



# Emerging Food Safety Risks: New Developments

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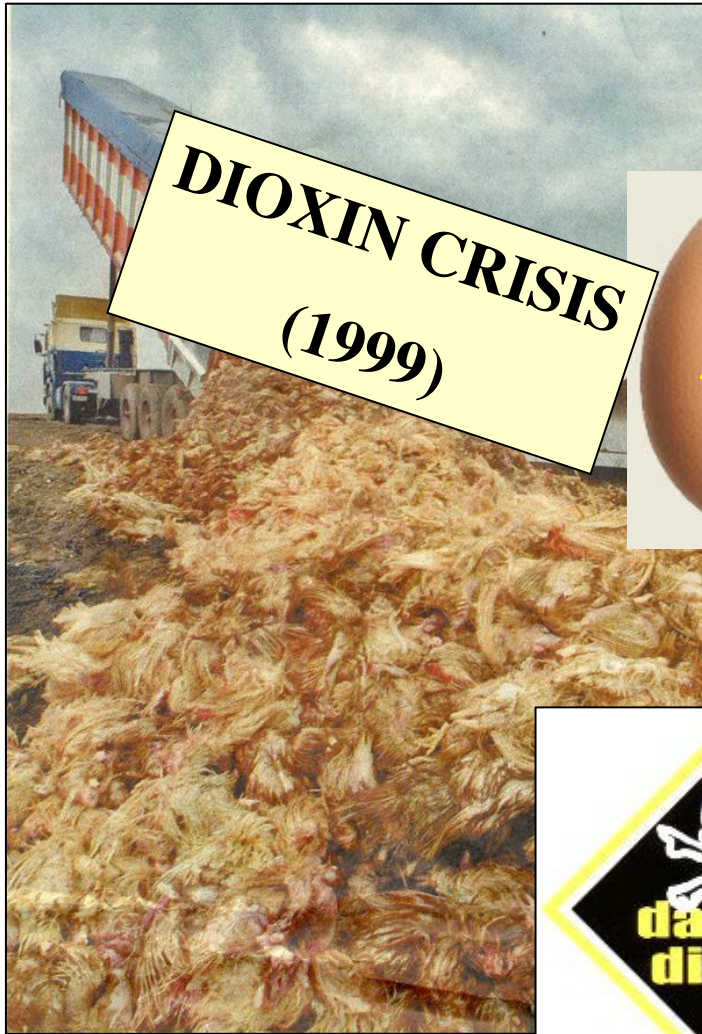
The Netherlands



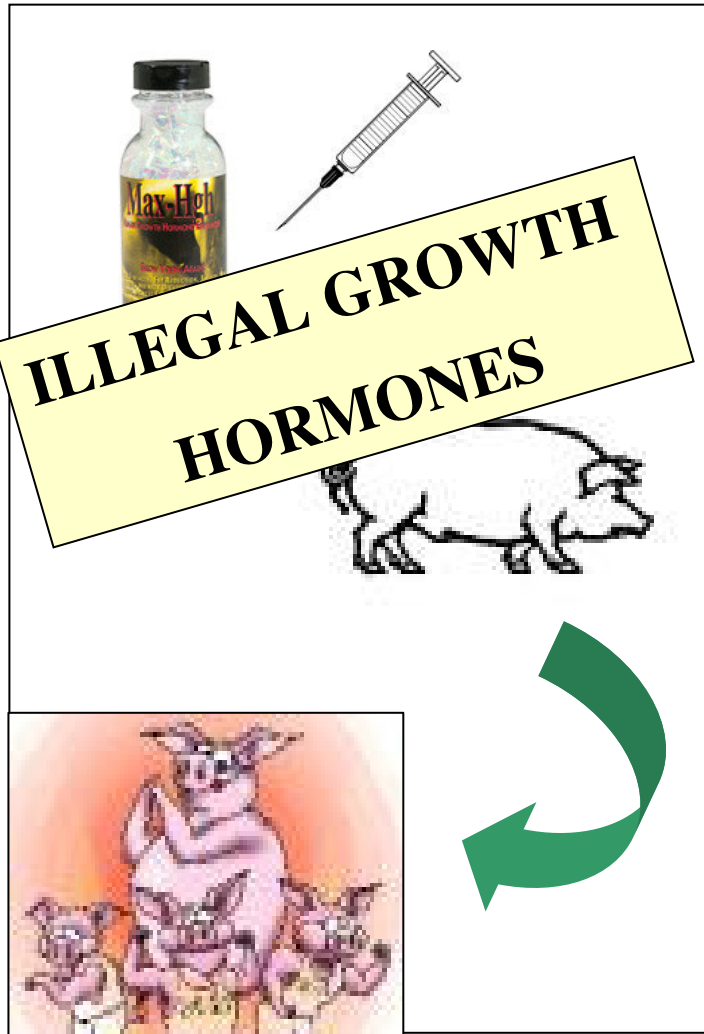
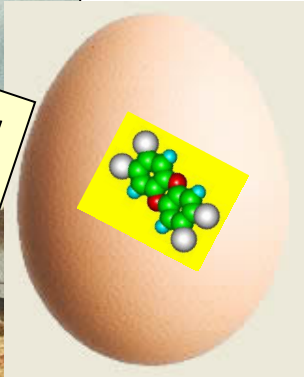
# Outline of the presentation

- Food safety crises in Europe
- Food Safety Authorities (EU, The Netherlands)
- Emerging risk definitions
- Emerging risk identification: a holistic approach

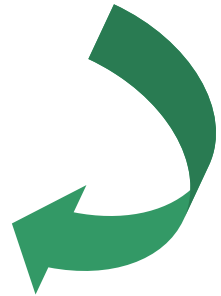
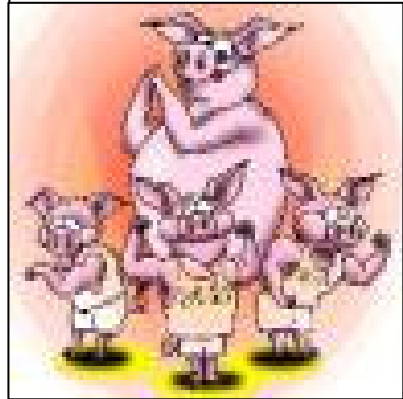




**DIOXIN CRISIS  
(1999)**



**ILLEGAL GROWTH  
HORMONES**



## The Puztai Potato



Illustration: L

Introduction of GMO's  
in the European food chain



Friends of the Earth



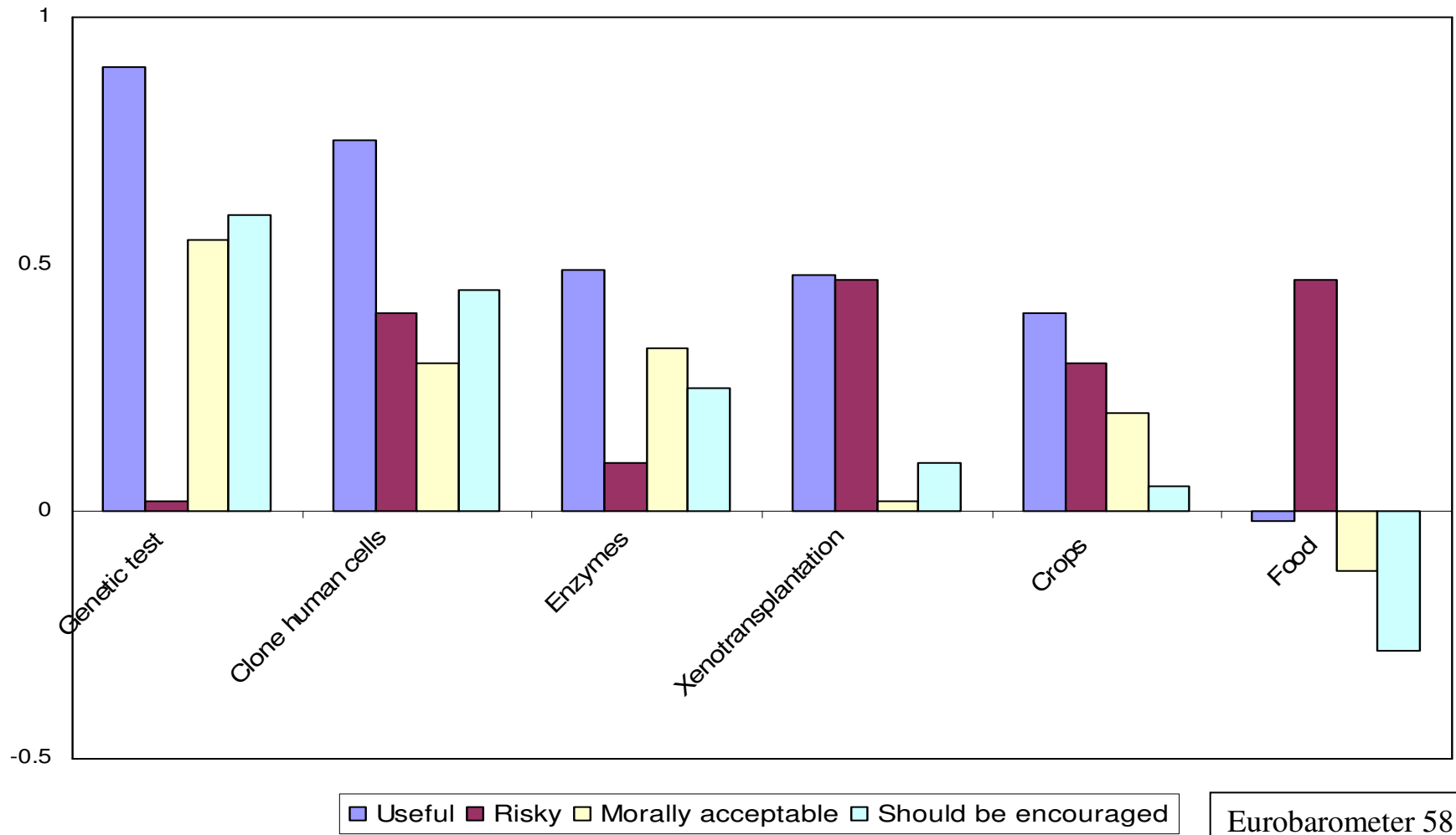
## Frankenstein Food



Greenpeace



# European attitudes to six applications of biotechnology in 2002



# Food Safety & Risk Assessment

- Broad public concern about the safety of the European food supply
- BSE, dioxin, *E. coli* 0157, GM food crops...
- Low public trust in how food crises were handled
- Low trust in the regulatory system in Europe



# The European Commission reacted

- EU White Paper on Food Safety (COM (1999), 719 final)



- General Food Law (Regulation 178/2002)



- Establishment of the European Food Safety Authority (EFSA) in 2002, <http://www.efsa.eu.int>



EFSA | European Food Safety Authority - Microsoft Internet Explorer

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Adres [http://www.efsa.eu.int/about\\_efsa/catindex\\_en.html](http://www.efsa.eu.int/about_efsa/catindex_en.html) Ga naar Links

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# European Food Safety Authority

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## Moving towards full strength

Last updated: 14 April 2005

**Following a series** of food scares in the 1990s (eg BSE, dioxins...) which undermined consumer confidence in the safety of the food chain, the European Union concluded that it needed to establish a new scientific body charged with providing independent and objective advice on food safety issues associated with the food chain. Its primary objective as set out in the White Paper on Food Safety would be to: "...contribute to a high level of consumer health protection in the area of food safety, through which consumer confidence can be restored and maintained." The result was the European Food Safety Authority (EFSA).



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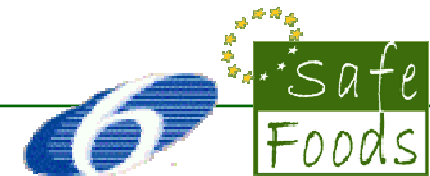
**27 September 2005**  
**Call for expressions of interest for the position of member of the Management Board of the European Food safety Authority - Partial renewal of the Management Board of the European Food Safety Authority**

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# Tasks of EFSA

- Risk assessment



- Risk communication



- *NOT* Risk management!



# In many EU members states Food Safety Authorities were established; also in The Netherlands



**Ministry of Agriculture, Nature  
and Food Quality (LNV)  
(Ministry of Health, Welfare  
and Sport )**

**Food and Consumer Product  
Safety Authority (VWA)**

**KvW**

**Inspectorate for Health Protection  
and Veterinary Public Health**

**RVV**

**National Inspection Service for  
Livestock and Meat**



# Food Authorities reaction

*“To decrease the number of food safety crises it is important to detect the problem in an very early stage, preferably before it develops”*

Available tools:

- Monitoring systems
- Rapid Alerts:
  - EU: RASFF
  - WHO: INFOSAN



# Overview of early warning systems

## ■ Overview of early warning systems (reactive)

- European Rapid Alert System on Food and Feed (RASFF)
- European Centre for Disease Prevention and Control (ECDC)
- Center for Disease control (CDC, USA)
- WHO early warning activities
  - Global Public Health Intelligence Network (GPHIN)
- ...



Source: SAFE FOODS; to be published



# Overview of early warning systems

- **Predictive early warning: emerging risk systems**
  - Early warning systems for mycotoxin in maize and / or wheat
  - Trend analysis using information of early warning systems (e.g. RASFF)
  - Holistic approach 

Source: SAFE FOODS; to be published



# Emerging Risk Projects

Some projects aim to develop new tools for the early detection of emerging risks (with involvement of RIKILT)

- EU 6th FP: PERIAPT
- EU 6th FP: SAFE FOODS; Workpackage 2
- EFSA: EMRISK
- Dutch project: Emerging Risks in the Dutch Food Chain

Holistic approach: look at influences inside *and* outside the food chain



# Some definitions

## Emerging Risk:

***A potential food or feed borne or diet-related hazard that may become a risk for human health in the (near) future.***

Emerging Risks can result from three different types of hazards such as:

- Type 1: Unidentified new form of hazard (e.g. Avian influenza)
- Type 2: Not well-known, unclear, hazard (e.g. acrylamide, BSE, endocrine disrupter)
- Type 3: Well known re-emerging hazard: (e.g. *Brucellosis*)

Excluded are:

- The well-characterised hazards that are presently controlled



## Emerging Risk identification:

***A system or procedure aimed at proactively identifying and preventing a potential hazard from becoming a risk.***

Characteristics:

- Anticipatory systems instead of responsive systems (e.g. increase or decrease of an indicator (see host environment analysis))
- Different from rapid alert systems (e.g. RASFF)
- Preventive measure

The system/procedure and/or network has three components, each fulfilling different tasks:

- Exploration of new/changing risk fields (type 1)
- Characterisation and assessment of unclear risks (type 2)
- Determination of situational changes in known risks (type 3)



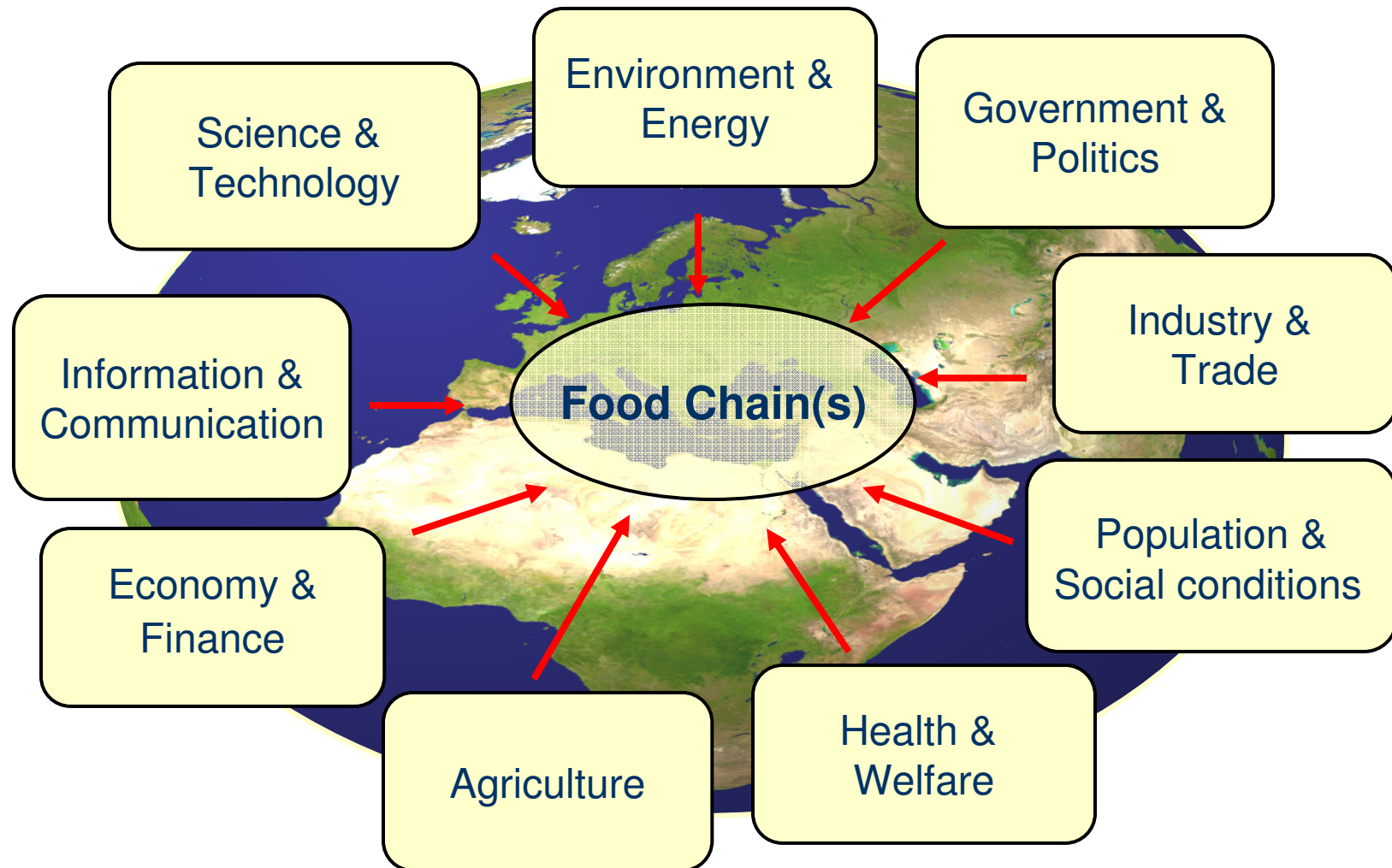
# Holistic approach



## Indicator

A (provisionally) signal that indicates (directly or indirectly) the (possibility of) occurrence of a type 1, 2 or 3 emerging risk

# Examples of Influential Sectors



Source: Wim Ooms VWA, 2006

## Questions to identify what key information was or would have been of vital importance

- Were there any indicators that could have predicted the emerging risks at stake and, how can the emerging risks be identified in the future?
- Did the observed risks correspond to a previous assessment?
- What did we fear, and what did we know?
- Were there crosscutting sectoral warning signals received?
- What information was needed to spot the problem?
- Were there any unexpected aspects of vulnerability?
- Which trends contributed to creating the evolution of the risk or systemic vulnerability? what was the impact of the problem on the public?
- What role(s) did the stakeholders play?
- What actions undertook industry and risk management to mitigate the problem?



# Key information

To determine the indicators (first influential sector) for emerging food safety risks, case studies have been performed on recent food safety crises.

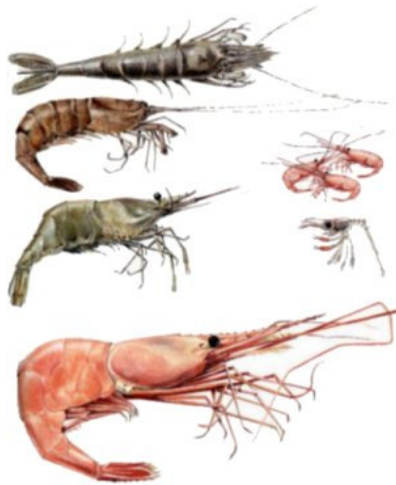
Examples (from different projects):

- Use of botanicals/ herbs in Food and Feed
  - Renal disease after Chinese slimming pills in Belgium
  - Intoxication by consumption of star anise tea
- BSE
- Antibiotics in cultured shrimp
- Acrylamide
- Perfluorinated contaminants in fish
- PCB's/ dioxines and organochlor pesticides in fish
- Dioxine in pork meat
- VTEC Escherichia coli
- ...



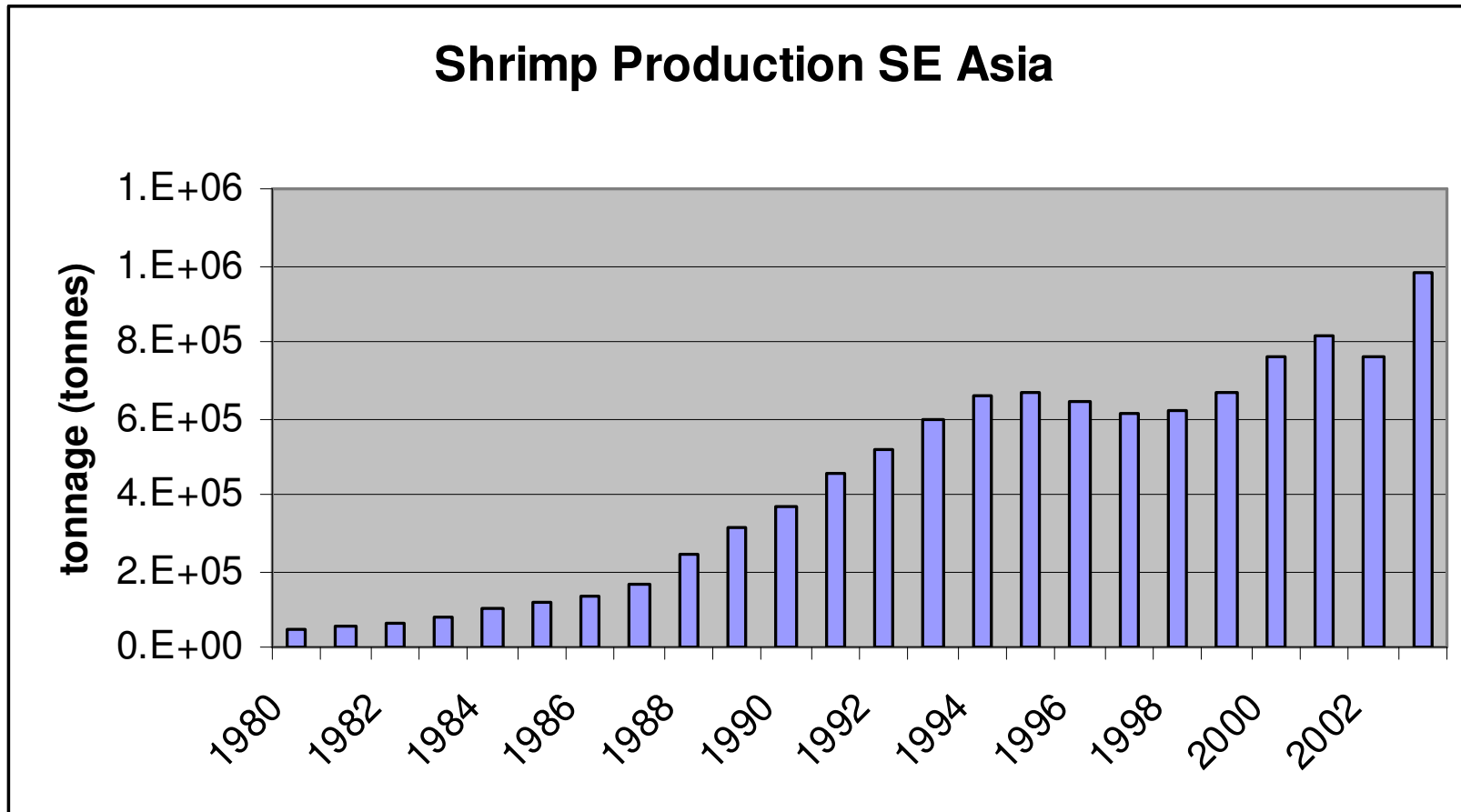
# A case study

- Antibiotics in cultured shrimp  
(an example)



Source: "Inventory of possible emerging hazards to food safety and an analysis of critical factors" (to be published 2006) by G.A Kleter, M. Poelman, M.J. Groot and H.J.P. Marvin

# Increased demand in Europe for fishery products; increased production in SE Asia



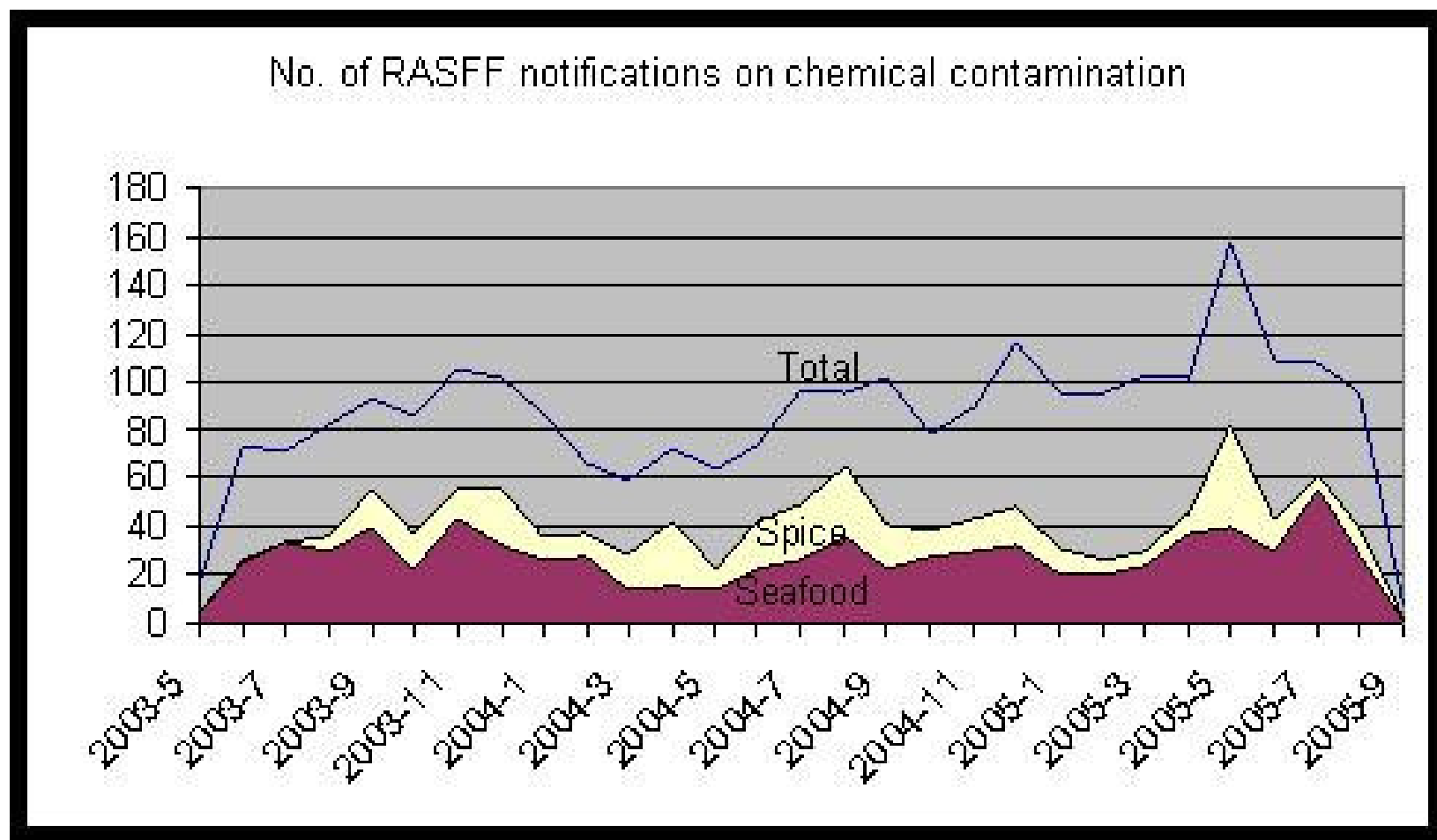
# Problems occurring

Increased production associated with intensification of aquaculture

- Increase disease pressure
- Increase use of antibiotics (CAP and nitrofurans)
- No MRL existed for these compounds
- EU; zero tolerance
- Increased control



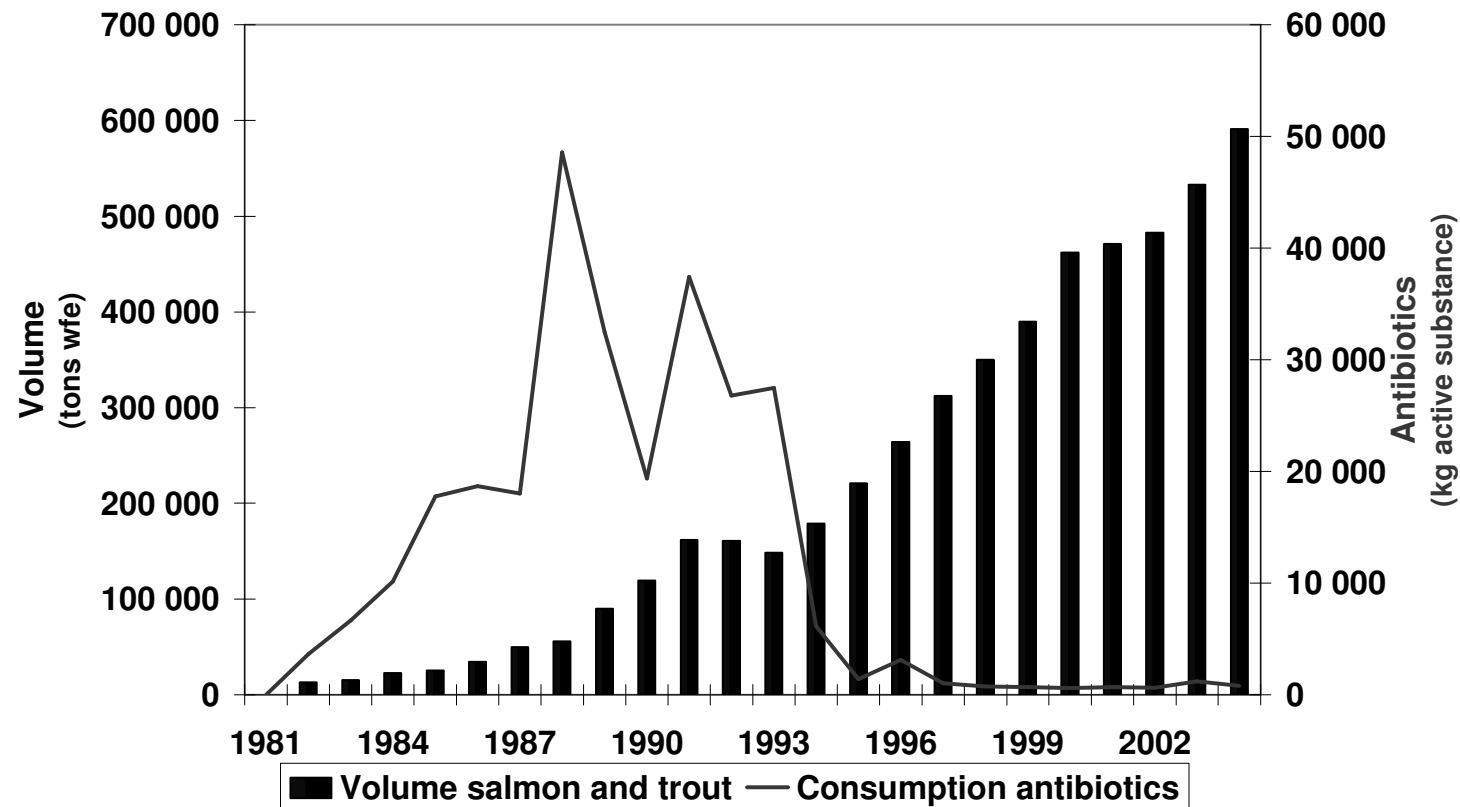
# Monthly notifications of chemical contamination in RASFF



Source: Consumer health hazards in international food trade; Thom Achterbosch 2005



# Another case: Use of antibiotics in Norway set off against the volume of farmed salmon and trout



Source: van der Roest et al. 2007



## Example of holistic analysis

- Increased production → increased disease pressure → antibiotic use → risk. **Indicator:** increased production. **Source:** FAO, EUROSTAT
- Increased small scale production → lack of knowledge → misuse → risk. **Indicator:** increased small scale production; **Source:** FAO
- More resistant strains → other antibiotics → new risk. **Indicator:** more resistant strains; **Source:** science programs
- Lack of international harmonised legislation → zero tolerance → risk.



# Emerging risk systems: Holistic approach

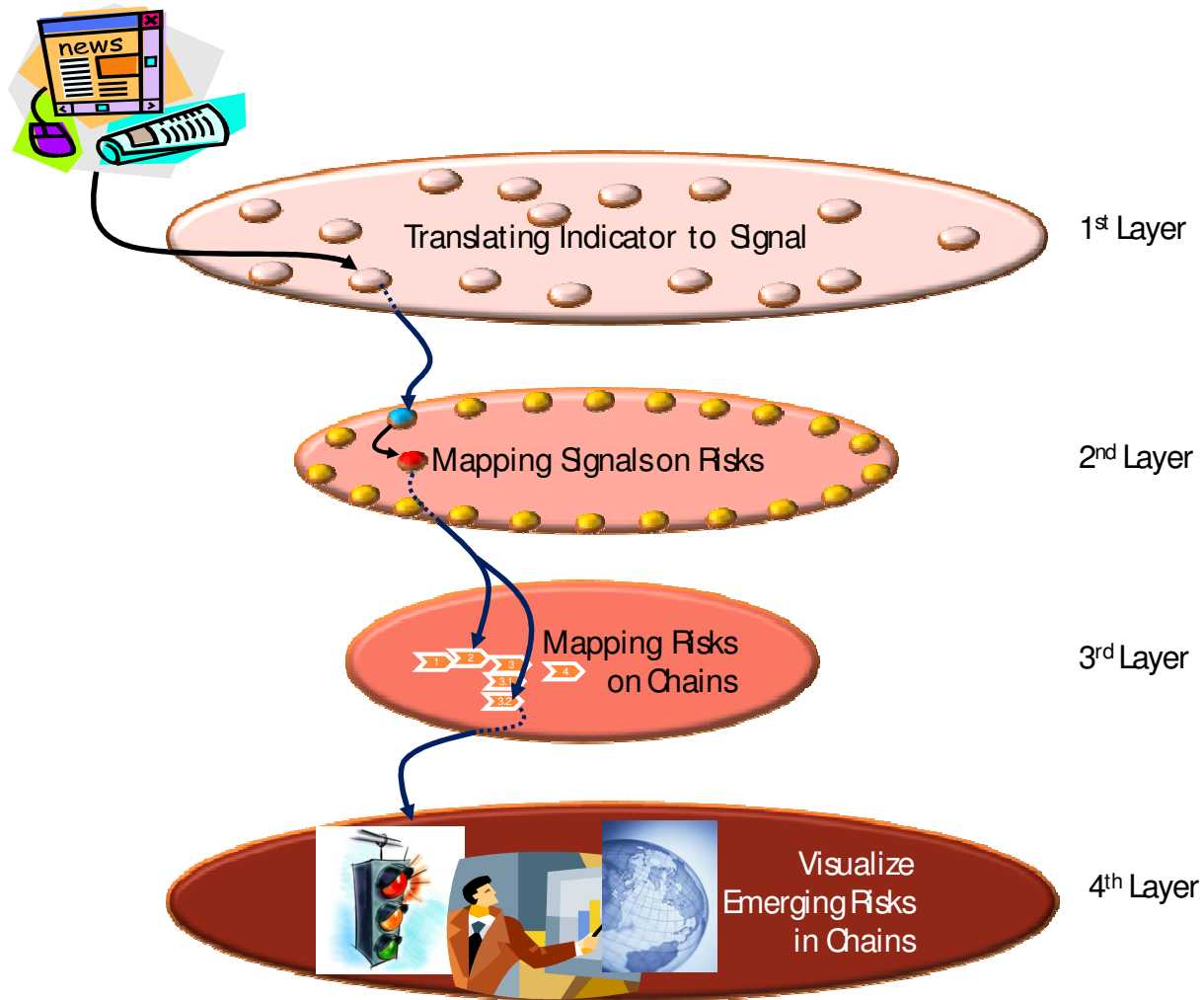
## Conclusions of the case studies

In every case study influential sectors were identified

- Most frequent influential sectors were:
  - Science and technology
  - Human behavior
  - Nature and environment
  - Legislation & economy
- Many indicators were identified, generic and case-specific
- Emerging risk systems based on holistic principle seem promising but need much more research



# Proposed 4-layer system for Emerging Risk Detection



Source: Hulzebos et al. 2007

## Further questions to be answered

- What is the quality of the data sources?
- Is there a quantitative relationship between indicator(s) (data source) and the emerging risk?
- Can we make a generic method / procedure to identify emerging risks in the food and feed chain based on the indicators?



safe

**Thank you for your attention**

Foods

