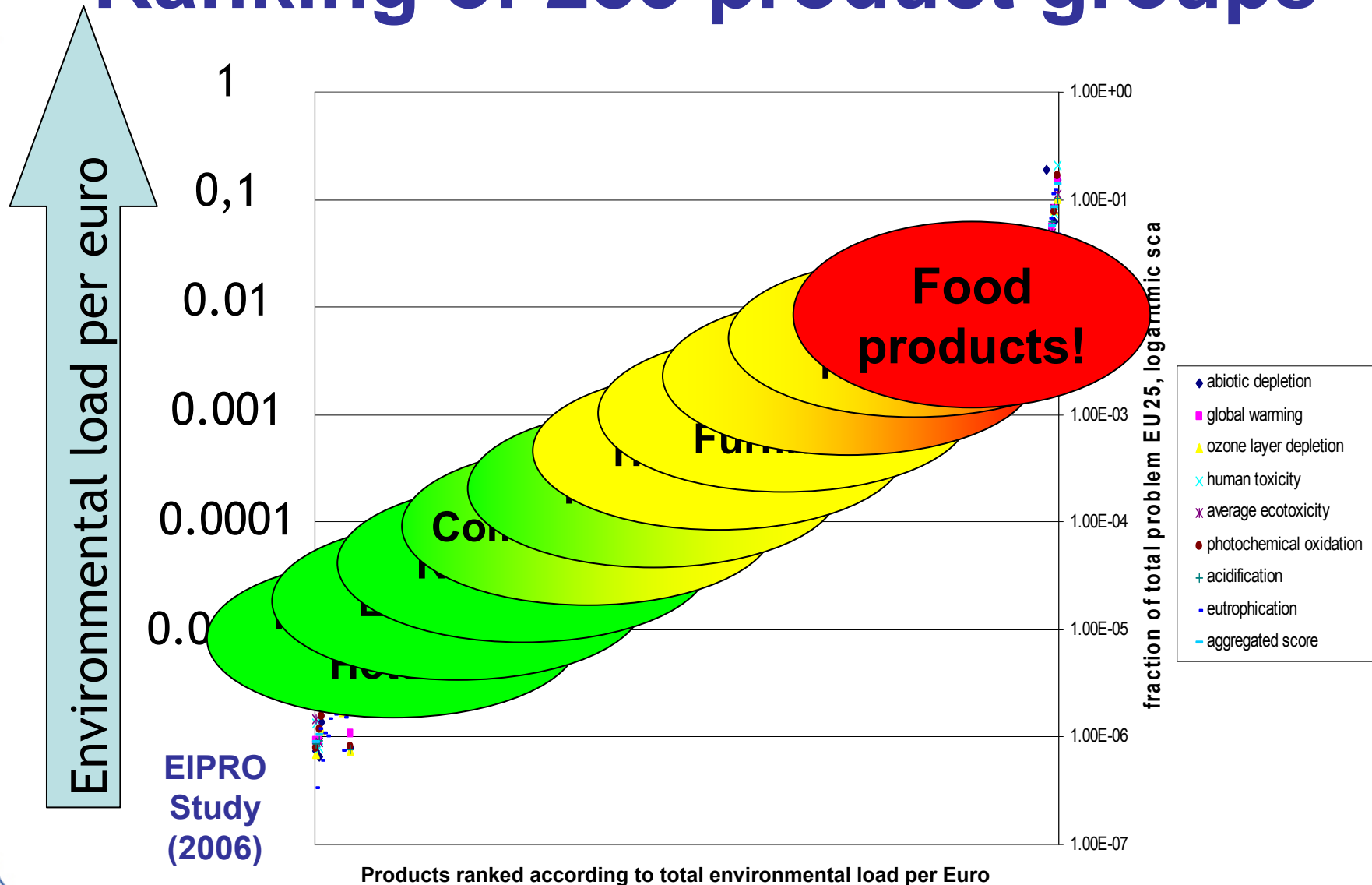


Definition – Brundtland commission

Sustainable development :

The concept of meeting the needs of the present without compromising the ability of future generations to meet their needs.

Ranking of 283 product groups



Identical products?



<- Different production plants ->

<- Different ingredient batches ->

<- Different production batches ->

<- Different production/use by date ->

<- Different transport route ->

<- Different temperature history ->

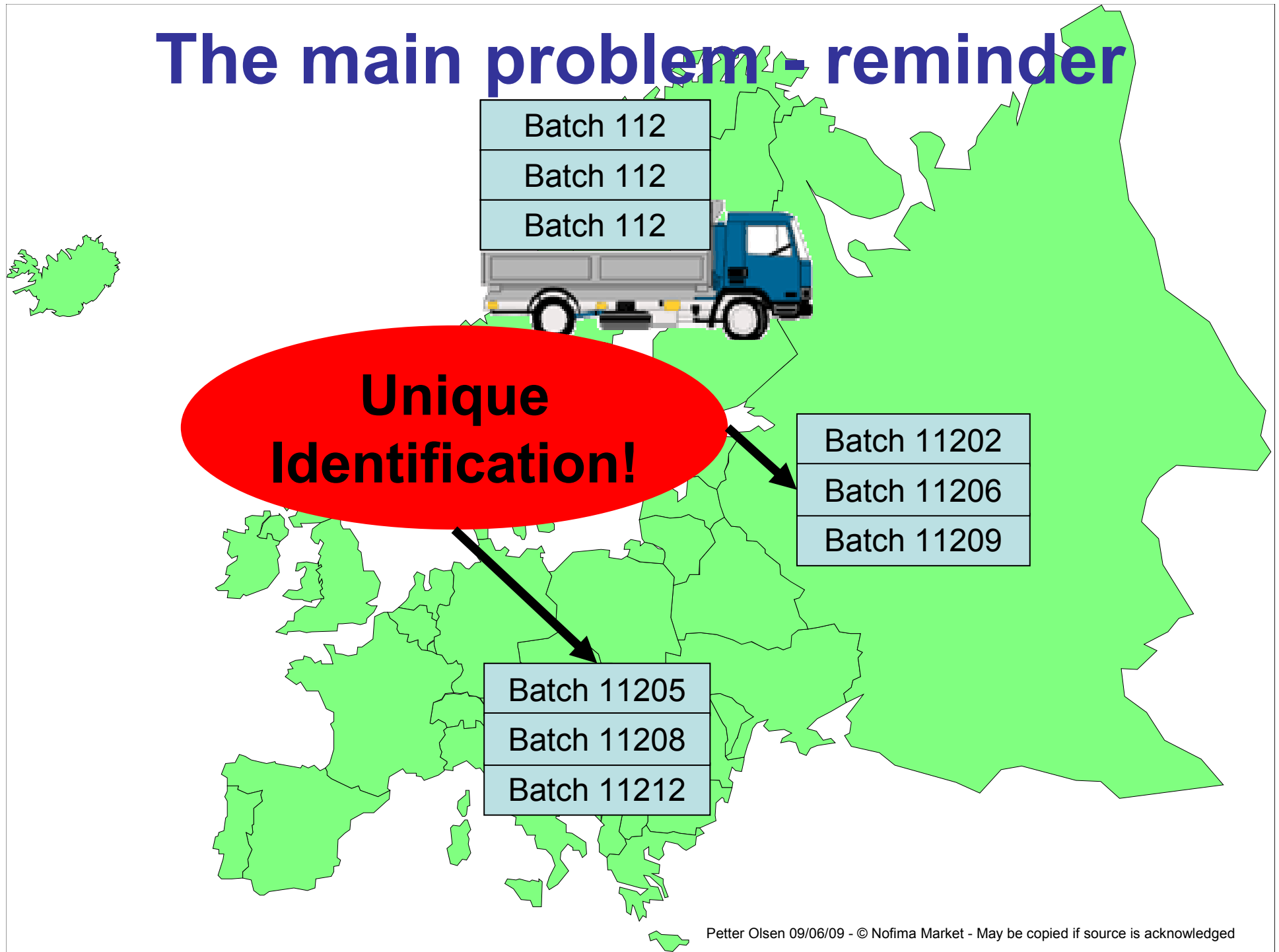
<- Different environmental load ->



Driver conclusions so far...

- For authorities and to some degree for consumers, food safety is the main driver for traceability.
- For the food industry, rationalisation, branding and competitive advantage are the main drivers for traceability.
- Competitive advantage through traceability is of particular importance in industries where supply exceeds demand.
- Traceability to enable documentation of parameters relating to ethics and sustainability is becoming very important.

The main problem - reminder



Standards for traceability

- **Codex Alimentarius**, CAC/GL 60-2006, *"Principles for Traceability / Product Tracing as a Tool Within a Food Inspection and Certification System"*
- **Codex Alimentarius**, CCFICS 2003, *"Discussion paper on traceability/product tracing in the context of food import and export inspection and certification systems."*
- **ISO**, ISO/DIS 22005, *"Traceability in feed and food chain — General principles and basic requirements for system design and implementation"*
- **EU Common Food Law**, 178/2002
- **EU Feed Hygiene Regulation**, 1831/2003
- **EU Feed Additive Regulation**, 1831/2003
- **Can-Trace**, Can-Trace reference document
- **CIES**, *"Implementing Traceability in the Food Supply Chain"*
- **EurepGAP**, *"EurepGAP General Regulations"*, *"EurepGAP Control Points and Compliance Criteria"*, *"EurepGAP Checklist"*
- **ECR**, ECR Blue Book, *"Using Traceability in the Supply Chain to meet Consumer Safety Expectations"*
- **BRC**, *"Technical Standard for Companies Supplying Retailer Branded Food Products"* (incorporating the old EFSIS standard)
- **IFS**, *"International Food Standard"*
- **GS1**, *"The GS1 Traceability Standard"*
- ... and many others

Standards for naming or Electronic Data Interchange

- **AGROVOC**, FAO standard for a multilingual, structured and controlled vocabulary designed to cover the terminology of all subject fields in agriculture, forestry, fisheries, food and related domains (e.g. environment)
- **AgroXML**, tysk standard for landbrukssektoren.
- **ebXML** (Electronic Business using eXtensible Markup Language) is a modular suite of specifications that enables enterprises of any size and in any geographical location to conduct business over the Internet. Using ebXML, companies now have a standard method to exchange business messages, conduct trading relationships, communicate data in common terms and define and register business processes.
- **ANSI/ISO88**, Batch Control
- **ANSI/ISO95**, Enterprise Control System Integration
- **ISO/IEC 6523**, Information technology – Structure for the identification of organizations and organization parts
- **ISO/IEC 15459**, Information technology - Unique identifiers
- **EDIFACT**, United Nations/Electronic Data Interchange For Administration, Commerce, and Transport (UN/EDIFACT) is the international EDI standard developed under the United Nations. EDIFACT has been adopted by the International Organization for Standardization (ISO) as the ISO standard ISO 9735.

Why is a standard needed?

- Reduce workload for food business operators (FBOs); avoid large sets of conflicting documentation requirements.
- Increase transparency and re-use of data; data delivered by different FBOs will have standard meaning and measurement
- Enable benchmarking between same type FBOs
- Enable electronic data interchange
- Enable common understanding and automatic translation of product and process parameters
- Establish "*unique identification on lowest level*" and "*documentation of transformations*" principle to enable tracking and tracing without systematic information loss; this to establish chain of custody to enable all the previously mentioned drivers (food safety, legislation, labour/cost reduction, etc.)

Case1: Dioxin, Belgium, 1999

In the first week of January 1999 a car demolition company in Wallonia, Belgium delivers oil from a transformer to a municipal oil recycling plant.

The oil contains about 1 gram of dioxin.

For some unknown reason, the oil ends up in a vegetable oil storage tank.

Winter 1999:

- **Jan:** 'oil' company collects from tank, sells oil to 'fat' company
- **Jan:** 'fat' company produces vegetable fat from oil, sells to feed company
- **Jan:** feed company produces chicken feed from fat, distributes feed to 1600 chicken farms in Belgium, France, Netherlands and Germany
- **Feb:** egg producers notice chicken sickness and reduced egg quality
- **Mar:** complaints, government and insurance companies get involved
- **Mar:** feed company stops selling feed and reports 'fat' company to the police

Spring 1999:

- **Apr: dioxin is identified as contaminant**
- **Apr: feed production stops**
- **Apr: neighbouring countries informed**
- **May 27th: first press statement issued**
- **May 28th: all Belgian egg and poultry products removed from shelves**
- **May 28th: Press accuses government of cover-up**
- **May 31st: All imports stopped**

Summer 1999:

- **Jun 2nd: EU commission stops sale of products that are -, or may be contaminated**
- **Jun 2nd: Management of 'fat' company arrested**
- **Jun 17th: Management of 'oil' company arrested**
- **Jun: Belgian minister of agriculture and minister of health forced to resign. Government survived, but had a terrible election result later in the summer. The main issue in the election was the handling of this case. Green party election winners.**

Aftermath:

- **4 feed plants closed for good, 3 of them had never produced contaminated feed, 1 of them was not even in the same company, but demand for feed from Belgium dropped to practically zero**
- **EU commission estimated the direct economic loss as a result of these events at least to be 1500 million Euro, over 1300 million USD**

On reflection

This food scandal was not horrendous in effect. Very few people became ill, and then only mildly and temporarily. Very few animals were harmed.

The problem with the Belgian dioxin scandal was the scope. Few companies or farmers kept records of which ingredients or feed they used. Fewer still kept track of the production date or batch identifier. Thus any form of targeted recall was impossible, and the scandal couldn't be contained.

Case2: E. coli, Hudson Foods, 1997

In early July 1997, Hudson Foods Company in Arkansas, US started receiving reports of illness related to consumption of their beef patties. 16 consumers were affected, 5 of them were hospitalised, all recovered.

E.coli 0157:H7 was identified as the bacteria. This is normally not deadly, but may be very dangerous to children, elderly and those with compromised immune systems.

A slaughterhouse was identified as the source of contamination. The contaminated raw material had been used as input on one particular day of production.

August 1997:

- **August 12th: Voluntary nationwide recall was issued for 10 tons of beef patties, from three specified products with production dates '155' and '156'.**
- **August 14th: One documented case of E.coli contamination related to consumption of beef patties produced at a later date is reported. Hudson recalls 10 more tons, for a total of 20.**
- **August 15th: Federal inspectors move in. Recall issued for 600 tons.**
- **August 21st: After studying Hudson production methods and documentation, federal inspectors order the recall of 12.000 tons.**

Quote from federal report:

.. the reason for the addition recall is that Hudson took leftover raw materials from one day's production and used them in the next day's production.

Inspectors could not determine if materials used during the period in early June ... might have found their way into subsequent production days. So the decision was made to close the plant, destroy all product on hand, and recall any Hudson hamburger from Columbus still on the market.

On reflection

Keeping track of production date and batch identifier doesn't help if the producer cannot relate the production batch to input batches.

The production batch must be of limited size, it must be related to a finite set of input batches, and this relation (“transformation”) must be explicitly documented.

Crisis management

- **Accidents will happen.**
- **The industry must be prepared for this fact, and know exactly what to do.**
- **Specifically, they must make systematic recordings that enable them to trace food through all processes back to origin.**
- **Specifically, they must also make systematic recordings that enable them to recall all the contaminated food.**
- **Ideally, these recordings should be available at the press of a button.**

Thank you for your attention!

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