Are Product Recalls Insurable in the Netherlands Dairy Supply Chain?

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Are product recalls insurable in the Netherlands dairy supply chain?

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AAEA, 22 July 2006
Background

- General Food Law
  - Traceability
  - Transparency
  - Recalls
- Recall insurance
Objectives (1)

Loss prevention
Product recall
Insurance ?
Objectives (2)

- Perils, losses, scope of losses
- Proper rules of behavior
- Risk assessment
- Third-party verifiability of due diligence
Perils & losses

- Perils
  - Food safety
  - Quality
  - Image

- Scope of losses
  - Non-conforming products or batch(es)
  - Suspected products or batch(es)

- Type of losses
  - Decreased value of product
  - Business interruption
  - Liability losses
Precautionary action points (1)

- Food safety
- Chemical & micro-biological
- Feed, farm & processing
- 85 action points
- Adaptive conjoint analysis
- 22 experts
Precautionary action points (2)

<table>
<thead>
<tr>
<th></th>
<th>Importance of top-five action points</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEED</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>31 %</td>
</tr>
<tr>
<td>Microbiological</td>
<td>31 %</td>
</tr>
<tr>
<td>FARM</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>47 %</td>
</tr>
<tr>
<td>Microbiological</td>
<td>21 %</td>
</tr>
<tr>
<td>DAIRY PROCESSING</td>
<td></td>
</tr>
<tr>
<td>Chemical</td>
<td>78 %</td>
</tr>
<tr>
<td>Microbiological</td>
<td>28 %</td>
</tr>
</tbody>
</table>
## Risk assessment (1)

<table>
<thead>
<tr>
<th></th>
<th>Batch (1000 kg)</th>
<th>Time (hours)</th>
<th>Product Euro/kg</th>
<th>Handling (Euro/kg)</th>
<th>Notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy farm (storage raw milk)</td>
<td>5</td>
<td>36</td>
<td>0.31</td>
<td>0.15</td>
<td>-</td>
</tr>
<tr>
<td>Dairy industry (collection raw milk)</td>
<td>20</td>
<td>3</td>
<td>0.32</td>
<td>0.15</td>
<td>-</td>
</tr>
<tr>
<td>Dairy industry (storage raw milk)</td>
<td>150</td>
<td>10</td>
<td>0.34</td>
<td>0.15</td>
<td>-</td>
</tr>
<tr>
<td>Retail (processed milk)</td>
<td>-</td>
<td>12</td>
<td>0.69</td>
<td>0.20</td>
<td>75,000</td>
</tr>
</tbody>
</table>
Risk assessment (2)

- 1 day of feed production = 30 dairy farms
- 4 collection vehicles = 2 storage tanks
- 1 package at retail level = 2 storage tanks
- Retail removes *specific* batches
<table>
<thead>
<tr>
<th>Risk assessment (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Recall expenses</td>
</tr>
<tr>
<td>(1,000 Euro)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>400 ton of contaminated feed, recall is announced 1 day after delivery</td>
</tr>
<tr>
<td>Recall expenses</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>400 ton of contaminated feed, recall is announced 3 days after delivery</td>
</tr>
<tr>
<td>Recall expenses</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
A retailer finds a can of contaminated milk, produced 2 days ago. The source of contamination cannot be readily detected.

<table>
<thead>
<tr>
<th>Source</th>
<th>Recall expenses (1,000 Euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,455 (processed milk)</td>
<td>1,455 (processed milk) = 63%</td>
</tr>
<tr>
<td>58 (raw milk)</td>
<td>58 (raw milk) = 3%</td>
</tr>
<tr>
<td>800 (feed)</td>
<td>800 (feed) = 34%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,313 (total)</strong></td>
</tr>
</tbody>
</table>
Third-party verifiability of due diligence (1)

- An example .... To avoid the risk of crossing red traffic lights:
  - Precautionary action point = brakes
  - Relevant control measure = brakes in working order
  - Due diligence = regular checks on the good condition of the brakes
  - Verifiable due diligence = validity of checks & registration of results

- PROPER application of ADEQUATE measure & OBJECTIVE proof that proper application is ensured
<table>
<thead>
<tr>
<th>Sector</th>
<th>Chemical</th>
<th>Microbiological</th>
<th>Fully/Partly/Not</th>
<th>Fully/Partly/Not</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEED</td>
<td>Chemical</td>
<td>Microbiological</td>
<td>Fully</td>
<td>Fully</td>
</tr>
<tr>
<td>FARM</td>
<td>Chemical</td>
<td>Microbiological</td>
<td>Partly/Fully</td>
<td>Not/Partly/Fully</td>
</tr>
<tr>
<td>DAIRY PROCESSING</td>
<td>Chemical</td>
<td>Microbiological</td>
<td>Fully</td>
<td>Fully</td>
</tr>
</tbody>
</table>
Conclusions

- Perils, losses, scope of losses
- Proper rules of behavior
- Risk assessment
- Third-party verifiability of due diligence

Product recall insurance is feasible
IF well-defined & limited in scope
& with proper incentives for risk prevention
Discussion

- Food-related chain **liability** issues
  - Similar issues
  - Alternative insurance solutions?

<table>
<thead>
<tr>
<th></th>
<th>Million Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPA 2002</td>
<td></td>
</tr>
<tr>
<td>(&gt; 95 feed companies, &gt; 600 pig farms)</td>
<td></td>
</tr>
<tr>
<td>Losses</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>Claims 2006</td>
<td>7.1 + 1? + 33? + ?</td>
</tr>
<tr>
<td>Indemnification 2006</td>
<td>3</td>
</tr>
</tbody>
</table>
Miranda Meuwissen has a background in economics & risk management (livestock insurance, food safety issues, eu-project on risk management). She is currently working for IRMA (Institute for Risk Management in Agriculture) & Business Economics, both at Wageningen University, The Netherlands. Email address is miranda.meuwissen@wur.nl.
Industry perspectives on incentives for food safety innovation
Continuous food safety innovation as a management strategy
   Dave Theno, Jack in the Box, US
Economic incentives for food safety in the fresh-cut produce supply chain
   Susan Ajeska, Fresh Express, US
Innovative food safety training systems
   Gary Fread, Guelph Food Technology Centre, Canada

Organizational and technological food safety innovations
Is co-regulation more efficient and effective in supplying safer food?
   Marian Garcia, Dept. of Agricultural Sciences, Imperial College London
Andrew Fearne, Centre for Supply Chain Research, University of Kent, UK
Chain level dairy innovation and changes in expected recall costs
   Annet Velthuis, Cyriel van Erve, Miranda Meuwissen, & Ruud Huirne
Business Economics & Institute for Risk Management in Agriculture, Wageningen University, the Netherlands
### Regulatory food safety innovations

Prioritization of foodborne pathogens  
Marie-Josée Mangen, J. Kemmeren, Y. van Duynhoven, A.H. and Havelaar, National Institute for Public Health & Environment (RIVM), the Netherlands

Risk-based inspection: US Hazard Coefficients for meat and poultry  
Don Anderson, Food Safety and Inspection Service, USDA

UK HAS scores and impact on economic incentives  
Wenjing Shang and Neal H. Hooker, Department of Agricultural, Environmental & Development Economics, Ohio State University

### Private market mechanisms and food safety insurance

Sweden’s decade of success with private insurance for *Salmonella* in broilers  
Tanya Roberts, ERS, USDA and Hans Andersson, SLU, Sweden

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Miranda Meuwissen, Natasha Valeeva, Annet Velthuis & Ruud Huirne, Institute for Risk Management in Agriculture; Business Economics & Animal Sciences Group, Wageningen University, the Netherlands

Recapturing value from food safety certification: incentives and firm strategy  
Suzanne Thornsbury, Mollie Woods and Kellie Raper, Department of Agricultural Economics, Michigan State University
Applications evaluating innovation and incentives for food safety

Impact of new US food safety standards on produce exporters in northern Mexico
Belem Avendaño, Department of Economics, Universidad Autónoma de Baja California, Mexico and Linda Calvin, ERS, USDA

EU food safety standards and impact on Kenyan exports of green beans and fish
Julius Okello, University of Nairobi, Kenya

Danish *Salmonella* control: benefits, costs, and distributional impacts
Lill Andersen, Food and Resource Economics Institute, and Tove Christensen, Royal Danish Veterinary and Agricultural University, Denmark

Wrap up panel discussion of conference
FSN section rep. – Tanya Roberts, ERS, USDA
AEM section rep. – Randy Westgren, University of Illinois
INT section rep. – Julie Caswell, University of Massachusetts
FAMPS section rep. – Jean Kinsey, University of Minnesota
Discussion of everyone attending conference

Note: speaker is either the 1st person named or the person underlined.

Thanks to RTI International for co-sponsoring the workshop.
Workshop objectives
- Analyze how new public policies and private strategies are changing economic incentives for food safety,
- Showcase frontier research and the array of new analytical tools and methods that economists are applying to food safety research questions,
- Evaluate the economic impact of new food safety public policies and private strategies on the national and international marketplace,
- Demonstrate how new public policies and private strategies in one country can force technological change and influence markets and regulations in other countries, &
- Encourage cross-fertilization of ideas between the four sponsoring sections.

Workshop organizing committee
Tanya Roberts, ERS/USDA, Washington, DC - Chair
Julie Caswell, University of Massachusetts, MA
Helen Jensen, Iowa State University, IA
Drew Starbird, Santa Clara University, CA
Ruud Huirne, Wageningen University, the Netherlands
Andrew Fearne, University of Kent, UK
Mogens Lund, FOI, Denmark
Mary Muth, Research Triangle Institute Foundation, NC
Jayson Lusk, Oklahoma State University, OK
Randy Westgren, University of Illinois, IL
Darren Hudson, Mississippi State University, MI