



# **Food Safety:- Media based or Risk Based controls?**

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**Why do we not treat equal risks to public health in society with equal attention?**

**How do we rank threats to public health and prioritise interventions?**

**How do we spend resources to maximise health gain?**



Are we consistent in how we  
address risks along the food  
chain?

**Consumer Confidence**

**Regulations**

**Science**

**Politics**

**Public Health**

**Trade £££**

**Food Safety**



# Food Safety Challenges posed by:-

- International trade ++++
- Tourism and travel
- Climate change
- Industrialisation of food industry/intensification of farming
- Increasing sensitivity of laboratory analysis
- Balance Benefits v Risks
- Consumer anxiety
- Obesity
- Food handler training:- **“Your health is their hands”**
- Competition between food and energy crops
- Risk associated with new technologies eg Nano
- Bioterrorism

# Food Supply Chain...





# International Trade



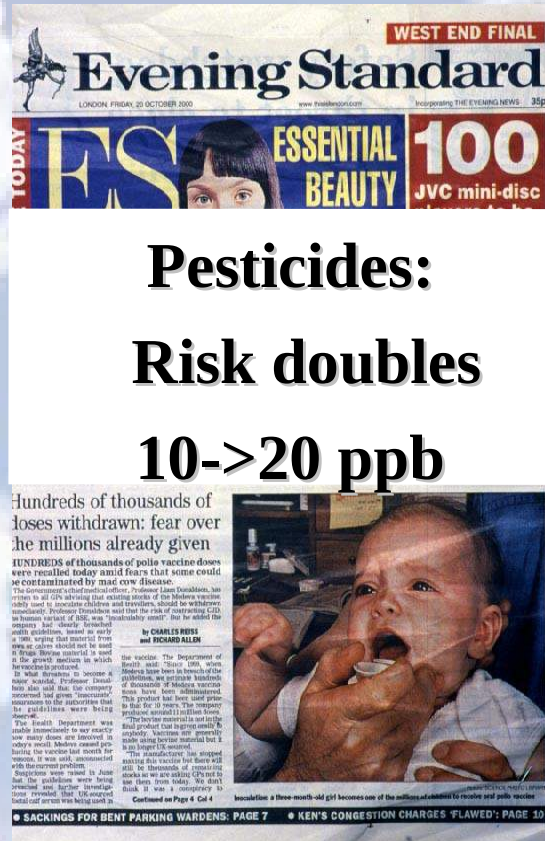
In a Few Hours

# Evidence based policies??

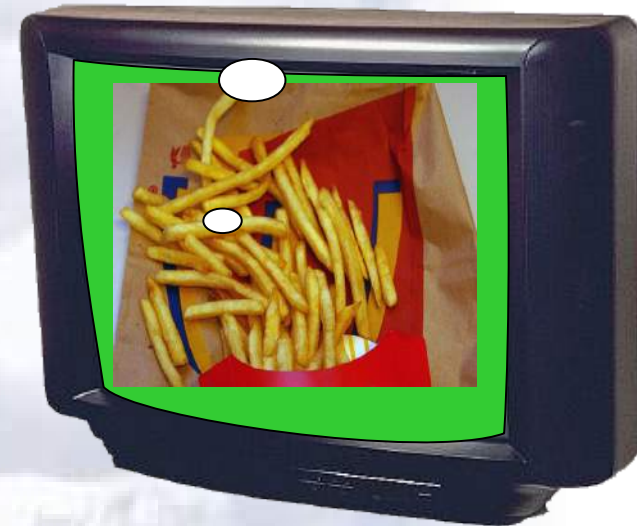
“Genotoxin  
In Chilli”



**Pesticides:  
Risk doubles  
10->20 ppb**



**Carcinogenic  
Acrylamide  
in Chips**



**Often the political and policy response is in proportion to the media interest rather than in proportion to the risk to public health**



**TECHNOLOGY: CAN MACHINES THINK?    SARAJEVO: ONE FAMILY'S ORDEAL**

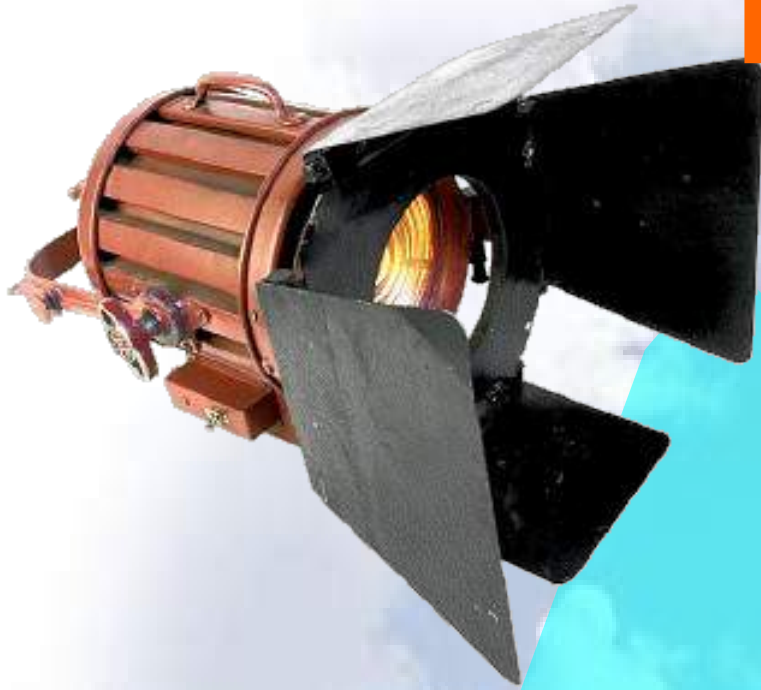
# CAN THIS COW KILL YOU?

**The mishandling of British beef may have caused a rare, fatal brain disease in humans. Is there still a risk?**



APRIL 1994

# BSE Was the Switch



# The U.K. BSE Inquiry



Return to an Order of the Honourable the House of Commons dated October 2000 for the

Report, evidence and supporting papers of the Inquiry into the emergence and identification of Bovine Spongiform Encephalopathy (BSE) and variant Creutzfeldt-Jakob Disease (vCJD) and the action taken in response to it up to 20 March 1996

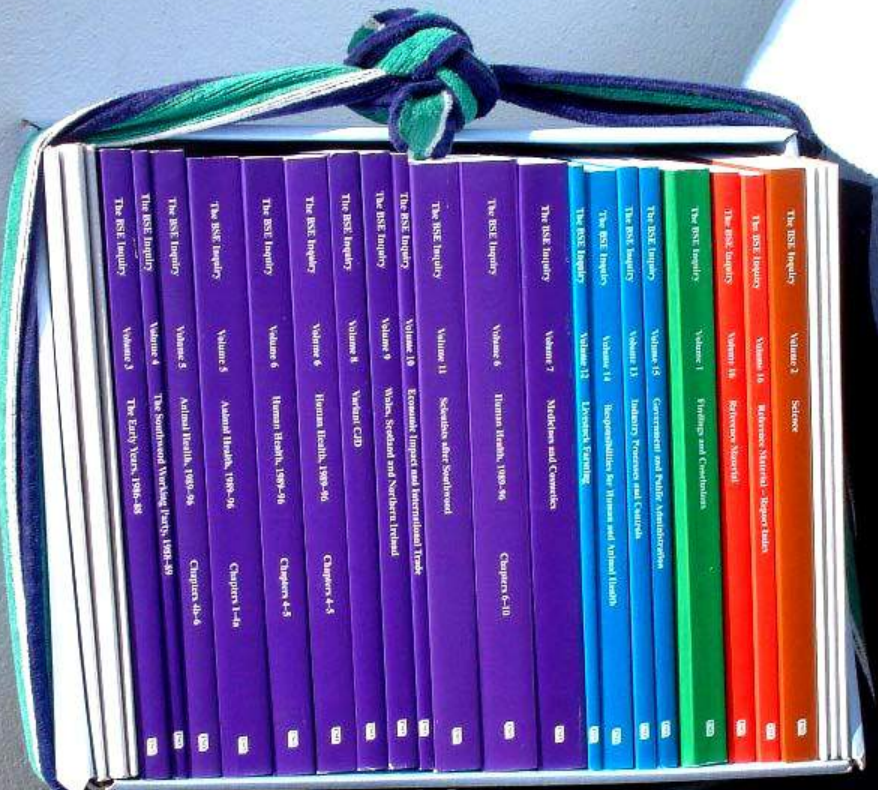
The  
**BSE**  
Inquiry

Volume 1

## Findings and Conclusions

Lord Phillips of Worth Matravers  
Mrs June Bridgeman CB  
Professor Malcolm Ferguson-Smith FRS





The Best Inquiry Volume 2 Science 001

The Best Inquiry Volume 10 Medicine (Mental) - Report Index 001

The Best Inquiry Volume 16 Reference Material 001

The Best Inquiry Volume 1 Earlyling and Communication 001

The Best Inquiry Volume 15 Government and Public Administration 001

The Best Inquiry Volume 13 Industry Processes and Controls 001

The Best Inquiry Volume 14 Investigation for Human and Animal Health 001

The Best Inquiry Volume 12 Laboratory Reporting 001

The Best Inquiry Volume 7 Medicine and Genetics 001

The Best Inquiry Volume 6 Human Health, 1985-90 Chapters 5-10 001

The Best Inquiry Volume 11 Selection after Southwood 001

The Best Inquiry Volume 10 Economic Impact and International Trade 001

The Best Inquiry Volume 9 Wales, Scotland and Northern Ireland 001

The Best Inquiry Volume 8 Variant CJD 001

The Best Inquiry Volume 6 Human Health, 1985-90 Chapters 4-5 001

The Best Inquiry Volume 6 Human Health, 1985-90 Chapters 1-3 001

The Best Inquiry Volume 5 Animal Health, 1985-90 Chapters 1-4 001

The Best Inquiry Volume 5 Animal Health, 1985-90 Chapters 1-4 001

The Best Inquiry Volume 4 The Southwood Working Party, 1985-90 Chapters 1-4 001

The Best Inquiry Volume 3 The Early Years, 1985-90 Chapters 1-4 001

# How people process and internalise risk?

**Write a  
Science  
Fiction  
Best Seller**

- Involuntary
- Catastrophic outcome-Dread factor
- Disproportionate affect on children
- Inevitably fatal consequences
- Scientific uncertainty
- Government miss-management

Slovic 1989

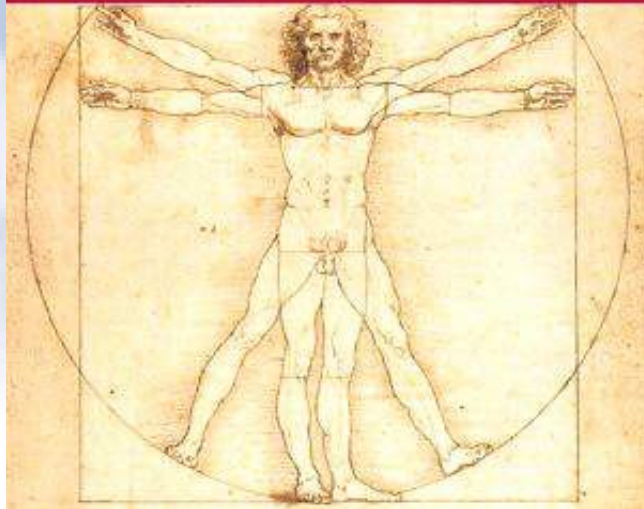
**Nuclear power**



THE TRUTH BEHIND THE NEW YORK TIMES #1 BESTSELLER

# **SPONGIFORM ENCEPHALOPATHY**

**By  
Patrick Wall**



A photograph of a sheep standing in a grassy field next to a large white bag. The bag is resting on a wooden pallet and has the text "Meat & Bone Meal" written on it in blue, italicized font. The sheep is white with a thick, curly coat. In the background, there is a wooden fence and more grass. The scene is brightly lit, suggesting a sunny day.

***Meat &  
Bone Meal***

**There is no evidence....**

**In the mid 90s BSE displaced  
HIV/AIDS as the major Public  
Health threat in the EU media**

**HIV/AIDS never regained its  
high profile media position  
although it remains a major  
public health issue**

# Risk and Research Funding?



**Confused Risk Managers &  
Frightened Consumers**

**Safe**

**Dangerous**

# **Dioxin Crisis Belgium 1999**

**Contaminated animal feed**

**No traceability**

**Initial Government cover up**

➤ **Confidence in all Belgian food collapsed**

**Minister for Health & Minister for  
Agriculture resigned**

➤ **Entire Government fell**

**Cost Belgian food industry 1.5 billion euros**

**US banned food lines from entire EU**



# Belgian Dioxin Crisis

**40% drop in campylobacter**  
Vellinga A. et al. EID 2002;8

**No adverse human health affects**  
Bernard A et al. Envir Research 2002;88;1-18

# Foot and Mouth Disease



£11 billion

UK 2001



**We wouldn't  
eat beef!  
Far too  
dangerous!!**

# **HUMAN BEHAVIOUR**



# **EU Purchase for Destruction Scheme**

## **Jan – June 2001**



**278,000  
animals**

**90,500 tonnes  
carcase beef**

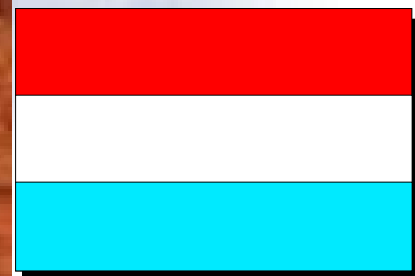
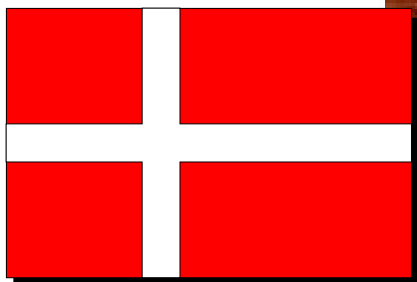
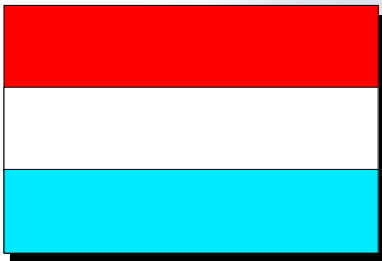
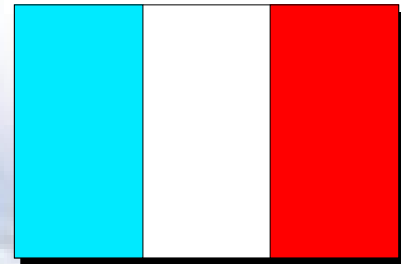
**320 Million  
Euro**

W

**Don't worry darling  
I'm on the Irish  
Feed additive!!**



**July 2002**







**2005: Recall of contaminated chilli**  
**46% of 500,000 tons of spices traded annually come  
from India**  
**4 companies had export licences revoked**

**Technical  
Breach**



**Health  
Risk?**

# Global Media 2006



of  
a...





# **Animal Welfare**



February 2008

<http://www.youtube.com>







The New York Times




# Largest Recall of Ground Beef Is Ordered

Published: February 18, 2008

A meatpacker accused of animal cruelty is making the largest U.S. meat recall on record -- 143 million lbs, the U.S. Agriculture Department said on Sunday.

Most of the meat, probably has already been consumed, said USDA officials at a briefing. Some 37 million lbs were bought for school lunches.





**Adulteration  
Criminal Activity  
Bioterrorism**

# Current Chinese infant formula milk scare

22 of 109 IMF companies implicated  
300 tons of products recalled so far!!  
52,000 babies ill, 13,000 hospitalised, 4 dead (Sept 22<sup>nd</sup>)  
(Melamine, rich in nitrogen, an element used to measure protein levels)



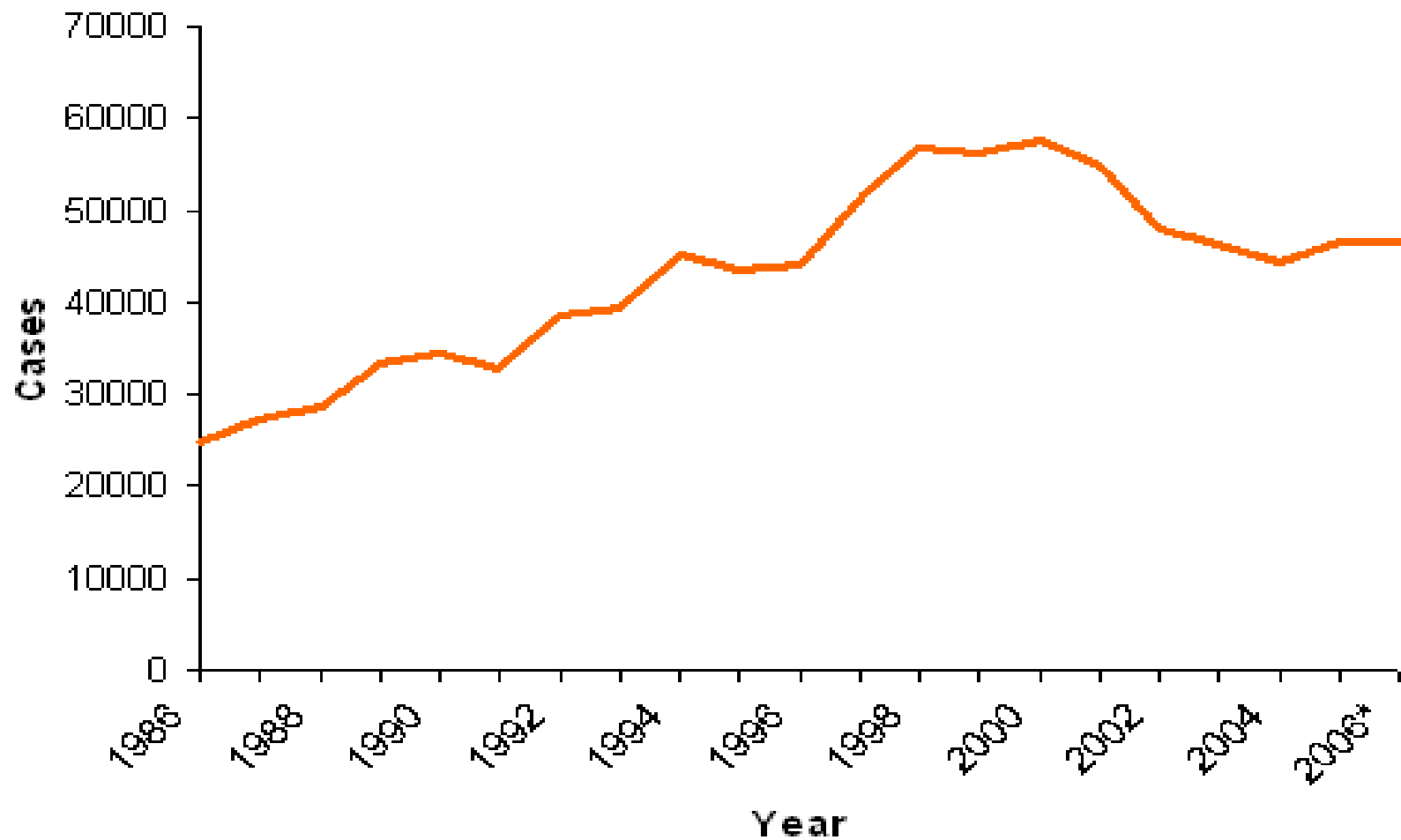
**Yogurt**  
**Icecream**  
**Chocolate**

# Bio-terrorism



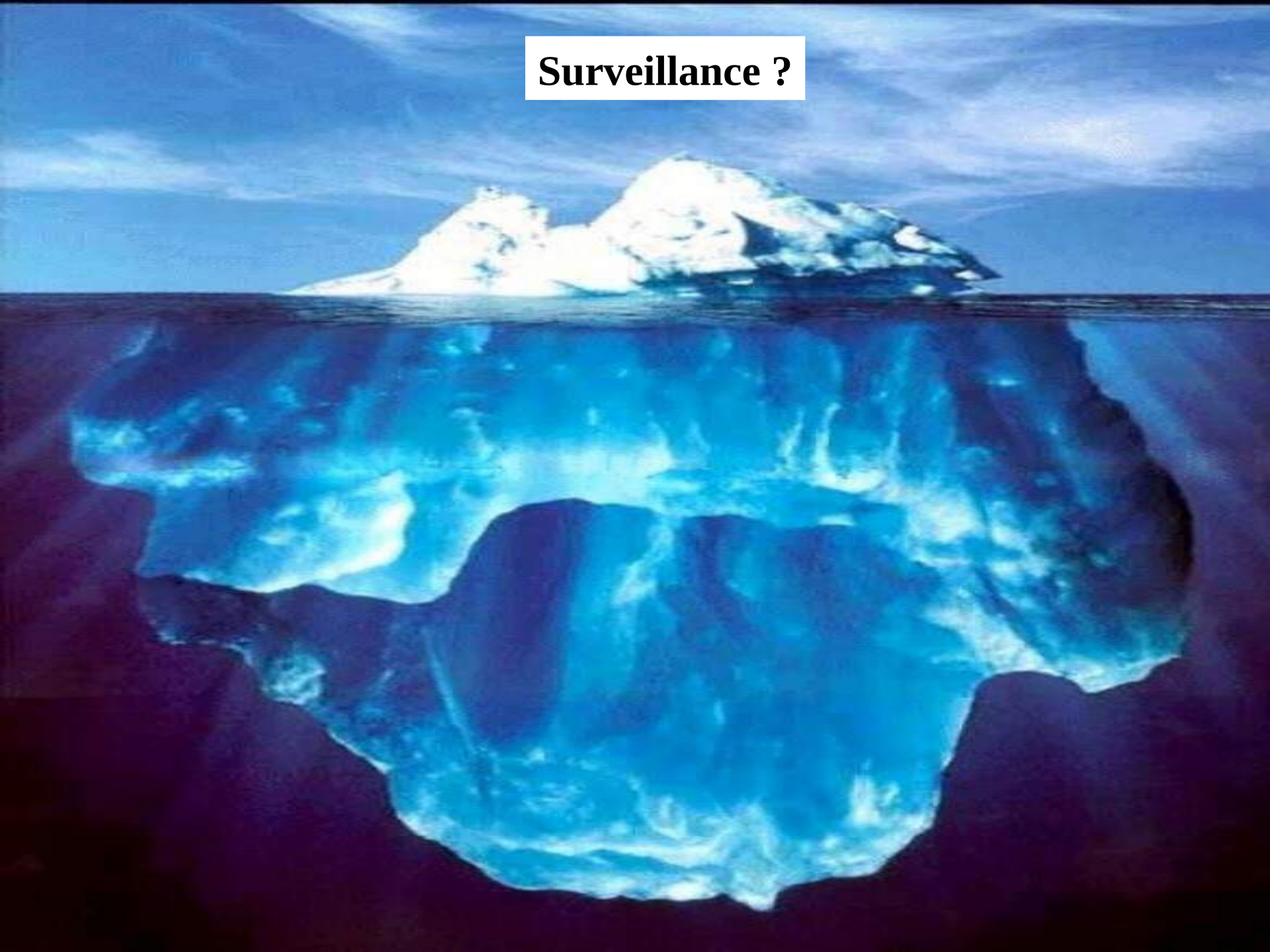
**It's Safe**

# Campylobacter; laboratory isolates England and Wales





**Surveillance ?**



I Don't eat  
Beef !

**BSE**

!

Probability  
Neglect

# The "New" European

I Don't eat  
chicken !

**Bird Flu**

Public  
Politicians  
Policy makers

**Globesity**





A photograph of a supermarket aisle with a shopping cart in the foreground. The cart is filled with various items including a yellow bag of KP brand flour, a red bag of Tostitos chips, a bag of Rooster brand potatoes, a carton of milk, and several bottles of water. The background shows shelves stocked with packaged meats and other food items. A white banner with blue text is overlaid diagonally across the center of the image.

**Food is not a weapon of mass  
destruction**

# All Preventable Faults

1. Contaminated raw ingredients/
2. Inadequate storage/
3. Insufficient
4. Contaminated raw products
5. Inadequate hygiene facilities for staff
6. Poorly supervised or trained staff

**Outbreaks are not bad luck  
They are bad management**

HPA data base

# Food Safety is not Rocket Science



**Health of  
Customers and  
Business at  
Risk**

- Quality Assurance
- Verifiable Standards
- Robust controls





**Traceability is a very complex**

**Legal Requirements**

**Protection of Brands &  
Reputations**

**Ensuring integrity of  
product and chain\***

**Marketing Strategy**

# Count Sheep on A Mountain



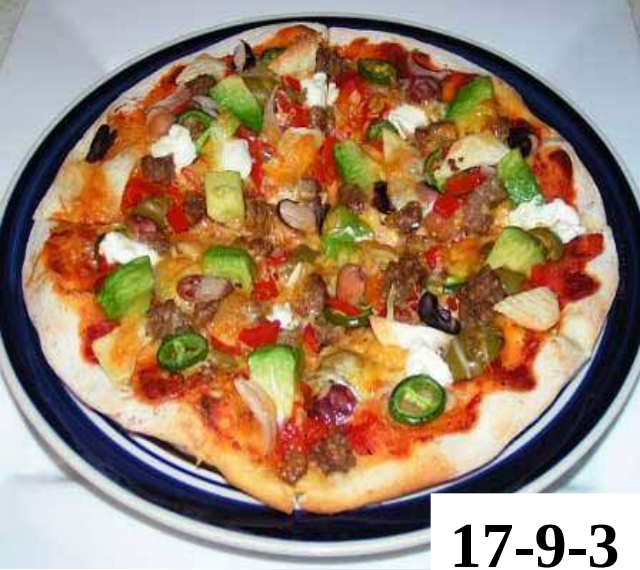


# Loose Track in Food Chain

**Houston we  
Have a  
Problem!**

**We've lost our  
sheep!**





17-9-3

# Traceability??

IBM Global Business Services

*IBM Institute for Business Value*

**IBM**

Consumer Products

**Establishing  
trust through  
traceability**

Protect and empower  
your brand for today's  
"Omni Consumer"

© TraceTracker - 06.07.2007, 16:16



# Traceability: Guarantee of safety ?

**Patrick Wall**

**Purveyor of**

**Fine Foods**

**UCD**

**Dublin 4**

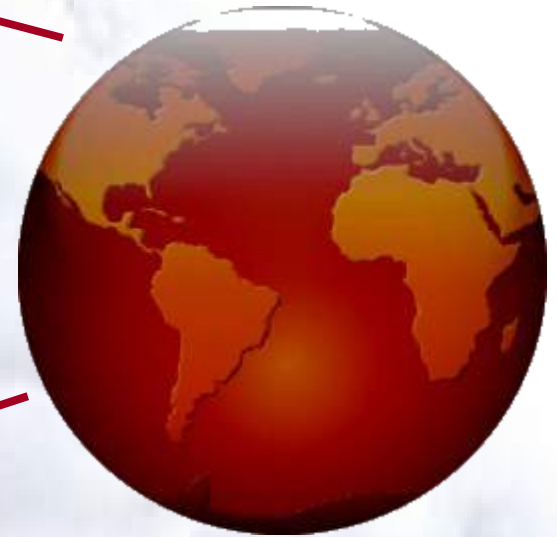




European Union

Non-European Union

**TRADE NOT AID**



**The health of EU citizens is increasingly dependent on the controls operating in Third Countries where more and more of the food is sourced**



Identifies a range of problems across all categories of foods, **WITHIN AND OUTSIDE THE EU**, suggesting that all is not well in the global village and equivalents standards are not being applied

# Are there Problems?

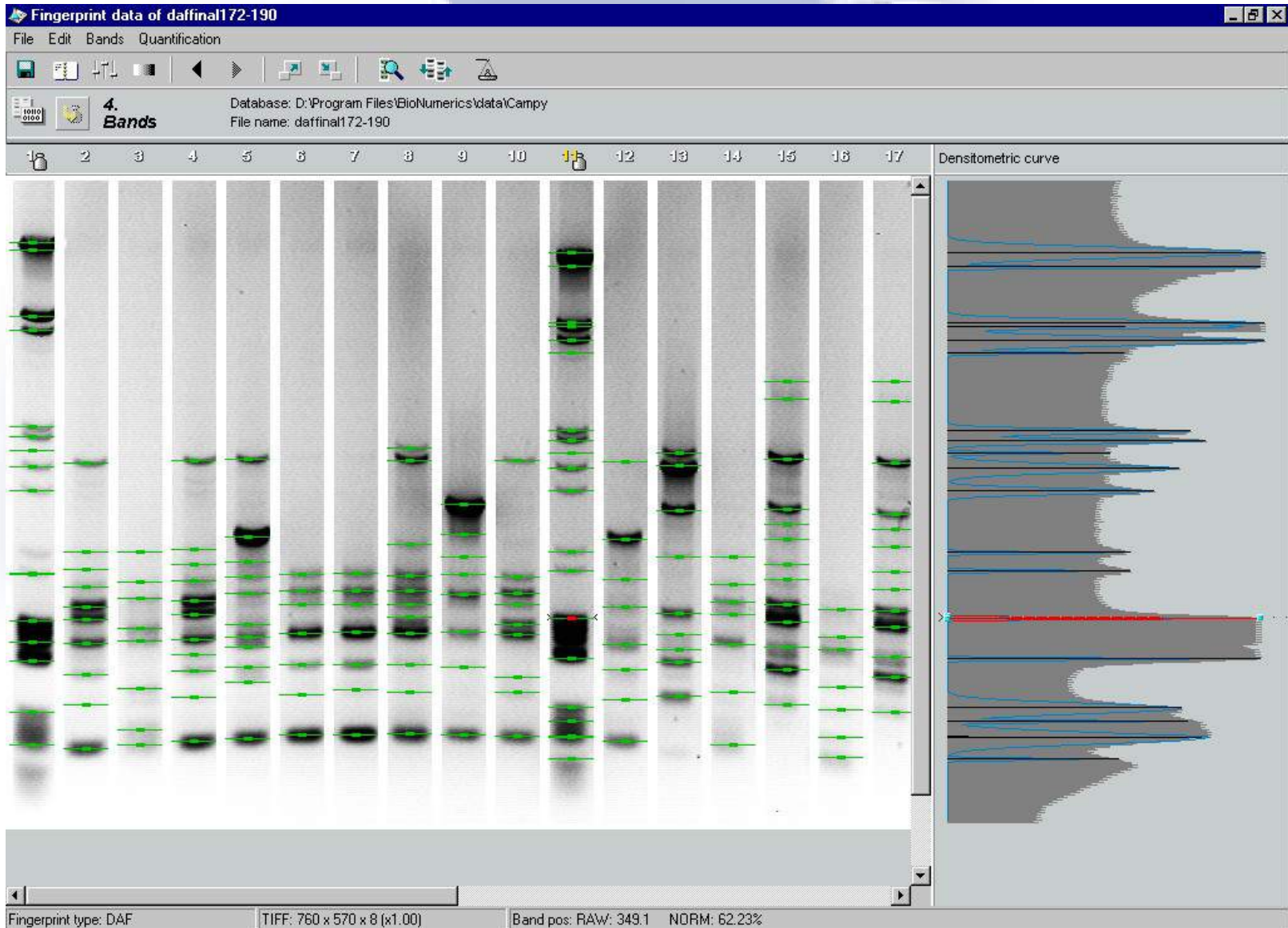
- 
- Just for one month**
- Salmonella in Tea From Egypt
  - Excessive Chemical Colouring Form Tandoori From Morocco
  - Insects in Coffee Beans From Brazil
  - Aflatoxins From Hazelnuts From Turkey, Pistachio Nuts From Iran, Chilli Powder From India and Melons From Nigeria
  - Salmonella in Sunflower Meal and Radioactive Mushrooms From Thailand
  - Nitrofurans From Lamb Casings From China
  - Excess Sulphite in Shrimps From Thailand, Colombia and
  - Bamboo Shoots From
  - E. Coli
  - Salmonella From Thailand and the Philippines
  - Mercury in Marlin From Sri Lanka and Shark From Senegal
  - Malachite Green in Cat Fish From Thailand
  - Coumarin in Cinnamon Tablets From Madagascar
  - Parasites in Swordfish From Sri Lanka and Mackerel From Croatia
  - Carbendazim in Apples From Chile,
  - Bacillus Cereus in Mushrooms From Vietnam
  - Cadmium in Prawns From Australia
  - Salmonella in Limes From Thailand
  - Rust in Corned Beef and Salmonella in Chicken Fillets From Brazil
  - Salmonella in Fish Meal From Peru, Poultry Meat From Argentina and Salmon Fillets From Chile

# Disease Detectives





# “Forensic” Microbiology





# **Salmonella agona 2008**

## **Pan- EU outbreak linked to Ireland**

- **Forensic microbiology → outbreak declared 16<sup>th</sup> July 08**
- **161 Cases:- 1st week in April to 1st week August 08**
- **England 95**
- **Scotland 34**
- **Ireland 11**
- **Wales 10**
- **France 3**
- **Luxemburg, Sweden, Northern Ireland 2**
- **Finland, Austria 1**

**Epidemiology indicated “some” of the illnesses associated with consumption of sandwiches**

# **Outbreak started 1<sup>st</sup> April**

## **Detected 16<sup>th</sup> July**

Irish Plant suspected 1st week August

- 1st recall 8th August
- Finland to Kuwait
- 2nd recall 13th August
- Recall reinforced 3 times
- Sandwich fillers

# Global sourced raw material distributed across EU and further



# Listeria outbreak linked to “ready to eat” products Canada August 08

20 confirmed deaths with further 6 under investigation

**Tracability???**

- August 17<sup>th</sup> 2 products recalled
- 2 days later 19 additional products recalled
- Subsequently 191 products recalled



**Inadequate  
Food Safety controls**

**or**

**Criminal Activity**



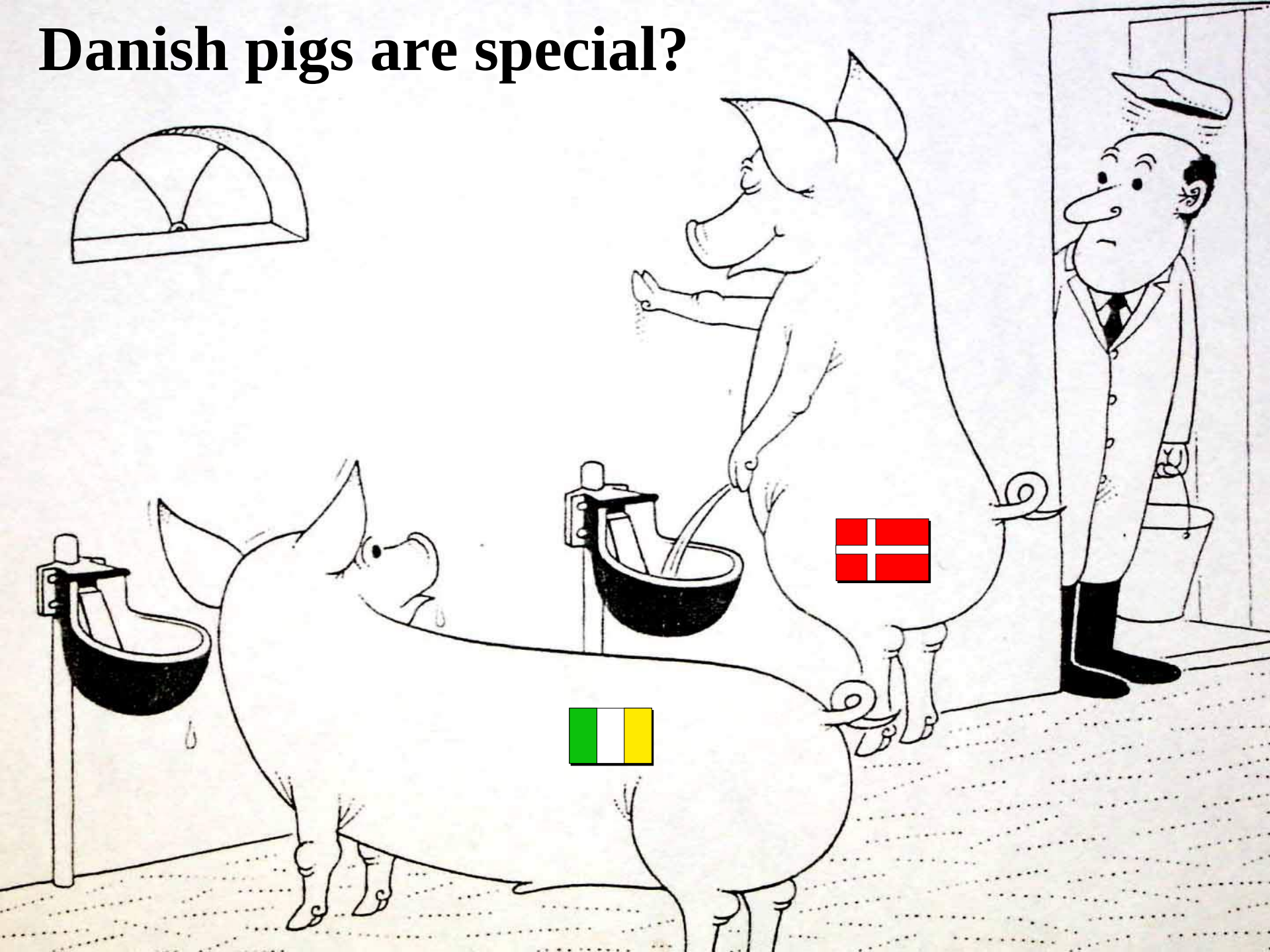
# “The Major Food Poisoning Pathogens are Zoonoses!”

**Control in the animal reservoirs!**

FMD  
Blue tongue  
Avian flu  
Swine fever



# Danish pigs are special?



**YOU CONTROL  
CLIMATE CHANGE.**



**Higher temperatures, floods, drought, and increased Ozone level will depress crop yields**

**Climates change will affect the geographical distribution of both animal and plant diseases**

**Unpolluted Water for Irrigation**

**USA 2006**

# **Outbreaks of Zoonotic agents increasingly linked to water**



**E coli  
O157**



**Climate Change:-contaminated water**





# **Miss-management of food related risk threatening public health**

- Reform of EU Food Law – Hygiene Package
- Creating of Independant national food safety agencies
- Creation of pan-EU Food Safety Authority
- Creation of Food and Veterinary Office (FVO)

## **FVO :- Major challenges**



**Food & Veterinary Office**

**Many countries national legislation is not equivalent to EU Hygiene Regulations and two standards often apply :- one relating to the domestic market and one for export**

# Cooperation...



# Risk analysis

## Risk Assessment

**Estimate & characterise the risk**

## Risk Management

**Select & implement necessary controls to assure an appropriate level of protection**

## Risk Communication

**Exchange of information and opinions with interested parties**



# Increasing Scientific capability

- New compounds
- Lower levels - “parts per trillion”
- Implications of prolonged low level exposures



# Benefits Versus Risks



**Omega 3**  
**Folic acid**

**dioxin/ mercury in fish**  
**Cancer**

**GMOs?**  
**Nanotechnology?**  
**Cloning?**

# Risk Assessment:- Panels

**Scientific  
Committee**



**National Agencies  
eg UK FSA**



**Plant Health**

**Plant Protection Products\***

**Animal feed\***

**Animal Health and Welfare**

**Biological Hazards**

**Chemical contaminants**

**GMOs \***

**Nutrition/Diet Products and allergies\***

**Additive and flavourings \***

**Enzymes, processing aids  
and contact mat \***

# EFSA under attack

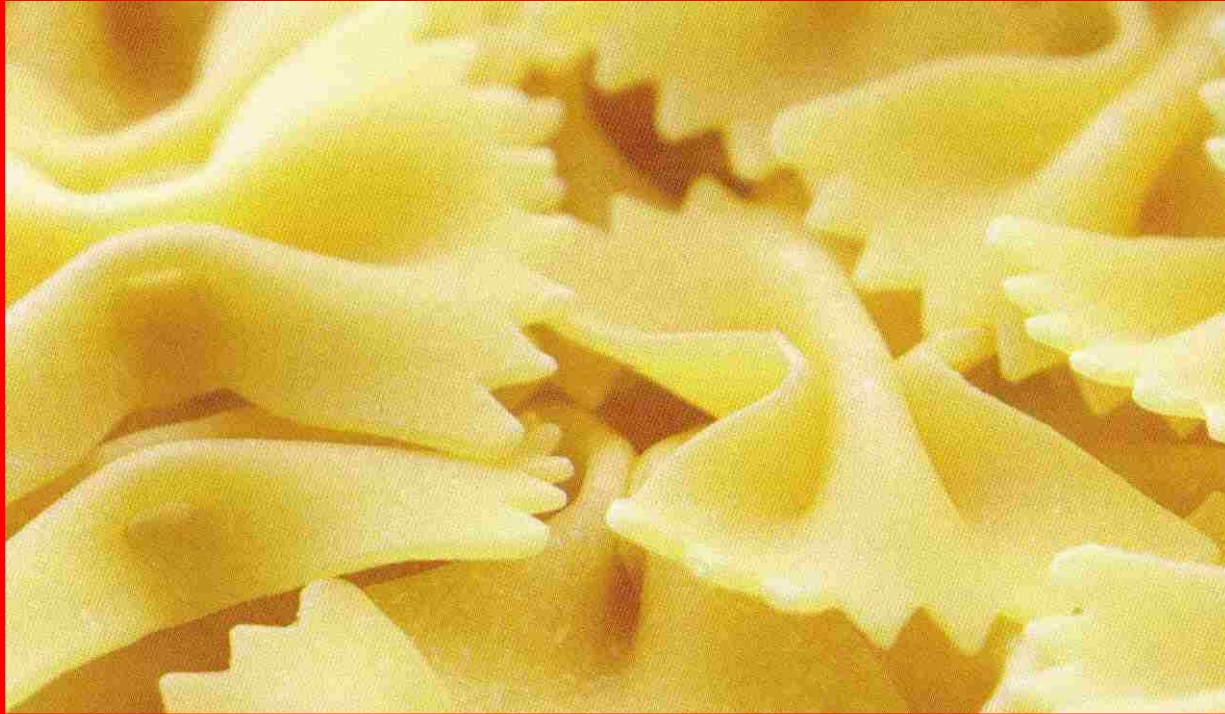
1. Too slow
2. Not transparent enough
3. Not rigorous enough





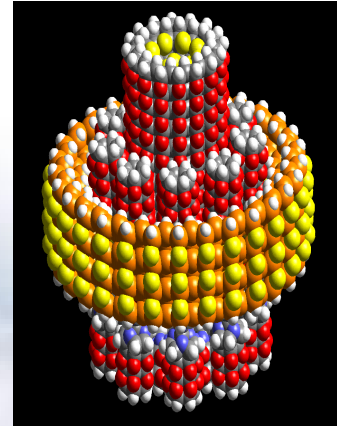
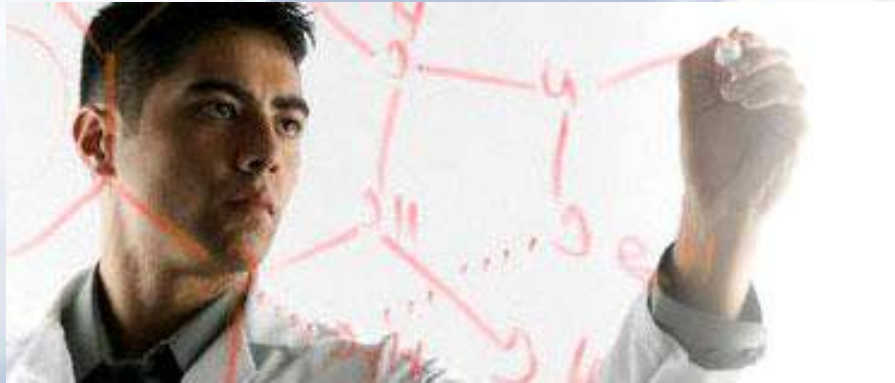
# GMO Risk Assessment Panel

Is Genetic Engineering  
a good thing or a bad thing  
?



**This Pasta is  
made from irradiated  
mutant wheat**

# Nanotechnology and Food?



Scientists Say “We don’t have all the answers”

In the case of nanotechnology?

**“We don’t even know all the questions!!”**

# Increasing liberalisation of Trade





# Global Village:-Global Problems



**Compatible with  
commerce**

**Global Solutions**

**Consistent science**



# Traceability – This Years Buzz Word



**What's In It? Fat, Microbes, Chemicals?**

**Accountability – Next Years**