

Risk assessment of food additives

Dr. Pirjo-Liisa Penttilä
Information Centre of Ministry of
Agriculture and Forestry
Finland

WHO/FAO 2006

- World Health Organisation
- Food and Agriculture organisation of the United Nations
- Food safety risk analysis:
A guide for national
food safety authorities

FAO: Food and Nutrition Paper NO:87

Risk Analysis

- Systematic, disciplined approach for making food safety decisions
- Risk assessment
- Risk management
- Risk communication

Risk assessment

- **Hazard identification**
 - Potential health affect/agent
- **Hazard characterization**
 - Gualitative, quantitative evaluation biolocical, chemical and physical agents
- **Exposure assessment**
- **Risk characterization**
 - Integration of information, estimation of adverse effects likely to occur in population

WHO Scientific Committees

- JECFA
 - Joint FAO/WHO Committee on Food Additives working since 1956
 - Provides independent scientific expert advice to the Commission and its specialist committees
 - Toxicological evaluations of food additives (1500), veterinary drugs (90) and contaminants (40)
 - Specifications for food additives

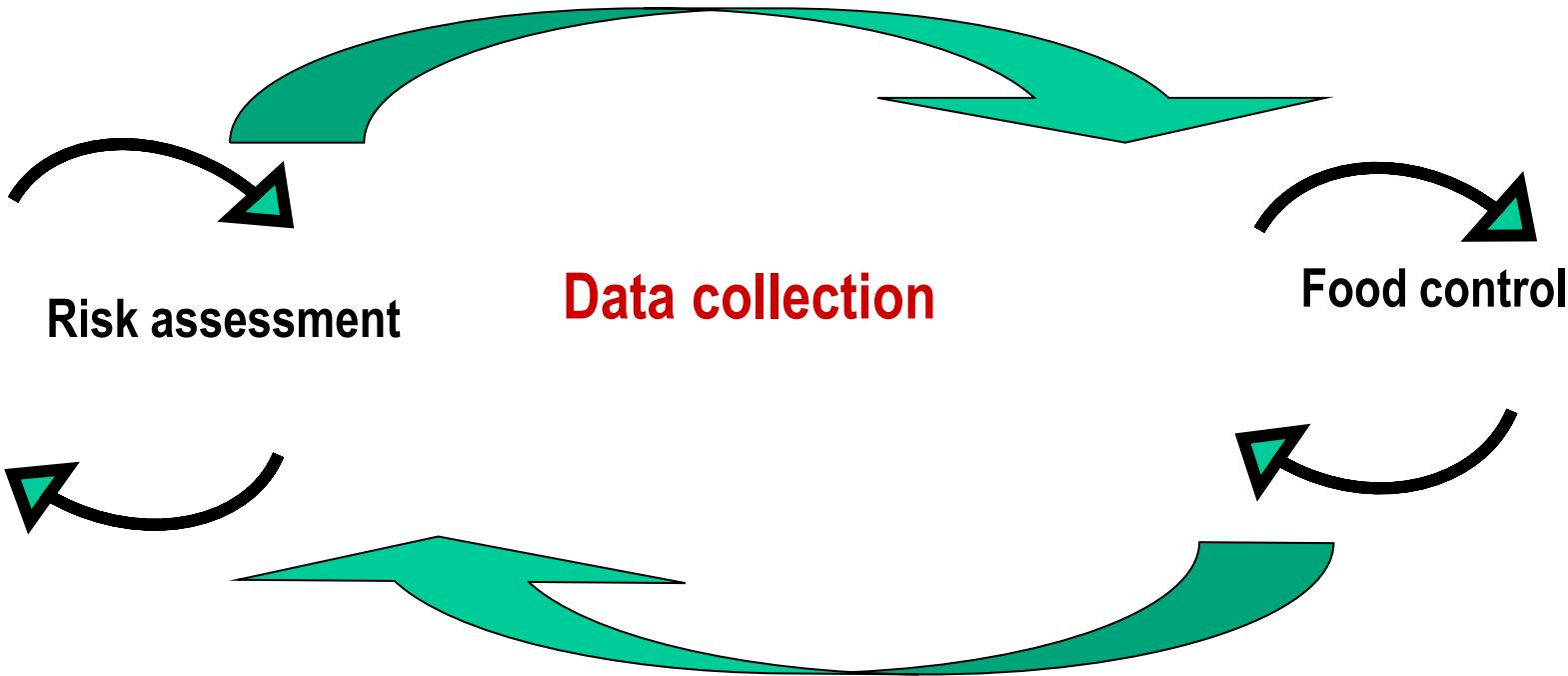
Acceptable Daily Intake

- ADI –value mg/body weight
- The daily amount of food additive in food that a person can ingest **over the lifetime** without a health risk

EFSA Science

- **European Food Safety Authority**
- **Scientific Committee and Panels**
- **Highly qualified experts in scientific risk assessment**
 - Animal health
 - **Food additives and nutrients**
 - Biological hazards
 - Food contact materials, enzymes...
 - Contaminants in the food chain

Risk assessment at national level



EXPOSURE ASSESSMENT IN FINLAND

**ACUTE
RISKS**

**FOOD
POISONINGS
BIOGENIC
AMINES
FUNGAL
POISONS
PESTICIDES
FOOD
ALLERGENS**

**CHRONIC RISKS
PESTICIDES
FOOD ADDITIVES
DIOXINS
HEAVY METALS
MYCOTOXINS
OVERWEIGHT**

EVALUTATION OF FOOD SAFETY

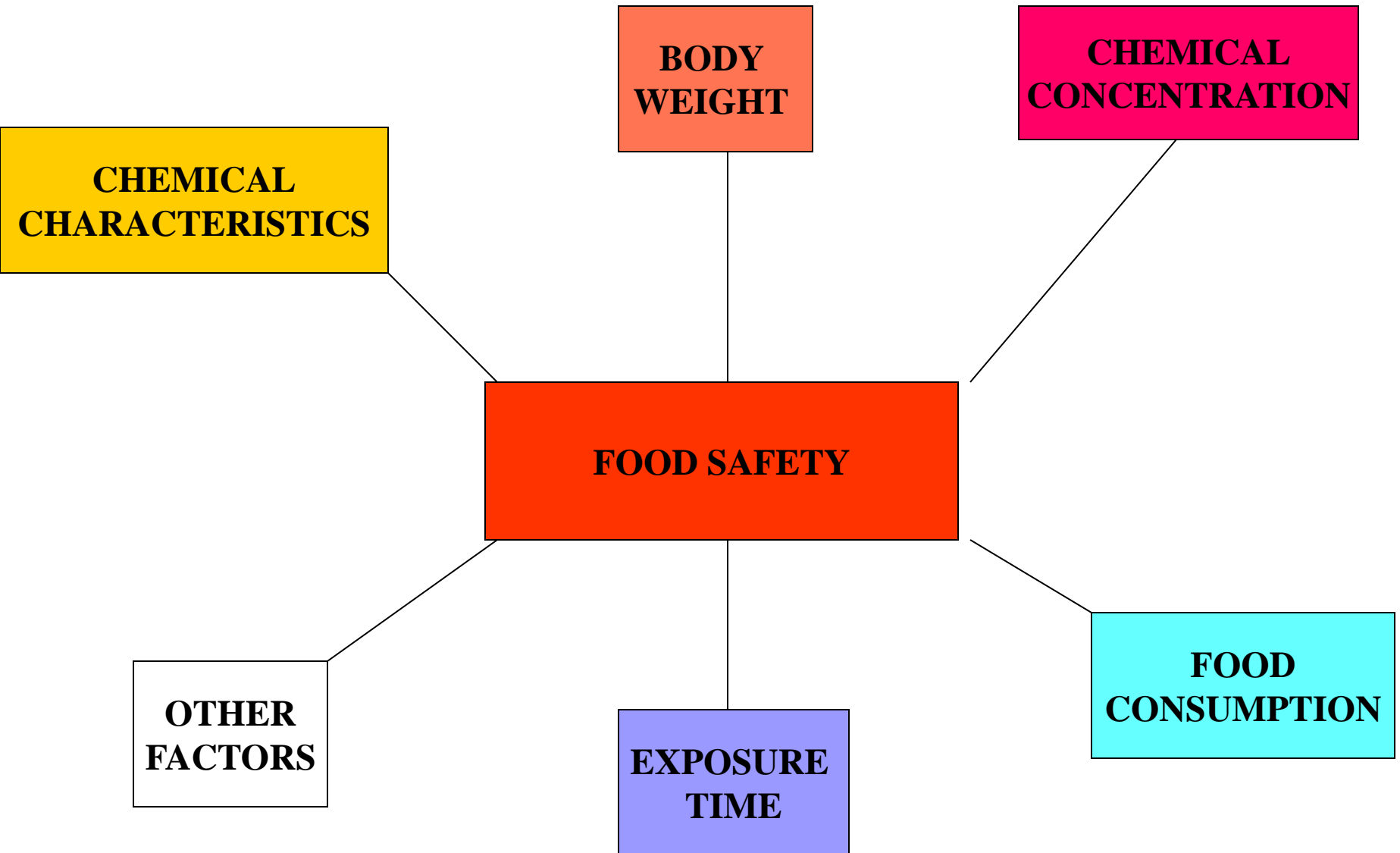
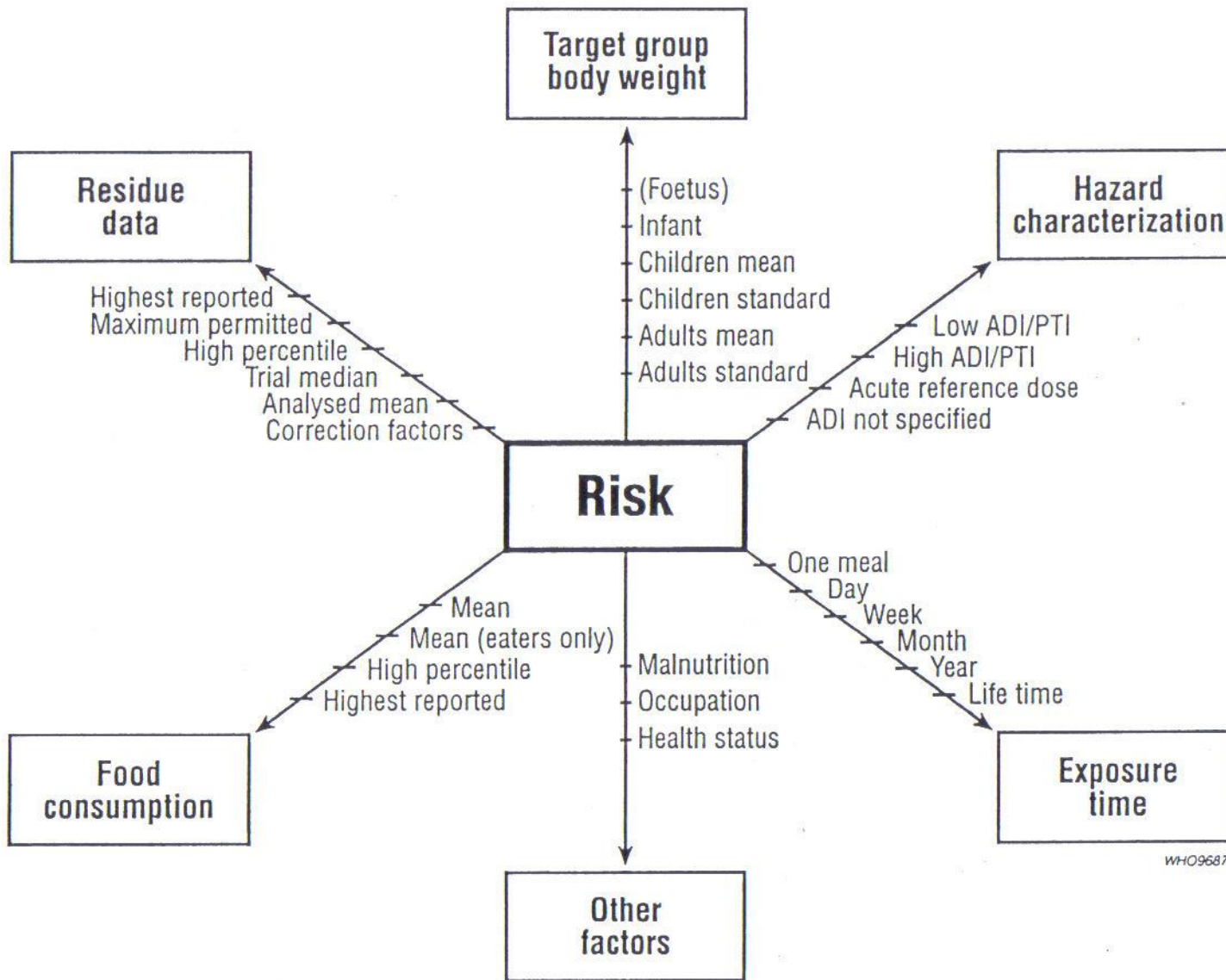
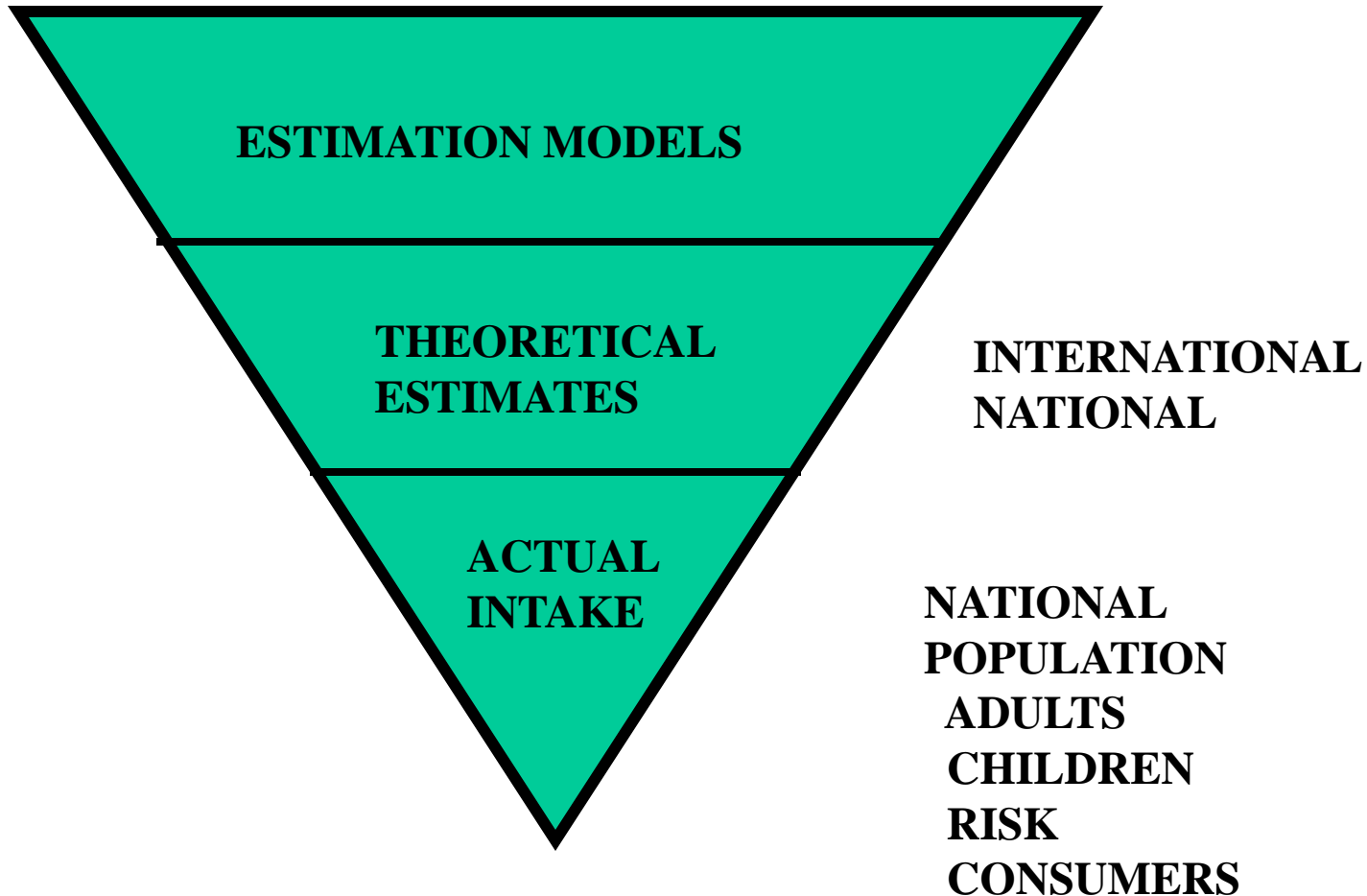


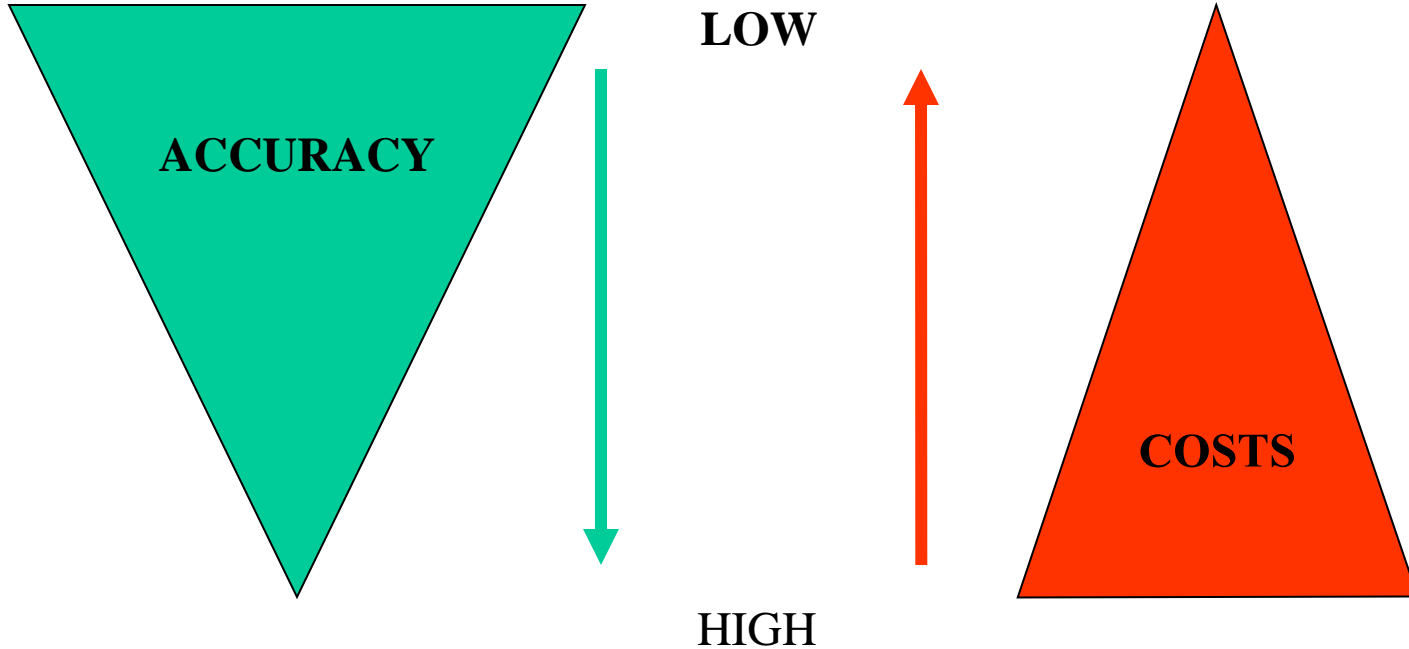
Figure 5. **Risk characterization of chemicals in food**



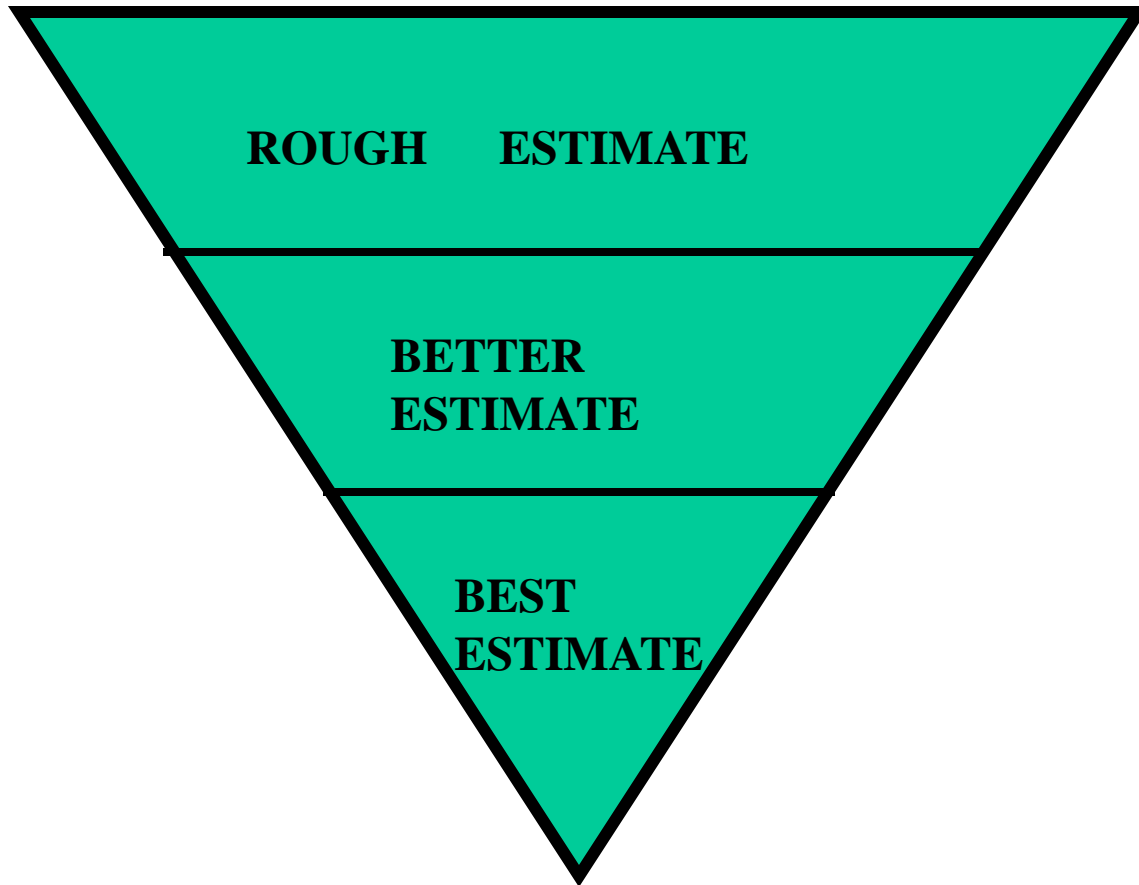
STEPWISE EXPOSURE ASSESSMENT



ACCURACY AND COSTS OF ESTIMATES

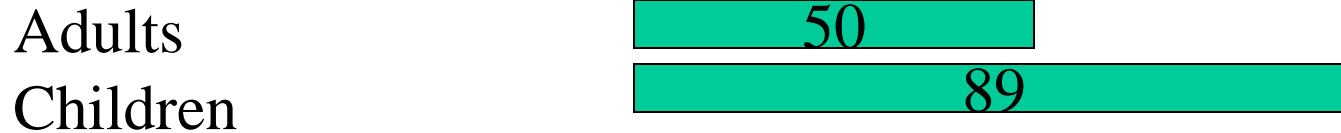


STEPWISE EXPOSURE ASSESSMENT



INTAKE OF CHEMICALS % TARGET VALUES

Nitrite



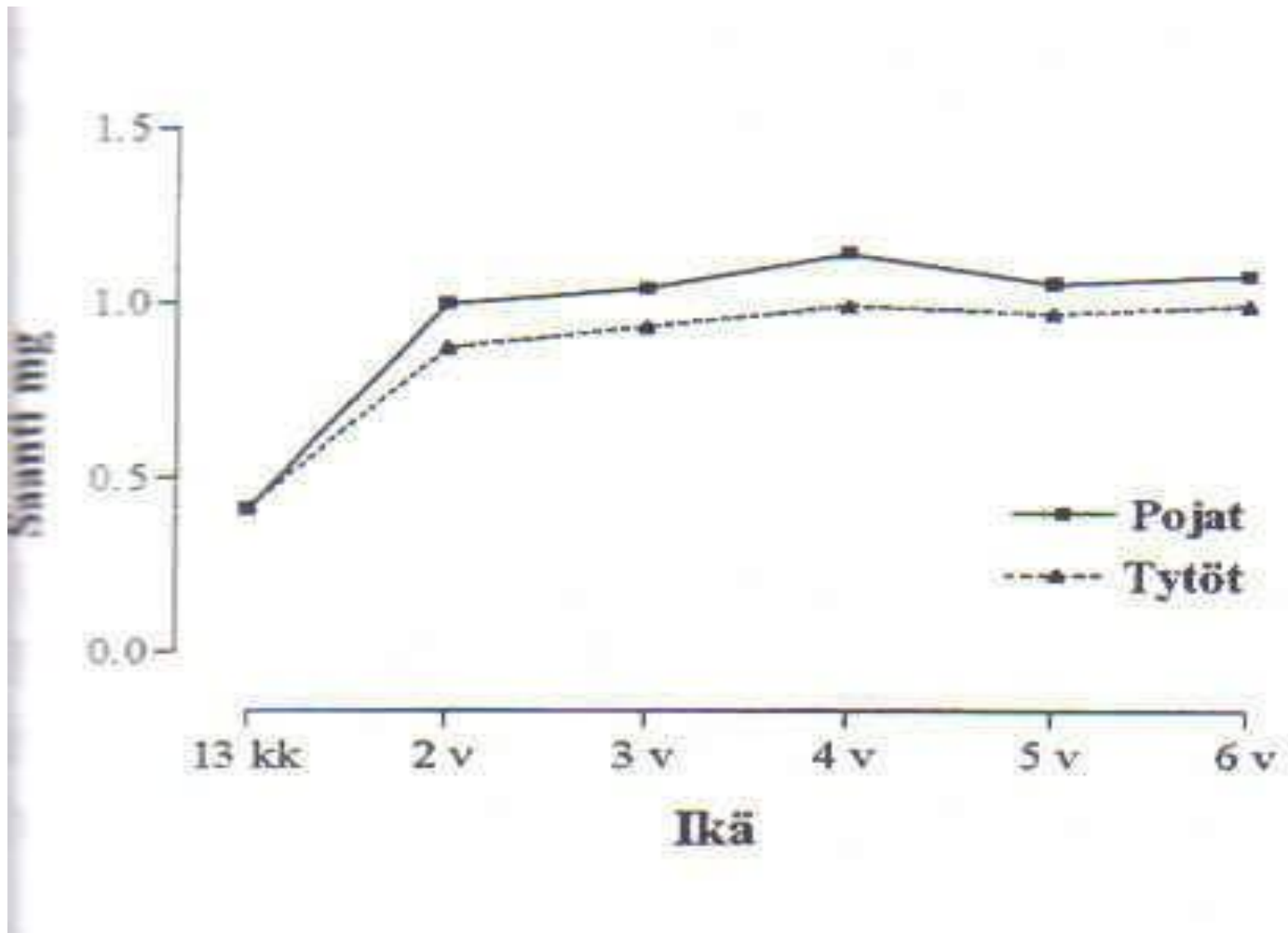
Lead



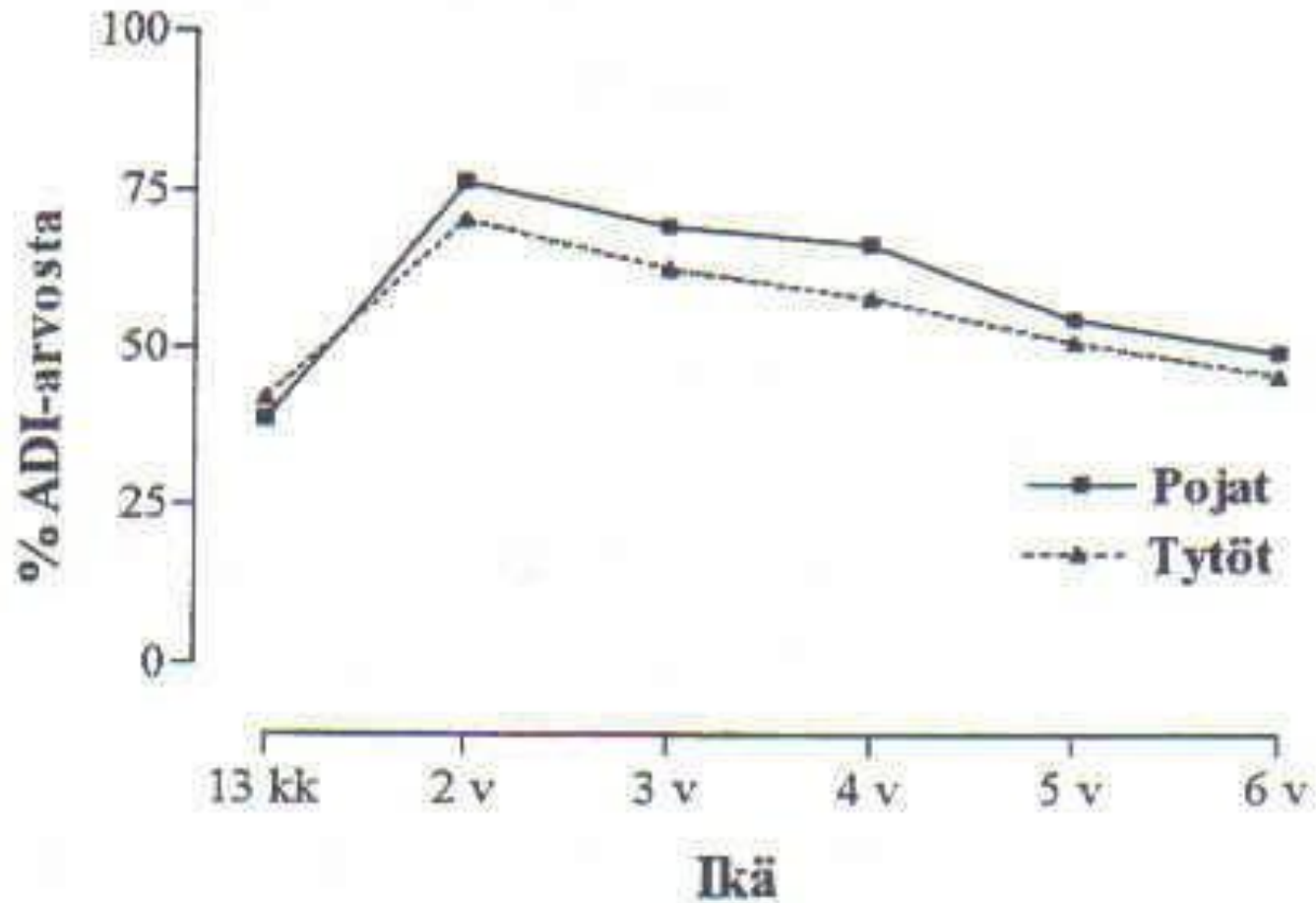
Risk group: children

- High food consumption
- Low body weight
- Limited products are eaten
- Exposure assessment with accurate method
- Individual food consumption
- Body weight of each child
- Analysing data of mostly eaten products

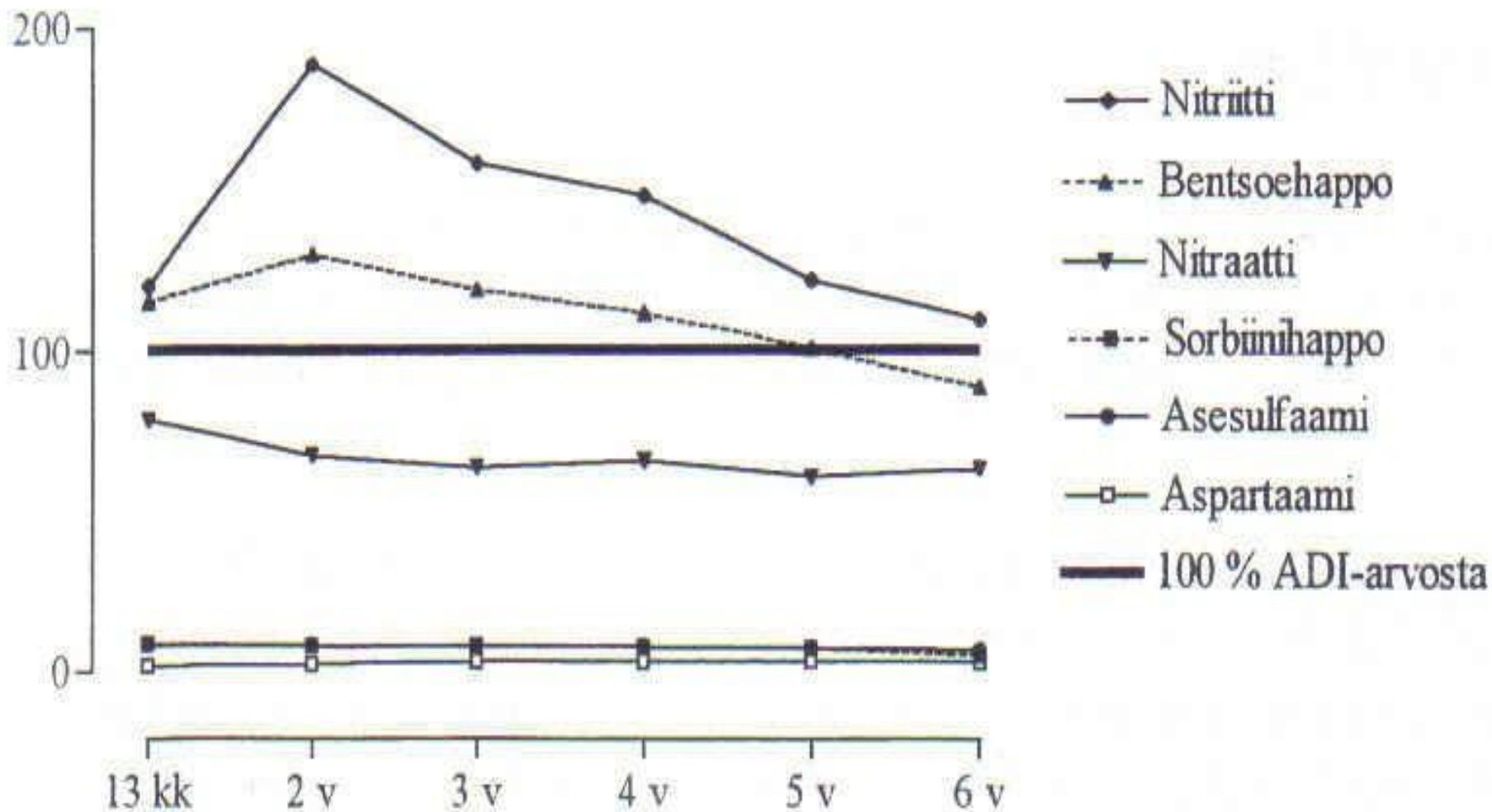
Intake of nitrite (mg) average boys and girls 1-6 years



Nitrite intake % of ADI



High consumers children average



Children and exposure

- Nitrite:
- 26 % of children (2 years) exceeding ADI
- Same child exceeds ADI several times-
eating habits?
- Exposure mainly from sausages
- Are small children protected enough ?

More evaluations are needed

- Food habits can change rapidly
- New products targeted to children
- To measure how risk communication is working

Conclusions

- Best information on food consumption and concentrations in foodstuffs should be used in exposure assessment
- Stepwise exposure assessment is cost effective and it fits better to national level
- Only results from same methodological hierarchy level can be compared

ACCEPTABLE LEVEL OF RISK

- QUESTIONS:
- Which method of exposure assessment is sufficient for evaluation?
- Is average exposure enough, false signal possible ?
- Should risk groups also be protected? At which level?
- Should we give official recommendations for food consumption?
- Are the present recommendations based really on risk assessment?