

Food Safety Nano - communication



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A young boy with dark hair, wearing a white shirt, is sitting at a table and eating a bowl of noodles with chopsticks. He is looking directly at the camera with a neutral expression. The background is slightly blurred, showing a bicycle. The text 'How safe is our food?' is overlaid on a yellow rectangular background in the upper right corner.

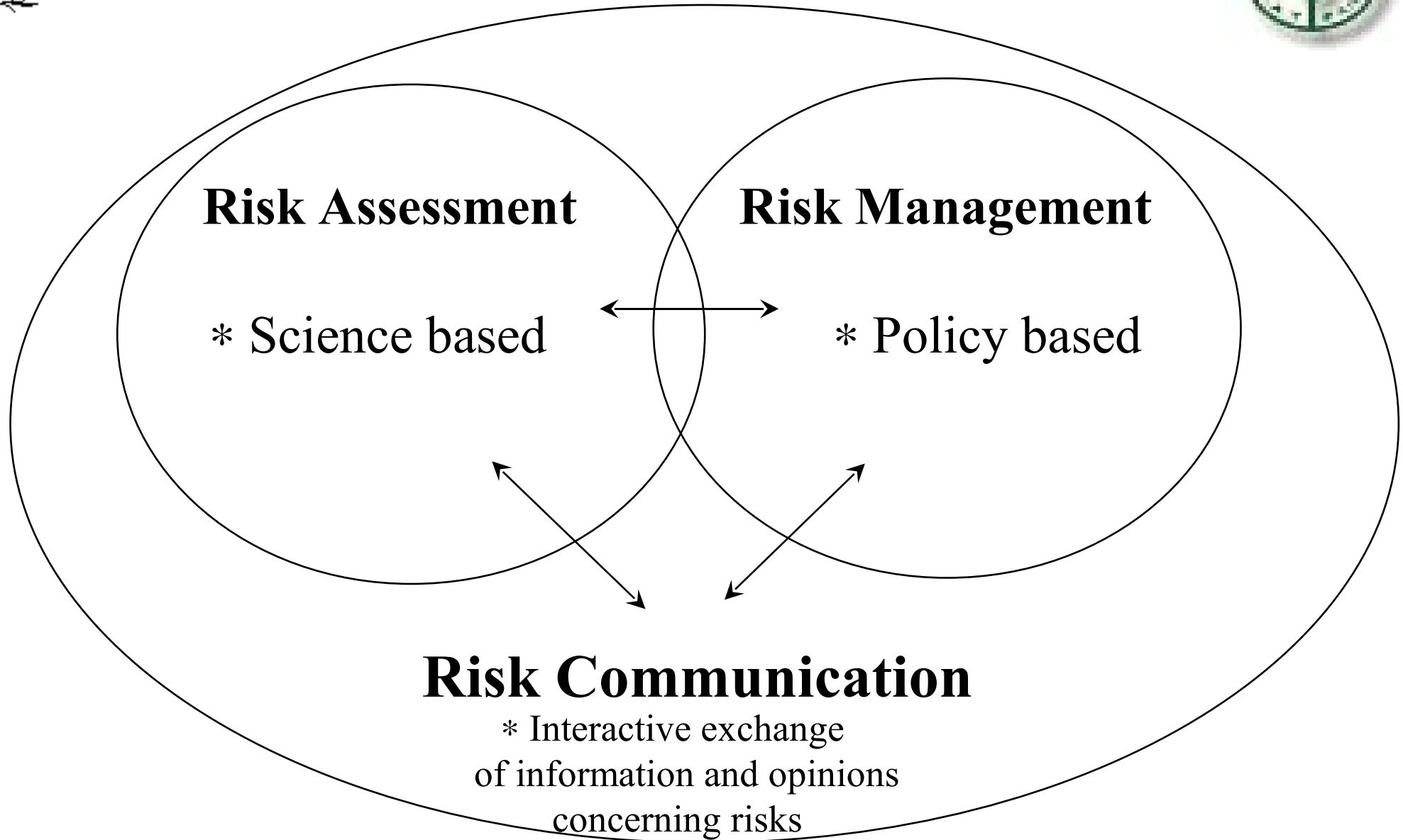
**How safe
is our food?**



Food safety initiative
World Health Organization

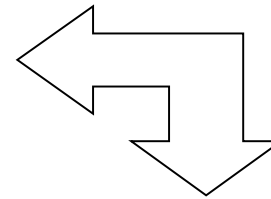


Risk Analysis



Codex Alimentarius - its scientific basis -

Liaison & Separation



- ◆ Codex - Risk management

Risk assessment

- ◆ **FAO/WHO Expert Bodies**
 - ◆ JECFA - food additives, vet. drug residues, contaminants in food
 - ◆ JMPR - pesticide residues in food
 - ◆ JEMRA - microbiological hazards in food
 - ◆ ad hoc Expert Consultations

Risk Perception

- Based on experience and knowledge
- Shaped by values and beliefs,
confidence and trust
Media
- Influenced by
Science

COMMUNICATION

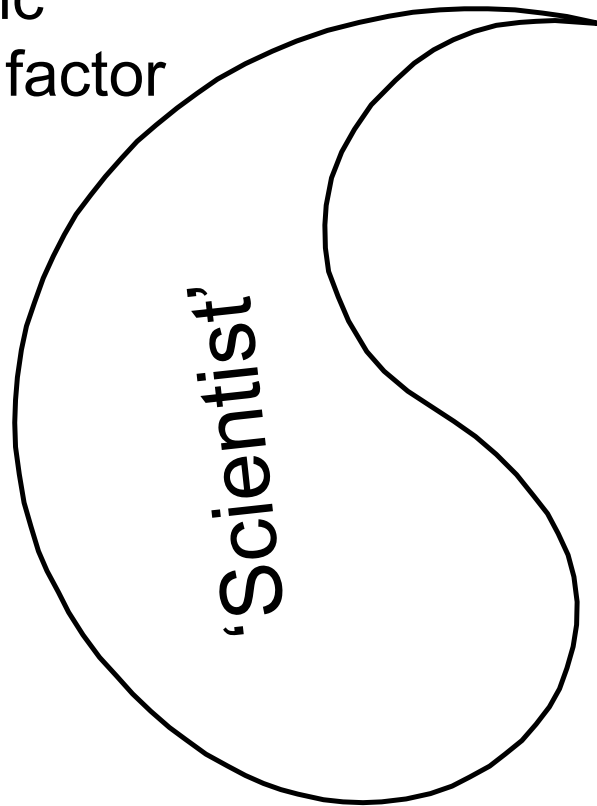
Risk Communication

“... an interactive exchange of information and opinions concerning risk among risk assessors, risk managers, consumers and other interested parties.”

(FAO/WHO Expert Consultation on Risk Analysis to Food Standards Issues, 1995)

When describing risk:

often ignores
the public
outrage factor



pays too little attention to
the relative nature of risk



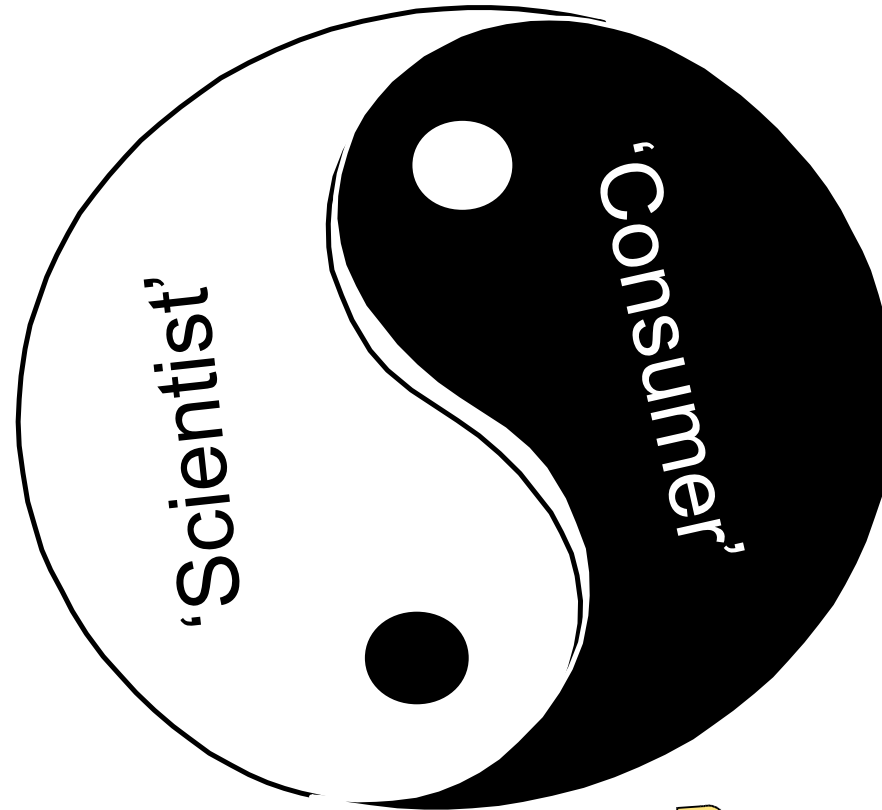
It takes two to communicate

Predict the risk

Discuss and decide
management

Say what you don't know

~~Accepting all views~~



Good Risk Communication Practice

Hazard and Risk

Hazard: Biological, chemical or physical agent, capable of causing disease

Risk: Probability of disease (combined with seriousness of outcome)

Hazard but no Risk:

Staphylococcus aureus can cause disease through toxin production – but only when present in very high concentration

Food with < 100 Staph. Aureus per gram does not cause disease

Nano - the benefit

- **By linking small molecules related to the body's natural pain killers to a biodegradable polymer, investigators at the University of Modena in Italy have developed nanoparticles capable of crossing into the brain. These polymer nanoparticles could be used to deliver imaging agents and anticancer drugs to brain tumors.**

"Peptide-derivatized biodegradable nanoparticles able to cross the blood-brain barrier."

Costantino, L. et al. Journal of Controlled Release, 2005 Nov 2;108(1):84-96.

Nano - Do we have the tools to assess hazard and risk

Control approaches are available which should be effective for exposure by inhalation but this has not been demonstrated.

Control approaches for dermal and ingestion exposure may not be as effective as they are for larger particles.

Surface area is probably the best exposure metric for some but not necessarily all nanoparticles but there are no effective methods by which this can be measured in the workplace.

Current knowledge is insufficient for risk assessment purposes.

Excerpts from Report from UK **Institute of Occupational Medicine** for the UK Health and Safety Executive 2004

Nano

Outcomes of investigations need careful communication

David D. Allen et al, Texas Tech University investigated nanoparticles used as brain drug delivery agents.

Estimated *in situ* control cerebrovascular flow values were 3.6×10^{-2} ml/s/g. NP addition caused no significant flow differences. *In vitro* studies evaluated the effect of NPs on permeation of sucrose, thiourea or choline. Similar to *in vivo* data, no significant changes were observed in this preparation.

Poster at Nanotechnology and the Environment, Conference, The 225th ACS National Meeting, New Orleans, LA, March 23-27, 2003

***"Nanoparticles have been shown
not to have toxic effects relative to the blood-brain barrier" ??***

Nano potential toxicity ?

Surface modification has been found to affect toxicity (nanovesicles induced cerebral edema)

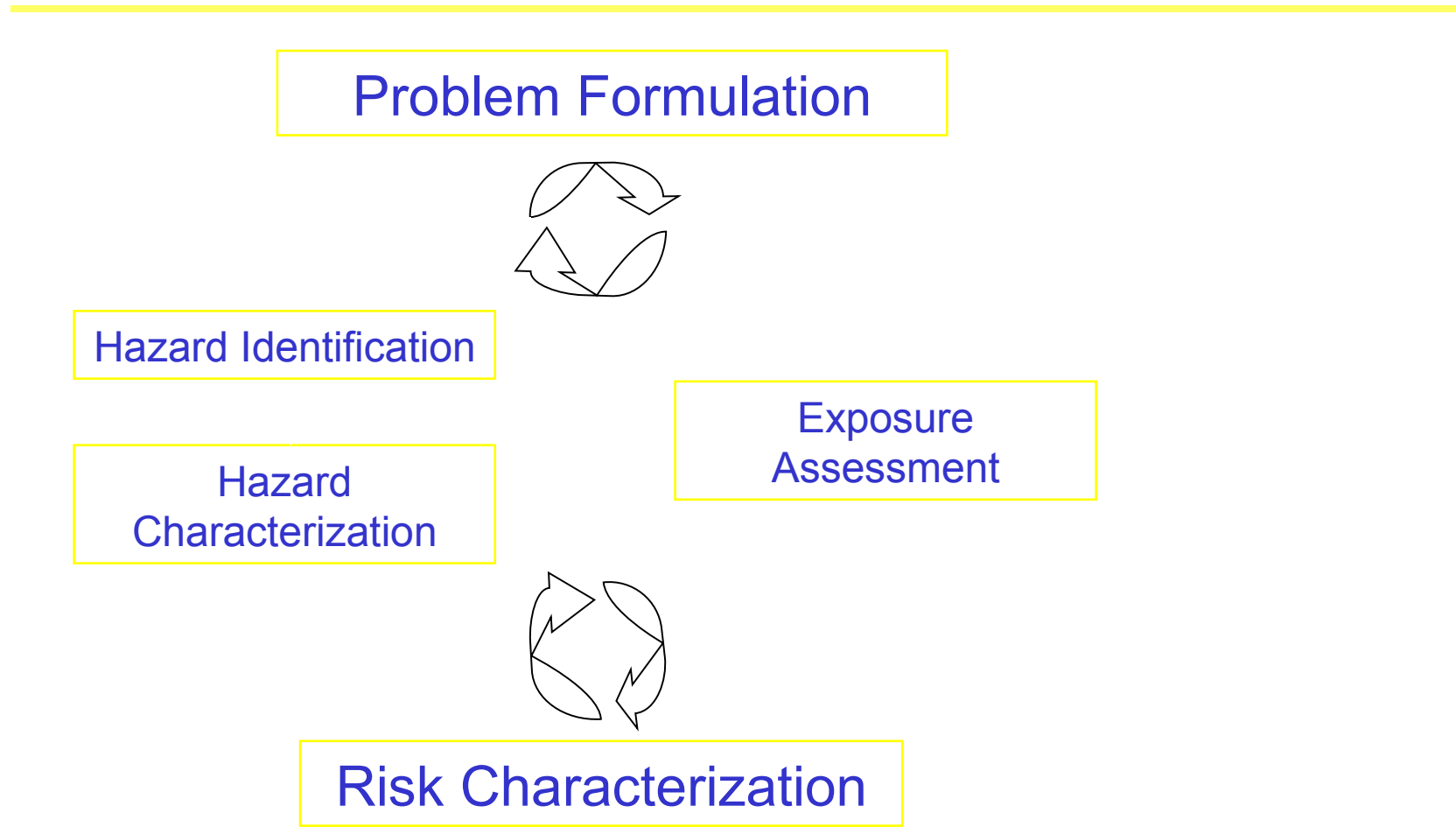
Modifying surface of nanoscale materials with surfactants or polymers reduced invitro toxicity

Surface area per unit of volume can be better measure than mass for assessing relative toxicity

No question that hazard exists– what is the risk – do we have the tools to say?

If the answer is no, we have to be able to communicate this!

Risk Perception - Role of Science: Improved Risk Analysis Process



Perception of Risk:

- **Scientific statements**
- **Press amplification**
- **Political involvement**
- **Regulatory action**

Poor communication of risk → worse perception of risk

Perception IS Reality

- there is always more to a risk issue than science describes
- the scientific assessment of risk is necessary for informed choices

What is WHO going to do about it?

- Together with FAO planning an expert meeting on nano in food for 2009
- Suggest to produce information to national food safety authorities (and consumers)
- Suggest to consider international management activities



What is INFOSAN?



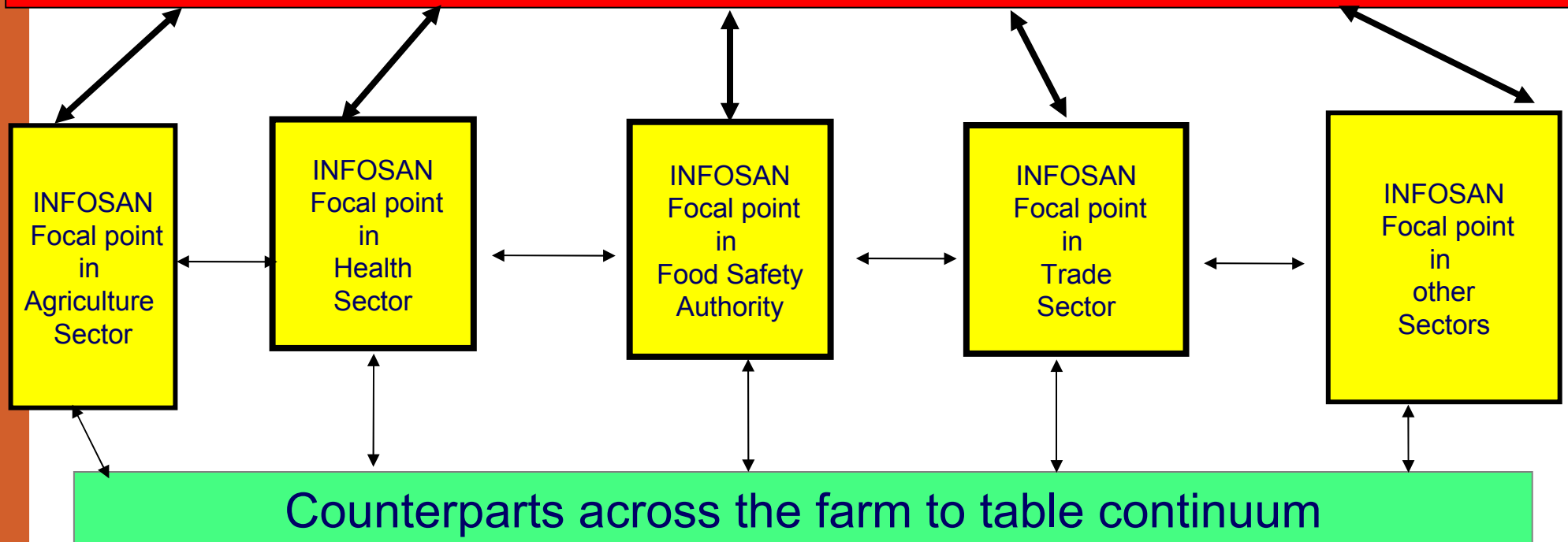
A global network of national food safety authorities that...

- Promotes the exchange of important food safety information globally
- Responds to international food safety events and requests for assistance
- Helps countries strengthen their capacity to manage food safety risks

Reinforced by the Beijing Declaration, December 2007

INFOSAN

International Food Safety Authorities Network



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