

Fit For Purpose Risk Assessment

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Koreans Name Food Safety as Biggest Headache

A survey released yesterday said food safety is more of a headache for Koreans than national security, with 60 percent of the people believing social order has grown more important than 10 years ago. The Korea National Statistical Office in Seoul said the survey of 42,000 people showed that food safety was the biggest concern over food safety.

Growers defensive as doctor raises starfruit poisoning danger

Chinese milk powder contaminated with melamine sickens 1,253 babies

Chinese hospitals are fighting to save the lives of some of the 1,253 babies who have fallen sick after they were fed milk powder contaminated with an industrial chemical. Two babies died. The parents of the sick babies are blaming the Chinese government for not doing enough to protect the food supply.

Salmonella Outbreak Exposes Food-Safety Flaws

A twisting road that led federal investigators to announce Monday that they found a single contaminated jalapeno pepper in Mexico and continuing salmonella outbreak. After weeks of looking for the source, the outbreak, it occurred at a distribution center. The source of the outbreak, it occurred at a distribution center. The source of the outbreak, it occurred at a distribution center.

Vietnam to intensify food safety

Education and media campaigns on food safety must be raised, local news on the duty.

Source of Tainted Tomatoes May Stay a Mystery

The Food and Drug Administration may never find the origin of salmonella-tainted tomatoes that have sickened hundreds of people, an agency official said Wednesday. "We may not ultimately find the source," said David Acheson, the agency's associate commissioner. "We thought we were looking pretty good, but we have to be realistic." The agency is investigating the chain.

U.S. company recalls about 286,000 pounds of meat

A New York company is voluntarily recalling about 286,000 pounds (129,700 kg) of fresh poultry products that may be contaminated, U.S. agriculture officials said on Saturday.

Salmonella-Tainted Tomatoes Linked to Markets, Restaurants

Tomatoes tainted with salmonella have been found at supermarkets and restaurants.

Consumer Group Seeks Ban on Some Food Dyes

EU: Could Ban Mozzarella Unless Gets Contamination Info

The European Commission warned Italian authorities that it could join Japan and South Korea's import ban on mozzarella cheese unless it receives information on contamination. "We still haven't had a reply," the commission spokesman said.

Health group urges overhaul of US food safety system

FOOD POISONING CAN BE A LONG-TERM PROBLEM

It's a dirty little secret of food poisoning: It can last for months or even years. Sometimes trigger symptoms months or even years after the initial bout. The unraveling of a legacy of food poisoning is being uncovered. What they've learned from interviews with victims.

Japan scare over China dumplings

Dozens of Japanese people say they have fallen ill after eating Chinese-made dumplings, prompting Tokyo officials to launch an inquiry. The frozen dumplings, known as gyoza, were made by Tianyuan.

Food Safety and Olympic challenge for Beijing



World Health Organization

Global challenges for Risk Assessment

- Many different hazards, in all foods, from everywhere
- Mixtures (chemicals)
- Interacting hazards
- Food trade
- Advances in analytical methods
- Estimates for food-borne disease burden



Interacting Hazards – what do we know?

Examples of chemicals affecting the immune system:

- Mycotoxins:
 - Trichothecenes (DON)
 - Fumonisin
 - Aflatoxins (HEP and AFB)
- Dioxins

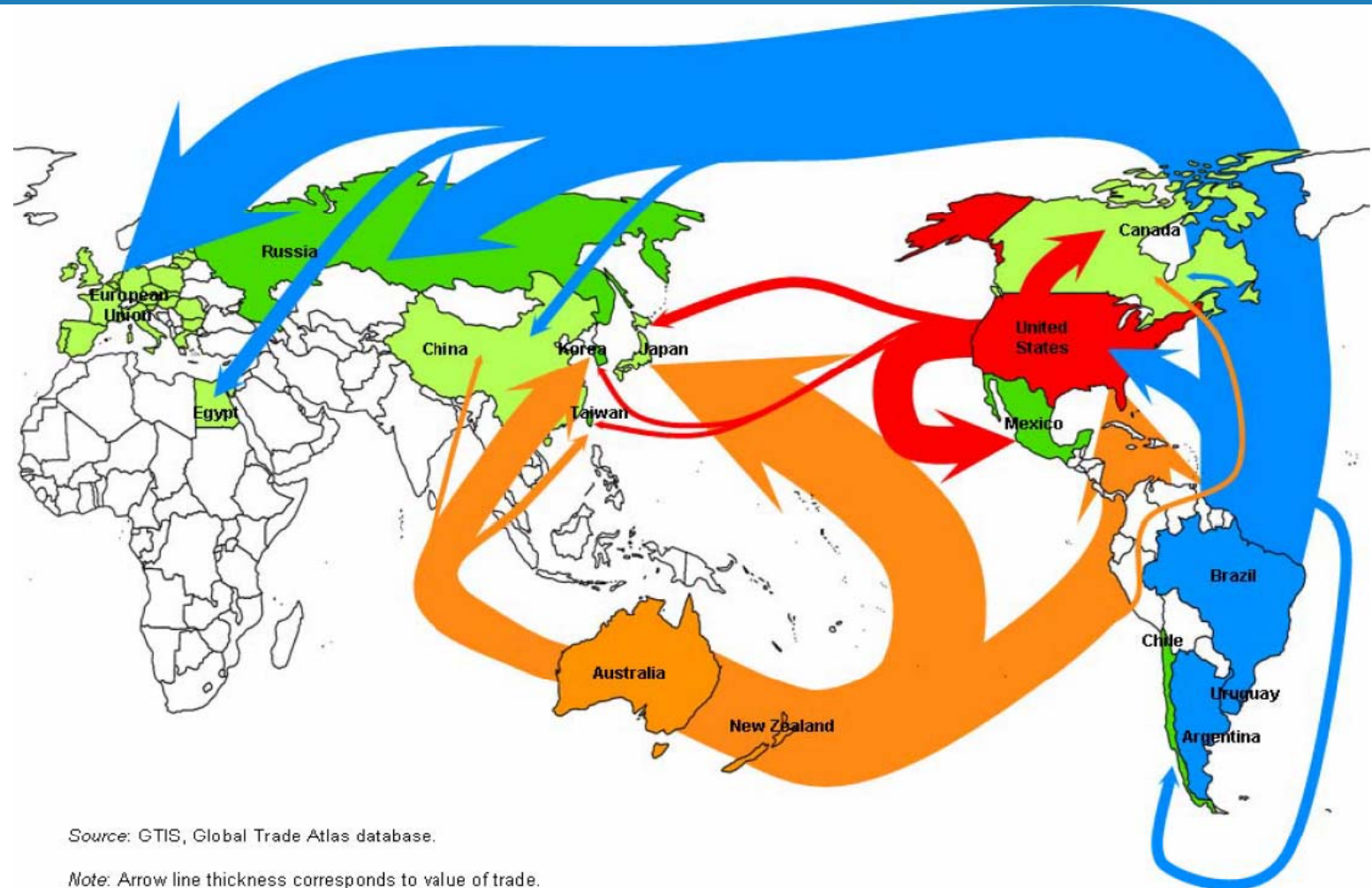
Food key exposure route for many important hazard

Impact on infectious diseases?

Food trade: a global interdependence

987 billion dollars of exports of food in 2009 [WTO]

- All types of food are now concerned by global and complex flows
- Thus, hazards also travel easily and quickly from one source to global dissemination



World beef trade flows, 2007

Advances in analytical methods

- Increased sensitivity
- Multi-residues methods
- New tools
- New methods
- Rapid in/on-line control

RECENT ADVANCES IN ANALYTICAL METHODS FOR MYCOTOXINS

Maragos, Chris

Journal of the Japanese Association of Mycotoxicology

May 20, 2004

Determination of pesticides in tea by isotope dilution gas chromatography-mass spectrometry coupled with solid-phase micro-extraction

Jie Feng

Anal. Methods, 2012, Accepted Manuscript

DOI: 10.1039/C2AY25749A, Paper

Identification and quantification of methylated PAHs in sediment by two-dimensional gas chromatography/mass spectrometry

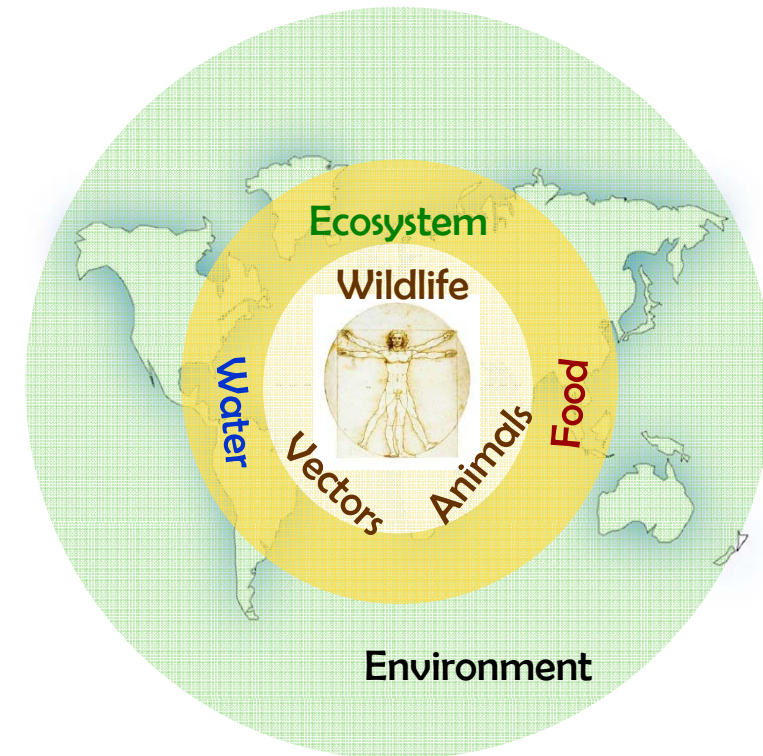
Ewa Skoczynska, Pim Leonards and Jacob de Boer

Anal. Methods, 2012, Accepted Manuscript

DOI: 10.1039/C2AY25746G, Paper

Burden of Disease Estimates

- Zoonotic diseases (Emerging and endemic):
 - disease or infection that is naturally transmissible from vertebrate animals to humans
 - Animals essential in maintaining zoonotic infections in nature
 - 1940 – 2004: 335 events of newly emerging infectious diseases – 60% zoonotic



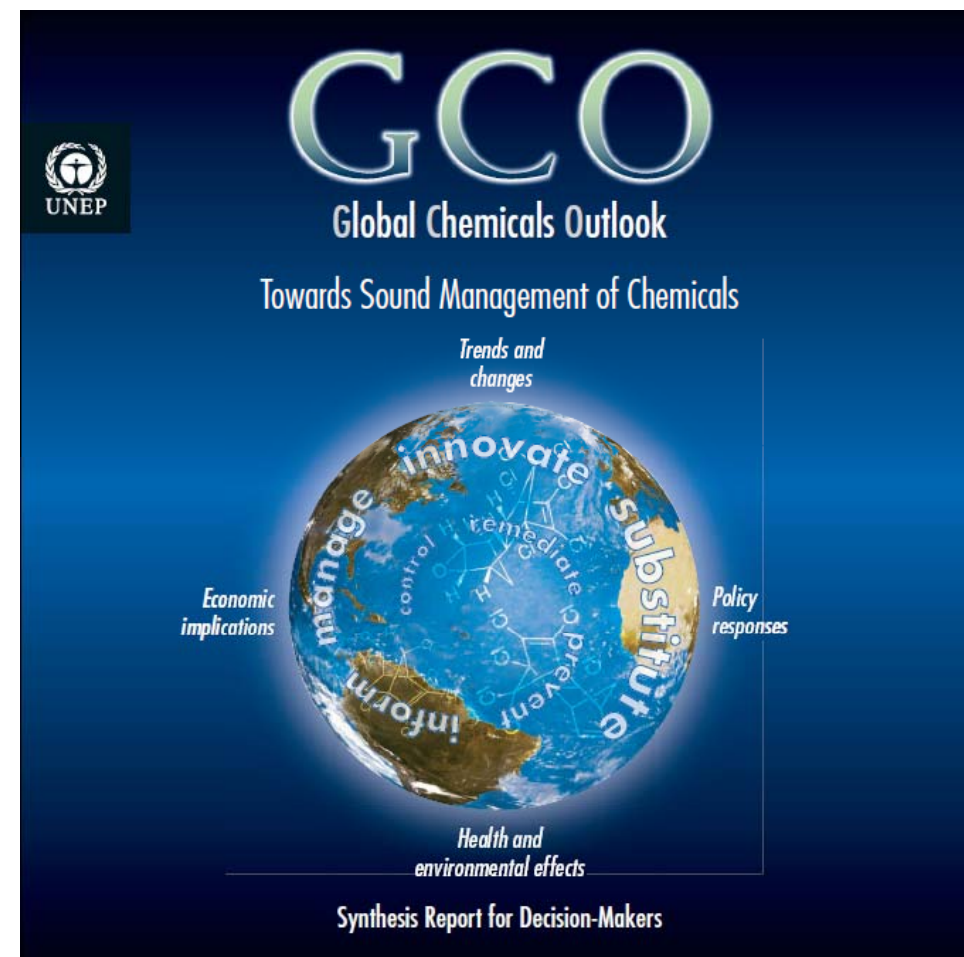
- Non Communicable Diseases: cancer, CVD, diabetes, obesity

Hazards

- 'Micro'biological hazards: limited number of pathogens, parasites, now viruses
- The world of chemicals:

The exact number of chemicals on the global market is not known but under the pre-registration requirement of the European Union's chemicals regulation, REACH, 143,835 chemical substances have been pre-registered. This is a reasonable guide to the approximate number of chemicals in commerce globally.

- Natural toxins
- Process contaminants
- New technologies and risk benefit



Microbiological risk assessment



Listeria monocytogenes



Salmonella



Escherichia coli O157



Vibrio parahaemolyticus

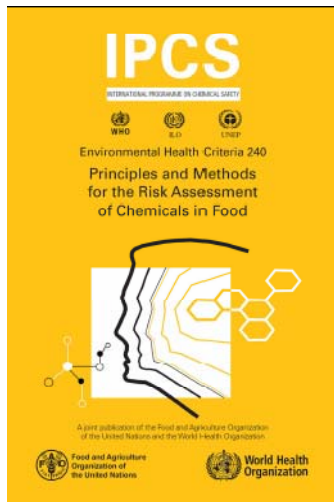


Campylobacter

Microbiological risk assessment is performed for pathogen/food combinations that are associated with food-borne illness (single pathogen, one product type, whole chain)

Chemical risk assessment

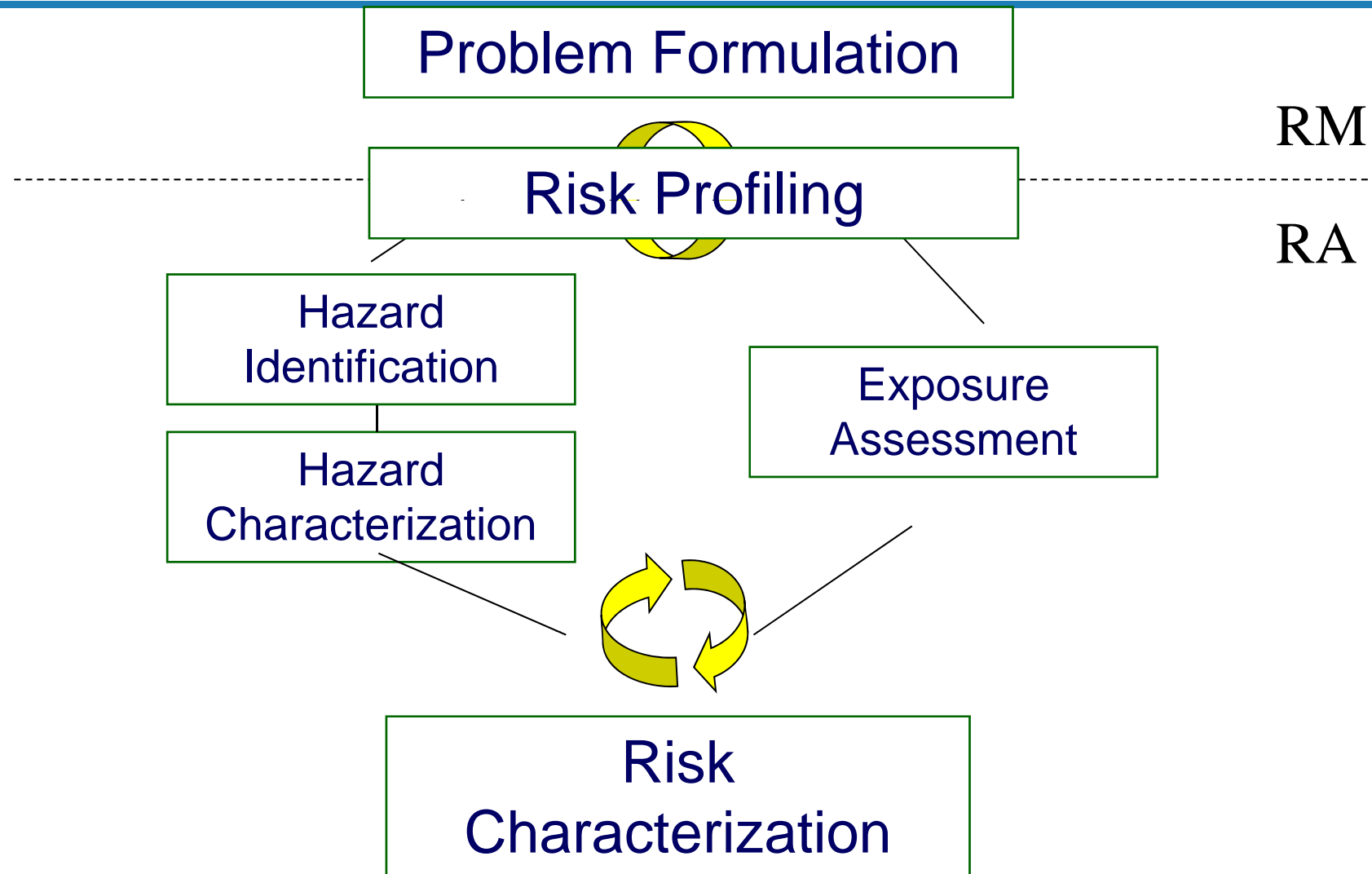
- Hazard assessment: inherent property of the chemical, independent of source, occurrence etc., some impact of processing
- Exposure assessment: source specific



EHC 240: Principles and methods for the risk assessment of chemicals in food

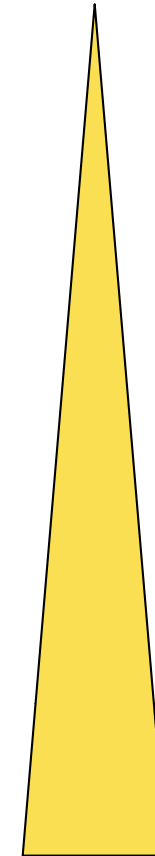
WHO 2009

Risk Assessment: A Scientific Process



Types of Risk Assessment

- Rapid risk assessment – emergencies
- Qualitative RA – due to lack of data or lack of health concern
- Quantitative RA – derivation of HBGV, or full expression of probability of adverse health outcome at defined level of exposure



Data and resource needs

Basic principles of risk assessment

- Identify problem (ranking of hazards)
- Identify **available information**
- **Define the scope** of risk assessment
- Bring together **relevant expertise** - microbiologists, toxicologists, epidemiologists, modellers, veterinarians, chemists, etc.
- Ensure there is **interaction between risk assessor and risk manager** - common understanding of problem
- Recognise limitations in data, resources - be **transparent**
- Take the whole database into account - **Integrate results**
- **Reporting** – data sources, assumptions, conclusions, uncertainties and data gaps

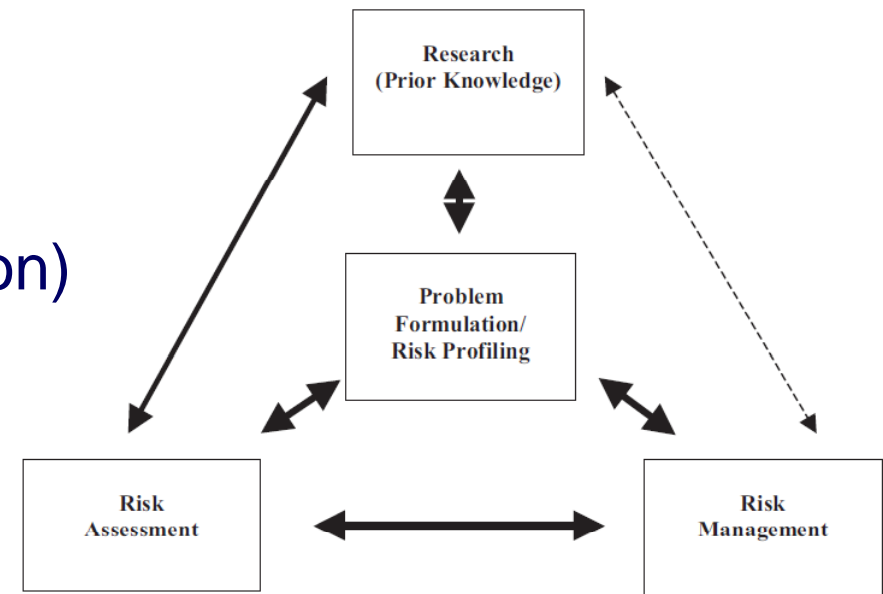
Fit-for-purpose....targeted to needs

- Scientific rationale:
 - Hazard profile
 - Exposure estimates
 - Disease burden
- 'Emotional' rationale:
 - perception



Problem formulation and preliminary risk profiling

- *Goal:* determination of need and extent of RA
- *Elements:*
 - Level of concern (toxic potential, exposure potential, sensitive population)
 - Occurrence, production, use pattern
 - Mitigation measures
 - Risk management options
 - Prioritization
- *Output:* risk assessment plan



Rapid risk assessment

- Limited information
- Limited time

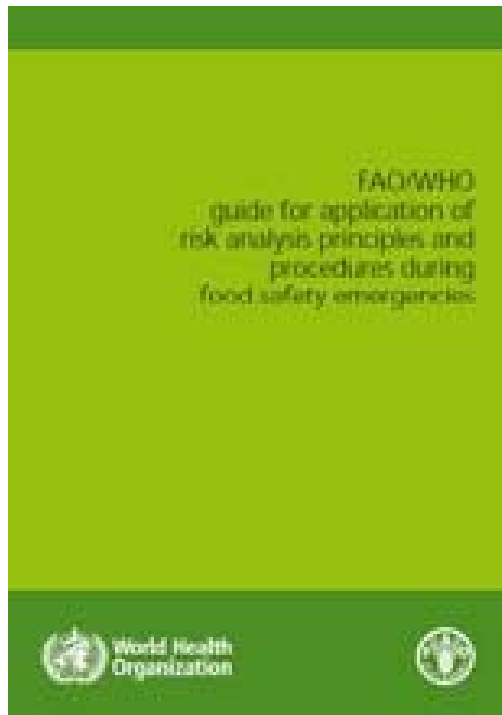


Figure 1. Example templates for a risk assessment request form and a risk assessment*

Annex 1.
Example template for a
Risk Assessment Request Form

Emergency Risk Assessment Request Form
(to be completed by risk managers)

1. Issue Identification

Issue description	
Area of concern	
Date of request (YYYY/MM/DD)	
Issue number	
Trigger	Issue report attached? (please check)
Requestor name	

2. Scope (Please state clearly the risk management questions)

3. Product Information

Annex 2.
Example template for a
Risk Assessment

Emergency Risk Assessment
(to be completed by risk assessors)

Assessment based on the written information

RA ####

The information concerning ##### product RA ####, a summary of which is given herein are specific to the situation described available at the time of conducting the assessment

Summary

Product category:	
Common name:	
Product type:	
Hazard:	
Brand name:	

http://whqlibdoc.who.int/publications/2011/9789241502474_eng.pdf

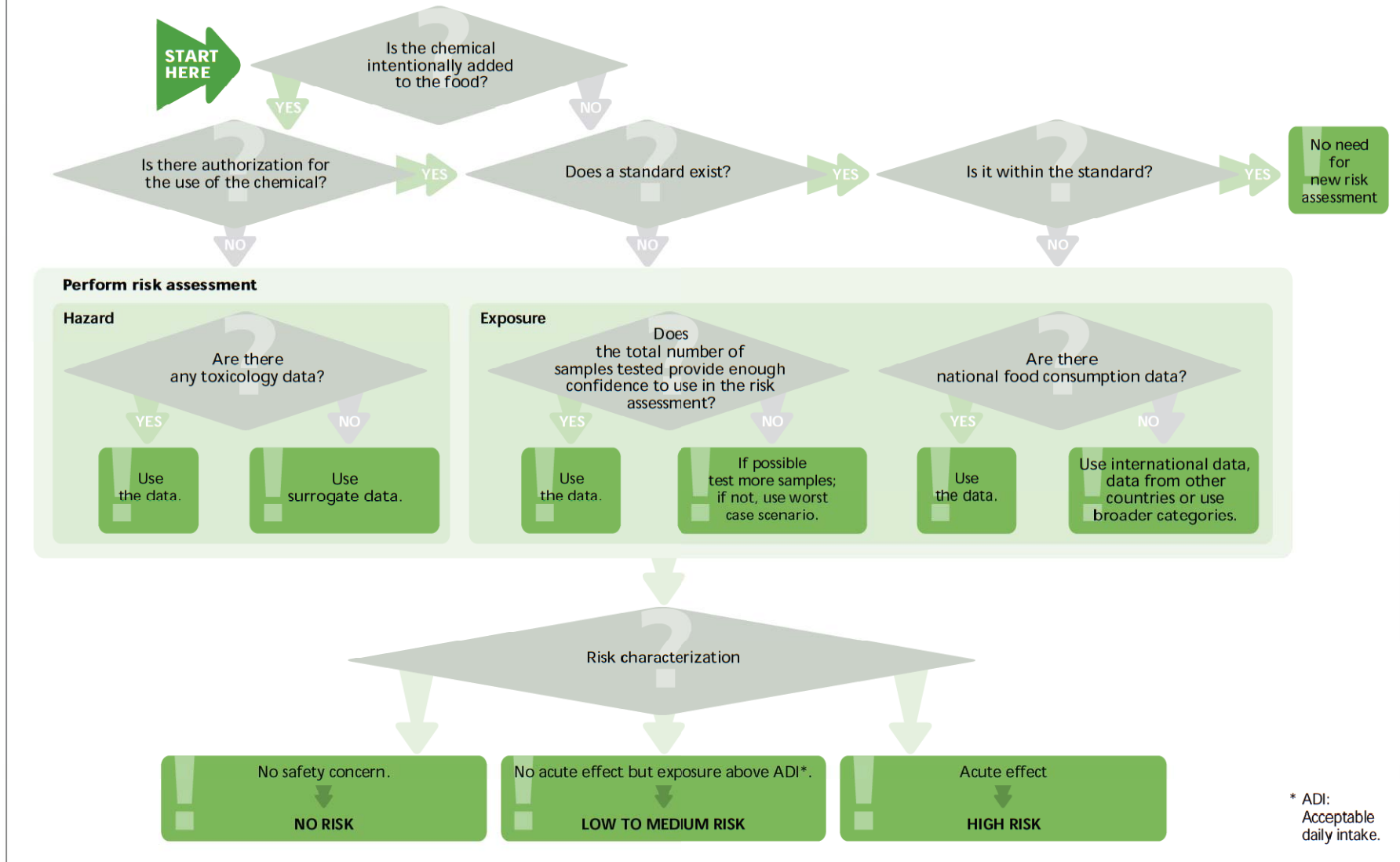
Proposal

for fit for purpose risk assessment approach

- Development of a step-wise approach for a transparent prioritization and fit for purpose risk assessment approach
- What is needed?
 - Systematic collection of guidance tools
 - Accessibility of existing relevant assessments
 - Transparent description of processes and procedures
 - Detailed description of problem formulation and preliminary risk profiling steps, incl. roles and responsibilities
- And.....
 - International agreement
 - Political will

Decision tree for chemical risk assessment

Figure 3. Example decision tree for chemical risk assessment



List all commodities/products containing the contaminated ingredient

Processing

Does the product undergo heat treatment and/or any inactivation technologies at the manufacturer's facility, after addition of the contaminated ingredient to the product, that cause at least a 5-log reduction of the hazard in the product?

YES

Very low risk

NO

Storage

Do any of the intrinsic parameters of the food, e.g. acidity or water activity, inactivate the hazard?

YES

Very low risk

NO

Is it a ready-to-eat product?

YES

Medium/high risk

NO

Preparation

If the product is cooked by the consumer, will it inactivate the hazard?

YES

Very low risk

NO

Medium to high risk

Decision tree for microbiological risk assessment



Thank you