Food Traceability:
Important for Food Safety, Indispensable for Food Defense

What’s Traceability Got to Do with It?

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Presentation Outline

• Who is IFT?

• Food Traceability
  – Definition
  – Regulatory Environment
  – Industry Landscape

• Traceability Challenges
  – Globalization
  – Food Terrorism and Fraud Risks
  – Recent events

• Traceability Opportunities
  – Preparedness
  – Holistic Protection
  – Industry Benefits

• Conclusion
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Who is IFT?

- For more than 75 years, IFT has unlocked the potential of the food science community by creating a dynamic global forum where members from more than 100 countries can share, learn and grow.
Who is IFT?

Global Membership

- Japan: 19%
- Korea, Republic Of: 16%
- Australia: 11%
- Taiwan: 10%
- United Kingdom: 9%
- Spain: 7%
- Brazil: 6%
- Thailand: 6%
- Argentina: 5%
- Germany: 5%
- India: 5%
Who is IFT?

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Defining Traceability

Trace“ability”  T“race”ability  Traceabi“lity”
Defining Traceability

- “T“race”” “ability”

- Traceability is NOT just recall
  - How do you find points of convergence when much is unknown?

- A single company doesn’t have whole-chain traceability – but is a critical piece of the puzzle!
Defining Traceability

- Traceability is not about data, identifiers, bar codes, RFID, tags, and any information that needs to be linked together to make traceability possible.
  - These are all critical, but not sufficient

- Traceability is about systematic ability to access any or all information relating to a food under consideration, throughout its entire life cycle, by means of recorded identifications.
  - For this to happen, a traceability system must keep track of when the units (and the associated identifiers) are created, used, joined together, split up and finally disposed
Regulatory Environment

- Bioterrorism Act of 2002
  - Established recordkeeping requirements
    - Record shipment and receipt information
    - Capture incoming lot numbers as possible
    - Link ingredients to finished product to extent practical
    - Contact information for who it came from and went to
  - Exemptions at supply chain ends
  - “1 up / 1 down” redundant system
  - Form of recordkeeping not specified
Regulatory Environment

- **Food Safety Modernization Act (FSMA)**
  - Section 103: Hazard Analysis and Risk Based Preventive Controls
  - Section 105: Standards for Produce Safety
  - Section 106: Protection Against Intentional Adulteration
  - Section 204: Enhancing Tracing and Tracing
  - Section 301: Foreign Supplier Verification Program

- **Other Countries**
  - Canada
  - European Union
  - Australia and New Zealand
  - China
  - India
  - Others
Regulatory Environment

- Lack of unifying requirements
  - Changing regulatory demands around the world
  - Multiple proprietary requirements
  - Terminology
Industry Landscape

- Consumers are more vocal
  - Demand for rapid access to reliable and relevant information whenever they need it
Industry Landscape

- Lack of records
  - Data is simply not available, or is difficult to collect

- Is the data
  - Reliable?
  - Relevant?
  - Rapidly accessed?
Industry Landscape

- Lack of technology
  - Technology is not the problem but it can be a solution
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Challenges: Globalization

✓ Animal Agriculture
✓ Good Ag Practices
✓ Food Processing
✓ Storage & Distribution
✓ Transportation
✓ Domestic Regulations
✓ International Regs.
✓ Multiple Standards
✓ Varied Enforcement
✓ Differing Scientific Views
✓ Consumer Trends
✓ Changing Habits
✓ Health Drivers
✓ New Threats
✓ Media

Adapted from Wall. 2010
Challenges: Globalization

The Complexity of the Food System

Dig into this pizza and see why food traceability throughout the food system, from farm to fork, is critical to ensuring a safe and abundant food supply.

**Tomatoes**
While the U.S. produces the most tomatoes, Mexico accounts for 71% of tomato imports, and Canada accounts for 27%.

**Cheese**
14% of the raw buffalo milk used for mozzarella is made in Italy while 86% of buffalo milk is produced in Asia.

**Mushrooms**
China produces 47% of our mushrooms across the globe, followed by the U.S which produces only 11%.

**Spices**
11.5% of India’s spices are exported to United Arab Emirates, the U.S, the EU, and Malaysia.

**Peppers**
95% of unprocessed peppers are exported through India, China, and the U.S.

**Anchovies**
56% of our anchovies are produced in Peru, while pizza anchovies come from Argentina, Croatia, Spain, and Italy.

**Beef**
2.5 billion pounds of beef were exported this year to top markets like Canada, Japan, Mexico, South Korea, and Hong Kong.
Challenges: Increased Risks

- Increasing concern about health and safety risks in the global food supply chain due to:
  - Foodborne illness: high visibility cases of E.coli, Listeria, Salmonella, etc.
  - Higher number and visibility of recalls
  - Rise in fraudulent activities in the food chain and counterfeit products
  - More products coming from countries with lower health and safety standards
  - Higher risk of contamination or spoilage due to long, complex supply chains
  - Threat of terrorism

- Impact of above:
  - Economic loss from negative impact of recalls
  - Rising distrust of the food supply – Fragile consumer confidence
  - Demands for proof of food product claims
  - Increased demands for regulation and guidelines
  - Increased business costs to comply with regulations
Challenges: Increased Risks

What do you estimate the financial impact (sales losses, direct recall costs, etc.) to your company was a result of the recall?

- Less than $9M: 48%
- $10M to $29M: 29%
- $30M to $49M: 9%
- $50M to $99M: 9%
- Over $100M: 5%

Source: Grocery Manufacturers Association, 2011
### Challenges: “Recent” Events

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700 BC</td>
<td>Mesopotamia shepherds mark animals with colors</td>
</tr>
<tr>
<td>350 BC</td>
<td>Alexander the Great’s horse</td>
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<tr>
<td>7th century</td>
<td>China tattoos breed horses</td>
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<tr>
<td>1275</td>
<td>First documentation of diseased ewe (France)</td>
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<tr>
<td>1348</td>
<td>Link of animal welfare to human health</td>
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<tr>
<td>1556</td>
<td>Naples/Venice hire inspectors</td>
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<tr>
<td>17th century</td>
<td>Persian royal stables marks horses</td>
</tr>
<tr>
<td>1711</td>
<td>200M head of cattle perish in Europe</td>
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<tr>
<td>1714</td>
<td>France outlaws un-inspected meat</td>
</tr>
<tr>
<td>1740-90</td>
<td>Various decrees to protect health (UK)</td>
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<tr>
<td>1862</td>
<td>USDA formed – First labs of the future FDA</td>
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<tr>
<td>1875</td>
<td>Marking of live animals with tags</td>
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<tr>
<td>1904</td>
<td>Typhoid Mary Mallon (USA)</td>
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<tr>
<td>1960</td>
<td>HACCP developed with NASA</td>
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<tr>
<td>1999</td>
<td>Dioxin in animal feed (Belgium)</td>
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<tr>
<td>2002</td>
<td>General Food Law adopted in Europe</td>
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<tr>
<td>2003</td>
<td>BSE identified in Canadian beef herd</td>
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<tr>
<td>2005</td>
<td>Sudan1 colorant contamination (UK)</td>
</tr>
<tr>
<td>2009</td>
<td>Peanut Corporation of America</td>
</tr>
</tbody>
</table>
Challenges: Recent Events
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1. **Germany**
   - Hypermarket chain Real recalled lasagne products after tests showed traces of horsemeat. Another chain Tengelmann said it had withdrawn a lasagne product after finding suspected horsemeat.

2. **UK**
   - Tests found horsemeat in school meals, hospital food and restaurant dishes, spreading the scandal of adulterated meat beyond supermarket products.

3. **Ireland**
   - Simon Coveney, Ireland's agriculture minister, said he was '110% certain' of the veracity of Irish test results showing horsemeat present in Polish offcuts of beef.

4. **France**
   - Six supermarket chains have withdrawn frozen beef meals made by Findus and Comigel.

5. **Sweden**
   - Supermarket chains ICA, Coop and Axfod all confirmed their lasagne products contained horsemeat.

6. **Norway**
   - Findus ready meals thought to contain horsemeat have been pulled from supermarket shelves.

7. **Switzerland**
   - Supermarket chain Coop has found horsemeat in its own-brand lasagne.

8. **Netherlands**
   - Supermarket chains Albert Heijn, Plus, Coop and C1000 all pulled tainted products.

9. **Spain**
   - A consumer association said it had found horsemeat DNA in hamburgers sold in Eroski and Ahorraramas supermarkets. Ahorraramas pulled the product while Eroski denied the claim.

10. **Austria**
    - Austria pulled beef tortelloni sold by discount chain Lidl off the shelves after horsemeat discovered.

11. **Belgium**
    - French frozen foods retailer Picard said it had been sold in Belgium and had been withdrawn earlier in the week.

*Source: FT research*
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Opportunities: Preparedness

- Food Protection
  - Holistic approach
- Food Defense
  - Intentional contamination
- Food Safety
  - Unintentional contamination
- Food Security
  - Accessibility and availability
Opportunities: Preparedness

- Causality
- Trust
- Visibility
- Agility

Prevention
Preparedness
Food Safety and Defense
Response
Recovery
Opportunities: Holistic Protection

Traceability as an essential component of long term industry/business viability

**Improved Public Safety**
- Food fraud
- Food quality & safety - Nutrition
- Animal / Plant disease management
- Bio-threats & terrorism
- Consumer confidence

**Increased Competitiveness**
- Productivity – on the farm, through processing, to final point of sale
- Innovation – new technology & business processes to deliver competitive advantage
- Brand equity and image management

**International Trade – Market Access**
- Secure and increase access to key markets and customers
- Sectors dependent on trade and new markets – Diversification
- Consumer expectations and regulatory requirements

**Risk Mitigation & Lower Costs**
- Reduce cost of quarantine/recall
- Absolve unaffected businesses
- Accurately track product movement to isolate and quickly resolve issues
- Reduce waste
Opportunities: Holistic Protection

“Traceability is Free”

Industry Competitiveness

Whole-chain Productivity

Compliance

Quality

Safety and Defense

Applications beyond Traceability

Value Chain (System) Traceability

Limited (one up/one down) Traceability

Internal (Enterprise-wide) Traceability

Internal (Individual) Traceability

"Traceability is Free"
Opportunities: Industry

- Significantly lower costs of business
  - Reduce the time to trace suspected products
  - Correctly identify affected products and companies
  - Reduce the scope of recall or withdrawal
  - Decrease risk & liability – lower insurance costs
  - Reduce potential fraud and counterfeit products
Opportunities: Industry

- Ease compliance with global regulations
- Improved recall process – Lower costs
- Greater inventory visibility – Faster order-to-cash
- More timely and accurate upstream and downstream data – Reduced working capital
- Improved returns process – Reduced risk
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Conclusion: Five Lessons Learned

1. Traceability means increased liability  
   - Traceability reduces risk exposure & liability

2. Traceability means lost confidentiality  
   - Traceability means increased transparency

3. The ‘cost of traceability’ is high  
   - Traceability is free – it reduces other costs

4. Traceability is only of value for regulators  
   - The business value of traceability is higher

5. Traceability is the responsibility of IT  
   - Traceability is a business opportunity
Conclusion: Traceability is a Global Challenge

Local Solutions