AN ACADEMIC’S PERSPECTIVE ON THE FOOD INDUSTRY TO ENSURING SAFE FOODS

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AN ACADEMIC’S PERSPECTIVE ON THE FOOD INDUSTRY TO ENSURING SAFE FOODS

- Contributing factors to ensuring safe food production and processing
- Role of public health: Importance of foodborne disease surveillance for the food industry
- Imported foods: An impending food safety crisis?
Contributing Factors to Ensuring Safe Food Production and Processing

- Structure of the U.S. food industry
- Federal food oversight and inspection
- Industry influences adversely affecting the safety of foods
- Public health
Structure of the United States Food Industry

2.1 Million U.S. Farms
30,000 U.S. Processing Sites
19,000 Domestic Packers/Repackers
935,000 Retail Food Outlets

94,000 Foreign Processing Sites
87,000 Foreign Packers/Repackers
224,000 Retail Food Stores

? Million Foreign Farms

Courtesy of Shawn Kennedy, National Center for Food Defense and Protection
Federal Food Oversight and Inspection

- **USDA/Food Safety and Inspection Service**
  - Oversight of ~ 20% of foods consumed in the United States (meat, poultry, and processed eggs)
  - In 2006, 7,500 food safety inspectors at ~ 6,000 plants

- **FDA**
  - Oversight of ~ 80% of foods consumed in the United States (everything that is not under the USDA purview)
  - In 2006, 640 full-time food safety inspectors for ~ 57,000 plants
Industry Influences Adversely Affecting the Safety of Foods

- Not all food producers and food processors are equally committed to producing safe foods
  - Largely depends on a company’s culture, which is frequently determined by administrative leadership (CEO and senior management)

- Primary driver is economics/low cost
  - Major retailers are influential in cost cutting
  - Cost of ensuring safety of food is at risk
  - Major cost to manufacturing food is labor (~ 40%); developing countries have low labor costs
The company’s leadership has determined that it is more cost effective to handle recalls than it is to provide many of the food safety interventions.

- Estimate the average cost of a recall is ca. $1 million.
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Role of Public Health

- Foodborne disease surveillance and outbreak investigations have been the primary driver to prompting foodborne disease prevention by the industry by:
  
  ▲ Identifying new foodborne pathogens
    ♦ Example: *E. coli* O157 and hamburgers, 1982, 2 outbreaks, 43 cases

  ▲ Identifying new risky practices
    ♦ Example: Chopped garlic-in-oil and botulism, 3 cases in NY, unrefrigerated product, research determined need to acidify

  ▲ Identifying foods not previously recognized as high risk
    ♦ Examples: peanut butter, peanut paste, dried dog food, bagged fresh-cut spinach, bagged fresh-cut lettuce, cookie dough flour, imported pepper, and Chinese dried vegetable flavoring
Role of Public Health (cont.)

- Foodborne disease surveillance and outbreak investigations can further promote prevention efforts by the food industry by:
  - Identifying “problem” suppliers and food processors
  - Identifying high-risk ingredients and foods to place greater emphasis on contamination prevention
  - Providing impetus to change company’s perspective and commitment to ensuring the safety of foods
The foodborne disease surveillance system is to the food industry what radar is to automobile drivers – it is the “threat” of being caught that helps drive compliance with best safety practices.
Examples of Food Safety Monitoring/Surveillance Programs that Help Drive Food Safety Compliance

- **USDA-AMS MDP (Microbiological Data Program)**
  - Monitors fresh produce for foodborne bacterial pathogens
    - Facing elimination because of produce industry pressure on Congress

- **PulseNet**
  - **VoluntaryNet (VolNet)**
    - Supported by food industry leaders that are highly committed to raising the bar for safe foods
VoluntaryNet: A CDC - Food Industry - UGA Center for Food Safety Food Safety Collaboration
Purposes of VoluntaryNet

- Help the food industry and CDC identify emerging trends or pathogens of concern and understand the public health significance of these pathogens in specific foods
- Enable companies to perform better by conducting more thorough food safety risk assessments, with respect to food products, pathogens of concern, and country of origin
- Enable CDC and state health departments to improve hypothesis generation for questionnaires/case-control studies used in the investigation of illness clusters and outbreaks (early detection)
  - Identify and control emerging public health problems early, protect public health, and limit potential damage to industry
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Globalization of Food Industry

FDA Import Entries Foods Only

Bob Buchanan, FDA, 2008

2011 - Estimated 24 million food import entries (FDA Commissioner Margaret Hamburg)
<table>
<thead>
<tr>
<th>Food Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef</td>
<td>14</td>
</tr>
<tr>
<td>Fish and Seafood (Fresh and Frozen)</td>
<td>80</td>
</tr>
<tr>
<td>Fresh Fruits</td>
<td>50</td>
</tr>
<tr>
<td>Fresh Vegetables and Melons</td>
<td>20</td>
</tr>
<tr>
<td>Honey</td>
<td>60</td>
</tr>
<tr>
<td>Lamb and Mutton</td>
<td>50</td>
</tr>
<tr>
<td>Tree Nuts</td>
<td>45</td>
</tr>
</tbody>
</table>
United States Food Import Trends

U.S. food imports rose rapidly during fiscal years 1998-2007; consumer-ready products grew fastest

Compiled from data from the U.S. Department of Commerce, Census Bureau
Examples of Economically Motivated Adulteration of Foods Produced in China

- Melamine in dairy products and pet foods to fraudulently increase apparent nitrogen content
- Leather in dairy products to increase apparent protein content
- Ground limestone in flour to increase weight
- Feeding clenbuterol (fat-burning drug) to pigs and cattle to speed up and increase muscle mass
- Counterfeit certification of nonorganic crops, including soybeans, millet and buckwheat, as organic
**FDA Import Refusals for Contamination of Soy Protein Isolate from China between Nov 2011 - Apr 2012**

<table>
<thead>
<tr>
<th>Company</th>
<th>Date</th>
<th>Reason for Refusal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandong Crown Soya Protein</td>
<td>04/23/12</td>
<td><strong>Melamine</strong></td>
</tr>
<tr>
<td>Wenda Co Ltd</td>
<td>02/09/12</td>
<td><strong>Melamine</strong></td>
</tr>
<tr>
<td>Nanjing Sun Brain Garments Co Ltd</td>
<td>01/19/12</td>
<td><strong>Melamine</strong></td>
</tr>
<tr>
<td>Gushin Biological Technology Group Co Ltd</td>
<td>12/12/11</td>
<td><strong>Melamine</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Salmonella</strong></td>
</tr>
<tr>
<td>Shandong Gushin Imp &amp; Exp Co Ltd</td>
<td>12/05/11</td>
<td><strong>Melamine</strong></td>
</tr>
<tr>
<td>Shandong Yuwang Industrial Co Ltd</td>
<td>11/01/11</td>
<td><strong>Melamine</strong></td>
</tr>
</tbody>
</table>
Examples of U.S. Food and Drug Administration Import Refusals of **SPICES** for *Salmonella* Contamination (mostly 2009; some 2010)

- > 1300 total refusals

<table>
<thead>
<tr>
<th>Spice</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allspice, whole and ground</td>
<td>El Salvador, Mexico</td>
</tr>
<tr>
<td>Anise, ground and seeds</td>
<td>China, Jordan, Syria, Turkey</td>
</tr>
<tr>
<td>Basil, whole and ground</td>
<td>Egypt, India, Thailand, Vietnam</td>
</tr>
<tr>
<td>Bay, whole</td>
<td>Egypt, Turkey</td>
</tr>
<tr>
<td>Black pepper, whole and ground</td>
<td>Canada, China, Ecuador, El Salvador, Ethiopia, France, Ghana, Hong Kong, Indonesia, Lebanon, Malaysia, Mexico, Pakistan, Russia, South Africa, Spain, Sri Lanka, Taiwan, Thailand, Turkey, Vietnam</td>
</tr>
<tr>
<td>Caraway, whole and ground</td>
<td>Egypt, India</td>
</tr>
<tr>
<td>Cardamom, whole and ground</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Celery Seeds, whole and ground</td>
<td>China, India</td>
</tr>
</tbody>
</table>
Imported Foods: An Impending Food Safety Crisis?

- Food imports to United States are increasing at an unprecedented rate: likely >20% of foods consumed in United States are imported (FDA Commissioner M. Hamburg estimated 24 million shipments in 2011)
- Low cost is largely driving food industry to developing countries as sources of ingredients and consumer-ready foods
- Many foods in many developing countries are not produced and prepared under acceptable sanitary practices
- Building adequate oversight to ensure safe imported foods is a major future challenge
Food Safety and the Food Industry
Concluding Thoughts

- Foodborne outbreak investigations have a major influence on a company’s commitment to best practices
- There are many ways to make foods safer; targeted research can provide answers
- Regulation can help level the playing field
- Growing international sourcing of foods and pressures to reduce food costs means industry needs to upgrade prevention and oversight programs
- A strong foodborne disease surveillance and outbreak investigation system is essential to help ensure the safety of foods
Opportunity for Food Safety Community, Especially the Government

- Publically recognize/reward food companies that have a continued proven commitment to enhancing the safety of the food supply
  - Public recognition is already given to those companies that error badly in the food safety arena