levels and how they partner to protect the safety of America’s food supply.
**Impact of Foodborne Illness on Public Health in American**

- Causes 48 million illnesses, 128,000 hospitalizations, and 3,000 deaths each year.  
  Source: Centers for Disease Control and Prevention
- Roughly one in six Americans may experience a foodborne illness each year.
- Reducing the incidence of foodborne illness by 10% would prevent nearly 5 million cases of disease each year.

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**Economic Impact of Foodborne Illness**

- Foodborne illness costs $152 billion dollars annually in the form of medical expenses, lost productivity, loss of business, lawsuits, and loss of reputation.  
  Source: Produce Safety Project, Pew Charitable Trusts
- The U.S. spends >$1 billion annually on Food Safety Regulation
Recent, Large Outbreaks of Foodborne Illness and Product Recalls

- 2,000 illnesses were caused by *Salmonella* in eggs produced at two Iowa farms in 2010.
  - More than 500 million eggs were recalled as a result of this outbreak.

- In 2010-11, 140 people from 26 states and the District of Columbia infected with *Salmonella* I4,[5],12:i:- in alfalfa sprouts.

*Salmonella Typhimurium* in Peanut Butter

- In 2008-09, 714 persons from 49 states were infected with *Salmonella* Typhimurium in peanut products produced by Peanut Corporation of America.
  - 9 deaths were reported.

- The outbreak was caused by contaminated peanut butter sold in bulk packages used in institutions and peanut butter and peanut paste used as ingredients in food products.
**Salmonella Typhimurium in Peanut Butter**

- More than 2,100 products in 17 categories were voluntarily recalled by more than 200 companies.
- The total cost of the recall exceeded $1 Billion

**Shiga Toxin-Producing E. coli O104:H4 in Sprouts**

- An ongoing outbreak in Germany and 8 other European countries has been linked to sprouts contaminated with *E. coli* O104:H4.
  - To date, nearly 3,300 cases and 35 deaths have been reported. (Food Navigator.com, 6/13/11)
- Most deaths are the result of acute kidney failure known as hemolytic-uremic syndrome (HUS).
  - HUS is most likely to occur in young children and the elderly.
In 1980, 15% of the U.S. population was 60 years old or older. By 2025, the number will be 25%.

In 2007, 20-25% of the population was in a high-risk category (young, old, pregnant, and immune-compromised such as HIV positive, transplant patients, chemotherapy patients, and people with chronic diseases.)
Challenges Facing Food Safety

**Changing Consumption Patterns**

- Americans consume more foods that are prepared outside the home.
- Per capita consumption of fresh fruits and vegetables increased 36% from 1981-2000.
- Consumption of exotic foods such as raw milk is on the rise.

**Global Food Supply**

The U.S. trades with over 150 countries and territories, with products coming into over 300 U.S. ports.
Challenges Facing Food Safety

Global Food Supply

- Approximately 15% of the U.S. food supply by volume is imported.
- Approximately 60% of fresh fruits and vegetables consumed in the U.S. is imported.
- Imports of seafood rose from less than 50% in 1980 to more than 75% today.

Challenges Facing Food Safety

Threat of Intentional Contamination

Since 9/11, food safety has been expanded to include food security programs where professionals focus on both accidental AND intentional contamination of our food supply.
History of Food Safety Policy

• Prior to 1906 - little regulation on the food industry

• 1905 - Upton Sinclair wrote *The Jungle* which focused primarily on labor conditions in the meat packing industry, but also exposed unsanitary conditions in slaughter houses.

• Prompted the passage of the *Pure Food and Drug Act* in 1906.

Key Provisions of the Pure Food and Drug Act

• Created the U.S. Food and Drug Administration, which was charged with testing all foods and drugs intended for human consumption.

• Required prescriptions from licensed physicians before a patient could purchase certain drugs.

• Required label warnings on habit-forming drugs.
**Meat Inspection Act of 1906**

- Companion legislation to the Pure Food and Drug Act that was directed at the meat-packing industry.
- **Key provisions of the Act:**
  - Created sanitary standards for slaughterhouses and meat processing plants.
  - Required all animals to pass an inspection by a U.S. Department of Agriculture agent prior to slaughter.
  - Subjected all carcasses to a post-mortem inspection to assure wholesomeness.

**Federal *Food, Drug and Cosmetic Act***

- Passed by Congress in 1938 to assure that foods are safe, wholesome, and produced under sanitary conditions.
- Represented a total overhaul of the Pure Food and Drug Act of 1906.
- Gave authority to FDA to:
  - issue standards for food, and
  - conduct factory inspections.
Two longstanding and complementary goals remain at the core of the FDCA.

1. Protect the public's safety by mandating the safety, purity, and in some cases the "effectiveness" of the products within its scope.

2. Disclose information by requiring truthfulness and completeness in product labeling and other marketing communications.

Since the original Act, food laws and regulations have evolved from concerns centering around food fraud to:

- Concerns about food safety,
- Protection of the nutritional integrity of food,
- Truth in labeling, and
- Concern about the relationship between health and food.

The Act was amended most recently to add requirements about bioterrorism preparations.
Poultry Products Inspection Act of 1957

- Promulgated due to increased consumption of ready-to-cook and processed poultry.
- Requires USDA’s Food Safety and Inspection Service (FSIS) to inspect all domesticated birds when slaughtered and processed into products for human consumption.
- Includes chickens, turkeys, ducks, geese, guinea fowl and ratites.

Primary goals are to:

- Prevent adulterated or misbranded poultry and poultry products from being sold as food, and
- Ensure that poultry and poultry products are slaughtered and processed under sanitary conditions.

These requirements also apply to products produced and sold within states as well as to imports, which must be inspected under equivalent foreign standards.
Food Quality Protection Act of 1996

- Amended the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Food Drug, and Cosmetic Act.
- Directed EPA to overhaul of the Nation's pesticide and food safety laws.
- Included a complete reassessment of all existing pesticide tolerances and stricter safety standards, especially for infants and children.

- Established “negligible risk” for carcinogenic pesticides as 1 new cancer case per million population.
- Prohibited pesticide residue in the “edible” portion of food.
- Established a tenfold safety factor for children when setting tolerances (maximum legally permissible levels) for pesticide residues in food.
The Food Allergen Labeling and Consumer Protection Act of 2006 (FALCPA)

Requires food manufacturers to disclose in plain language whether products contain any of the major food allergens.*

- Milk products
- Soy products
- Egg products
- Tree nuts
- Wheat proteins
- Fish
- Peanuts
- Shellfish.

* Applies to any domestic or imported food regulated by FDA.

The Food Safety Modernization Act of 2010

- Recent, major foodborne disease outbreaks and product recalls prompted Congress to initiate major reform of America’s food safety system.
- Under the new law, FDA now has new prevention-focused tools and a clear regulatory framework to help make substantial improvements in our approach to food safety.
FSMA Lays the Groundwork for an Integrated Food Safety System

Prevention
Enhanced Partnerships
Inspections, Compliance, and Response
Import Safety

Food Safety Modernization Act

• Changes the way FDA regulates foods
  • Puts prevention up front.
  • FDA will establish science-based minimum standards for the safe production and harvesting of fruits and vegetables.
  • Food facilities must implement a written preventive control plan, monitor the performance of those controls, and specify the corrective actions the facility will take when necessary.
  • FDA has authority to order a recall of food.
  • FDA can administratively detain food when there is “reason to believe” it is adulterated or misbranded.
Food Safety Modernization Act

- FSMA will make imported foods safer by:
  - Importer accountability
  - Third party certification of foreign food facilities
  - Third-party certification of high risk foods
  - Additional resources for foreign inspections
  - Authority to refuse entry into the US of a food that has refused U.S. inspection.

Federal Oversight of Food Safety

- Federal oversight of food safety is fragmented among 15 agencies that administer more than 35 major laws related to food safety.
- The two primary agencies are the U.S. Department of Agriculture and the Food and Drug Administration.
The Food and Drug Administration (FDA)

The leading food and drug regulatory agency in the world.

- Regulates food processing and manufacturing related to food sold in interstate commerce, except meat, poultry, and eggs.
- Publishes the *FDA Food Code* which provides recommendations for food service, retail foods, and vending operations.

FDA Duties

- FDA has jurisdiction over 80% of the nation’s food supply, including seafood, dairy and produce.
- FDA oversees a full range of domestic and imported products, including food and animal feed.
USDA Food Safety Duties

• USDA is responsible for the inspection and grading of meat, poultry and eggs.

• USDA’s Food Safety Inspection Service (FSIS) plans to use a risk-based approach for meat and poultry plant inspections where inspectors will be deployed in accordance with the level of risk associated with a product, process, or food-safety program.

  • All plants will remain subject to daily inspection, though frequent inspections are likely to occur only where the threat of pathogens is high or where past visits have found unsafe practices.

Food Safety Policy - From Farm To Fork

• Food safety policies can take a variety of forms such as:
  • International Agreements and MOUs.
  • National objectives for disease prevention and health promotion.
  • National laws, rules and regulations.
  • State regulations
  • Local ordinances
  • Industry standards
**International Food Safety Organizations and Policy**

- **Food and Agriculture Organization (FAO)**
  - The main United Nations agency that specializes in all aspects of food quality and safety.

- **Codex Alimentarius Commission**
  - An intergovernmental body created by FAO and WHO to protect consumers’ health and ensure fair trade practices.

- **Global Food Safety Initiative (GFSI)**
  - A non-profit foundation that seeks continuous improvement in food safety management systems.

**FAO’s Food Quality and Standards Service**

- FAO is committed to the enhancement of food safety and quality along all levels of the food chain with the aim of:
  - preventing foodborne diseases,
  - protecting consumers and
  - promoting fair practices in the food trade.
**FAO’s Food Chain Approach**

- This approach focuses on strengthening each step in the food flow - from the way it is grown or raised, to how it is collected, processed, packaged, sold and consumed.
- Stakeholders include:
  - Farmers and fishermen,
  - Slaughterhouse operators,
  - Food processors,
  - Transport operators,
  - Distributors (both retail and wholesale)
  - Consumers, and
  - Governments obliged to protect public health.

**Codex Alimentarius**

- A collection of international standards for the safety and quality of food adopted by the Codex Alimentarius Commission (CAC).
- Codex Standards cover processed, semi-processed, and raw foods as well as materials used in the processing of food products.
- Codex Standards have been created for food additives, pesticide and veterinary drug residues, contaminants, labeling and presentation, as well as methods of sampling and risk analysis.
Global Food Safety Initiative

• A non-profit foundation whose mission is to provide continuous improvement in food safety management systems to ensure confidence in the delivery of safe food to consumers worldwide.

• The GFSI has nearly 700 members in over 150 countries on 3 continents.

GFSI Objectives

• Reduce food safety risks by delivering equivalence and convergence between food safety management systems worldwide.

• Manage cost by eliminating redundancy and improving operational efficiency.

• Develop competencies and capacity to create consistent and effective global food systems.

• Provide an international platform for collaboration, knowledge exchange and networking.
Global Food Safety Initiative

• GFSI members require food suppliers to achieve factory audit certification against one of several recognized standards, which include Safe Quality Food (SQF), British Retail Consortium (BRC), or International Food Standard (IFS).

• Achieving one of the GFSI standards is a goal for many private label manufacturers in the U.S.

Indiana Board of Animal Health

• Original mission was to "prevent and suppress contagious and infectious diseases among the livestock.

• Though the original mission has not changed, the scope of BOAH's work has expanded to:
  • enhance Indiana's economy by protecting Hoosiers' investment in animal agriculture, wildlife, horses and companion animals.
**Indiana Board of Animal Health**

- The scope of the BOAH's work has expanded to:
  - protect **public health** by preventing and controlling the spread of animal diseases, such as rabies, which pose a threat to people.
  - maintain a vital link in a **safe food** supply through the state meat and poultry and dairy inspection programs.
  - to **help people** and their animals who are victims of large-scale disasters such as floods and tornadoes.

**Indiana State Department of Health**

- The mission of the Food Protection Program, within the ISDH, is to ensure a safe and wholesome food supply throughout the State of Indiana.

- The Program develops regulations, conducts routine inspections, investigates foodborne illness complaints, and responds to other food emergency incidents.
The Food Protection Program participates in cooperative food safety inspection programs with other state, federal, and local agencies.

The Food Protection Program is divided into two focus areas:
- Food Safety
- Food Defense

The Food Safety Section has regulatory authority and conducts inspections of food establishments on state property, manufacturing plants, processors, warehouses, packagers, and transporters and of food products for distribution to another entity for resale or redistribution.

The Program also provides training and technical assistance to local health departments, consumers and businesses.
Indiana State Department of Health

• The Food Defense Section provides guidance to Indiana's food retailers, producers, processors, and distributors on how to conduct vulnerability assessments and develop food defense plans.

• Develops and maintains the Food Emergency Response Plan and works with other entities and programs to protect food from intentional acts of contamination.

• Manages the Indiana Food Safety and Defense Task Force.

Local Food Agencies

• More than 3,000 state, local and tribal agencies have primary responsibility to regulate the more than 1 million food establishments in the United States.

• These regulatory agencies license and routinely inspect retail food establishments to assure that proper standards for food safety and sanitation are maintained.
The Food Industry Must Get Involved

• According to Dr. Robert Brackett, former head of the FDA Center for Food Safety and Applied Nutrition, “The explosive growth in the number of processors and the amount of imported foods mean manufacturers have to build safety into their products rather than us chasing after them.”

California Leafy Greens Marketing Agreement

• Assures buyers of California leafy greens that products bearing the mark have been grown according to the food safety practices accepted by the LGMA.

• This mark signifies the member has been verified through government audit to be in compliance with Good Agriculture Practices (GAPs) and mandatory food safety practices of the LGMA.
Good Agricultural Practices (GAPs) Reduce Risk of Microbial Contamination

- In fields or orchards
- During harvesting and transport
- During processing or packing
- In distribution and marketing

Good Manufacturing Practices (GMPs)

- GMPs are requirements that must be performed during processing to ensure the production of safe and wholesome food.
- Prescribed requirements for:
  - Personnel
  - Building and facilities
  - Equipment and utensils
  - Production and process controls
Foodborne illness has a major impact on public health and the nation’s economy. Food policies must be proactive and updated to accommodate:
- Emerging pathogens
- Changing factors that contribute to foodborne illness
- Changing food production and processing practices
- A global food supply.

To be effective, government agencies at all levels and the food industry working together to assure food safety and prevent foodborne illness.

**Questions**
References

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  http://www.fda.gov/NewsEvents/PublicHealthIssues/ucm236506.htm
- The Federal Food, Drug and Cosmetic Act (FD&C Act)
- CDC Estimates of Foodborne Illness in the United States.
- Gateway to Federal Food Safety Information
  http://www.foodsafety.gov/
- Food and Drug Administration
  http://www.fda.gov/Food/default.htm
- United States Department of Agriculture
  http://www.ars.usda.gov/overview