

International Commission on Microbiological Specifications for Foods (ICMSF)

Risk Analysis / Risk Assessment Sources of Information and available Tools

LEON GORRIS Codex Coordinator for ICMSF



Outline

- ICMSF & resources
- International Resources (Codex, FAO, WHO; ICD)
- Regional Resources (European Commission, EFSA, ILSI-Europe)
- Resources @ Risk.org (USA-based)



ICMSF

- 18 food microbiologists from 13 different countries
- Oceania 2, N-America 4, S-America 2, Asia 5, Africa 1, Europe 4
- risk assessment, ecology/physiology, product and process development, public health, agriculture, food technology, food safety management, quality control and education
- assistance from an extensive network of consultants/experts
- selected on technical expertise, not national delegates
- 6 academia, 6 government, 6 industry
- voluntary and without honoraria
- 10 male, 8 female

The International Commission on Microbiological Specifications for Foods (ICMSF, the Commission) was formed in 1962 through the action of the International Committee on Food Microbiology and Hygiene, a committee of the International Union of Microbiological Societies (IUMS). Through the IUMS, the ICMSF is linked to the International Union of Biological Societies (IUBS) and to the World Health Organization (WHO) of the United Nations.









Peer-reviewed publications

- Validation of control measures in a food chain using the FSO concept . Food Control, Volume 21, Issue 12, Supplement, December 2010, Pages 1716-1722
- Relating microbiological criteria to food safety objectives and performance objectives. Food Control, Volume 20, Issue 11, November 2009, Pages 967-979
- Use of epidemiologic data to measure the impact of food safety control programs. Food Control, Volume 17, Issue 10, October 2006, Pages 825-837



Peer-reviewed publications

- Principles for the establishment of microbiological food safety objectives and related control measures. Food Control, 9(6):379-384 (1998).
- Potential application of risk assessment techniques to microbiological issues related to international trade in food and food products. J. Food Protection, 61(8):1075-1086 (1998).
- Establishment of microbiological safety criteria for foods in international trade. Wld. Hlth. Statist. Quart., 50:119-123 (1997).
- Choice of sampling plan and criteria for *Listeria monocytogenes*. Int. J. Food Microbiol.22:89-96 (1994)



Discussion/opinion papers for *Codex Alimentarius*

- Principles for the establishment and application of microbiological criteria for foods (case studies for application of MCs; 2012)
- Use of Epidemiologic Data to Measure the Impact of Food Safety Control Programs (2005)
- Microbiological criteria for powdered infant formula (2005)
- The role of Food Safety Objectives in the management of the microbiological safety of food (2001)
- Sampling plans for microbiological safety criteria for foods in international trade (1996)
- Principles for the establishment and application of microbiological criteria for foods (1995)
- Control of *L. monocytogenes* in foods (1995)

"Micro-organisms in Foods" book series





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Paper & software tool on performance of sampling plans

http://www.icmsf.org/main/software_downloads.html



Relating microbiological criteria to food safety objectives and performance objectives

M. van Schothorst^a, M.H. Zwietering^{b,*}, T. International Commission on Microbiologi



**The mean concentration detected is 1 cfu in 526g (if the assumed standard deviation is 0.8 and probability of detection is 95%).

(Input into Codex standards for Cronobacter and Salmonella in PIF, CAC, 2008)

Paper & software tool to assess meeting FSO

http://www.icmsf.org/main/software_downloads.html



Validation of control measures in a food chain using the FSO concept

M.H. Zwietering^{a,*}, C.M. Stewart^b, R.C. Whiting^c, International Commission on Microbiological Specifications for Foods (ICMSF)



Outline

- ICMSF & resources
- International Resources (Codex, FAO, WHO; ICD)
- Regional Resources (European Commission, EFSA, ILSI-Europe)
- Resources @ Risk.org (USA-based)



(Inter)national organizations involved in the development of risk assessment principles and methods



Risk Analysis = the common framework

- Risk Analysis:
 - Risk Management
 - Risk Assessment
 - Risk Communication
- Triggered by World Trade Organisation (WTO)
- Advocated by many governments and intergovernmental organisations (FAO, WHO)



"Codex" Risk analysis – development timeline



Meetings of JECFA and JMPR and ad hoc consultations

Codex Alimentarius RA Framework

Risk Assessment

- Hazard Identification
- Hazard Characterisation
- Exposure Assessment
- Risk Characterisation

Risk Management

- Risk Evaluation
- Option Assessment
- Option Implementation
- Monitoring & Review

Risk Communication

Interactive exchange of information and opinions concerning risks

Risk-based approach to evaluate food safety



Responsibilities for risk management and for risk assessment at the international level



FAO/WHO PROGRAMME FOR THE PROVISION OF SCIENTIFIC ADVICE

International level



Providers of scientific advice



Resources from Codex, FAO, WHO



JEMRA Output



JEMRA Output:

CCFH use:



codev alimentar	rius commission
FOOD AND AGRICULTURE	WORLD
OF THE UNITED NATIONS	ORGANIZATION
JOINT OFFICE: Viale delle Terme di Caracalla 00100 ROME Tel: 39 06 5702	51 www.codexalimentarius.net Email: codex@fao.org Faosimile: 39 06 5705 4593
Agenda Item 10 (c)	CX/FH 04/10-Add.3 December 2003
JOINT FAO/WHO FOOD	STANDARDS PROGRAMME
CODEX COMMITTE	E ON FOOD HYGIENE
Thirty-si Washinoton DC, United States of	ixth Session America, 29 March – 3 April 2004
. asingen bei entra states e	
DISCUSSION PAPER ON RISK MANAGEMI POU	ENT STRATEGIES FOR <i>SALMONELLA</i> SPP. I JLTRY
Prepared by Sweden with the assistance of Austral France, Germany, Netherlands, New Zealand, T	ia, Brazil, Canada, China, Czech Republic, Denmark hailand, USA, the European Commission and ALA
BACKGROUND	
At its 34 th session in Bangkok, the Codex Committee the FAO/WHO expert consultations on risk assessme was a need to develop a discussion paper on Risk Ma based upon the risk assessment document (FAO Food drafting group, led by Sweden should develop a discu drafting group met in Uppsala, Sweden, the 25-26 th o	on Food Hygiene was informed about the outcome of nt on <i>Listeria</i> and <i>Salmonella</i> . It was noted that there nagement Strategies for <i>Salmonella</i> spp. in broilers 4 and Nutrition Paper 72). The committee agreed that ission paper to be considered at its next Session. The f February 2002.

Microbiological Risk Assessments



Food and Agriculture Organization of the United Nations

for a world without hunge

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Food safety & quality

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Microbiological risks and JEMRA

> Risk assessments Risk management Guidelines

Technology transfer

- Microbiological hazards associated with fresh produce
- Viruses in foods
- Enterohaemorrhagic *Escherichia coli* (EHEC) in meat and meat products
- Vibrio spp. in seafoods
- Salmonella in eggs and broiler chickens
- Campylobacter spp. in broiler chickens
- Enterobacter sakazakii and other micro-organisms in powdered infant formula
- Listeria monoctogenes in ready-to-eat foods

http://www.fao.org/food/food-safety-quality/scientific-advice/jemra/risk-assessments/en/ 23

FAO/WHO MRAs	<i>Codex</i> guidelines
<i>Listeria monocytogenes</i> in ready- to-eat food	General principles of food hygiene for management of <i>L.</i> <i>monocytogenes</i>
<i>Cronobacter spp (E. sakazakii</i>) in infant formula	Recommended international code of practice for foods for infants and children
Vibrio spp. in seafood	Risk management strategies for <i>Vibrio</i> spp. in seafood
Salmonella spp. in broiler chickens and eggs Campylobacter spp. in broiler chickens	Risk management strategies for Salmonella and Campylobacter in poultry

Scientific advice – Technology transfer







Microbiological Risk Assessment Tools

Links

<u>Home</u>

FAO JEMRA Page

WHO JEMRA Page

One of the objectives of JEMRA (Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment) is to make risk assessment more accessible and user-friendly to the wider food safety community. The development of risk assessment tools is one approach to achieving this. Development of these tools has been driven by the international standard setting work of the Codex Alimentarius which takes a risk based approach to its standard development work and in its standards guides countries to also embrace risk based approaches.

A tool to assess the impact of control measures on the risk associated with *Cronobacter* spp. in powdered infant formula was the first tool to be developed and can be used in conjunction with the Codex Code of Hygienic Practice for Powdered Formulae for Infants and Young Children available at <u>http://www.codexalimentarius.net/download/standards/11026/CXP_066e.pdf</u>.

The decision support tool for the management of *Campylobacter* and *Salmonella* in chicken meat has been developed to support a risk based approach to the management of these pathogens and can be used in conjunction with the Codex Guidelines for the Control of *Campylobacter* and *Salmonella* in Chicken Meat available at

http://www.codexalimentarius.net/download/standards/11780/CXG_078e.pdf.



Joint FAO/WHO plans. Expert Meetings on Microbiological Risk Assessment

A tool to assess the performance of sampling plans, irrespective of the pathogen or commodity they refer to, is also being developed to assist regulators and the food industry assess the impact of sampling approaches and modifications to their plans.

http://www.mramodels.org/

Tools

<u>Powdered Infant</u> <u>Formula</u>

Poultry

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Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment

Risk Assessment for Cronobacter sakazakii in Powdered Infant Formula



Cronobacter sakazakii (previously Enterobacter sakazakii) is a gram-negative, non-spore-forming bacterium belonging to the Enterobacteriaceae family. On occasion, it has been associated with sporadic cases or small outbreaks of sepsis, meningitis, cerebritis and necrotizing enterocolitis.

• Model Summary

• The Model

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The risk assessment presented here addresses powdered infant formula (PIF) that is intrinsically contaminated with *C. sakazakii*. This risk assessment considers the preparation, storage and feeding of PIF to infants. The model describes the effect that each of the preparation and storage stages has upon the intrinsic microbiological quality of the PIF in terms of *C. sakazakii*.



The risk assessment explicitly examines the impact of different preparation and handling strategies on *C. sakazakii* in PIF and describes the outputs in terms of the relative risk posed to infants. In addition to explicitly considering the preparation and handling of PIF we provide tools to explore the possible impact of microbiological criteria through the specification of sampling plans for *C. sakazakii* in PIF. The microbiological criteria can be explored in isolation or in combination with the preparation and handling tools to determine the impacts upon risk.

The risk assessment model presented here was presented and reviewed at a Technical Meeting convened by FAO/WHO. The full report of the meeting is **available**.

Note that the risks associated with the potential contamination of the powder from environmental sources after retail, for example in the environment in which the formula is prepared or the equipment used in preparation (e.g. blenders), are not considered in this assessment.

http://www.mramodels.org/esak/



The risk assessment has three main components:

- Component A addresses the level of C. sakazakii in the PIF at the point of preparation (initial level of contamination).
- Component B addresses consumption of PIF, estimating the amount of powder consumed per million infant days or per million infants per day.
- Component C estimates the magnitude of the change in contaminating C. sakazakii (given a contaminated serving) that may occur as a result of preparation, holding and feeding practices. This includes the consideration of growth and inactivation.

http://www.mramodels.org/ESAK/ModelSummary.aspx

JEMRA Resources

Food and Agriculture	Food safety and quality						
United Nations	N 🖶 🗹 🛃 🚺						
for a world without hunger	> Food > Food safety & quality > Scientific advice > Microbiological risks and JEMRA > Resources						
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Food safety & quality							
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Events & projects	Microbiological Risk Assessment series						
A-Z index	Application of fisk analysis to food standards issues The application of risk analysis to food standards issues						
Capacity development	The application of fisk communication to food standards and safety matters - FAO Food and Nutrition Paper 70 Dick measurement and feed opticity. EAO Food and Nutrition Paper 85, 1007						
Scientific advice	 Risk management and food salety - FAO Food and Nutrition Paper 65. 1997 						
Calls for data and experts	Tools						
Microbiological risks and JEMRA	 Seafood Spoilage and Safety Predictor (SSSP) - predicts shelf-life and growth of bacteria in different fresh and lightly preserved set Risk Ranger - a simple food safety risk calculation tool intended as a simple and quick means to develop a first estimate of relations to develop a first estimate and set of the develop a first estimate of relations to develop a first estimate o						
Risk assessments	ComBase - free web-based database of food microbiology data						
Risk management	IJESAN - Online resource for food safety risk analysis						
Guidelines							
Technology transfer	Meetings/Conferences						
Resources							
Chemical risks and JECFA	 2nd International Conference on Microbial Risk Assessment: Foodborne Hazards Workshop on Molluscan Shellfish Safety 						
Other scientific advice	August 10-12, 2005, Grand Hotel Marriott Resort, Point Clear, Alabama USA						

http://www.fao.org/food/food-safety-quality/scientific-advice/jemra/resources1/en/

A Health topics	Data and statistics	Media centre	Publications	Countries	Programmes and projects Ab		
	Q [Search		
Food safety							
Food Safety	Chem	ical risks i	in food				
Zoonoses		~	General I	General Information			
Chemical risks			GEMS/F	GEMS/Food			
Biotechnology and nanotechnology	_ ¢			Joint FAO/WHO Expert Committee on Food Additives (JECFA) Joint FAO/WHO Meeting on Pesticide Residues (JMPR) Meetings			
Food standards (Code Alimentarius)	ex 🔍						
Foodborne disease		A	Publicatio	ons			
Food production to consumption	Bisphenol		Related li	nks			
Capacity building	The conta	The contamination of food by chemical hazards is a worldwide public health concern and					
Consumer education	is a leadi environm PCBs an alth pesticide	is a leading cause of trade problems internationally. Contamination may occur through environmental pollution of the air, water and soil, such as the case with toxic metals, PCBs and dioxins, or through the intentional use of various chemicals, such as pesticides, animal drugs and other agrochemicals.					
Organiza	tion						

http://www.who.int/foodsafety/chem/en/



http://www.who.int/foodsafety/chem/jecfa/en/

Q,

Countrioo

Abc

IPCS Home

Health impacts of chemicals

Tools for assessing chemical risks

Poisons information, prevention and management

Chemical incidents and emergencies

Capacity building



International Programme on Chemical Safety

Through the International Programme on Chemical Safety (IPCS), WHO works to establish the scientific basis for the sound management of chemicals, and to strengthen national capabilities and capacities for chemical safety.

Chemical safety is achieved by undertaking all activities involving chemicals in such a way as to ensure the safety of human health and the environment. It covers all chemicals, natural and manufactured, and the full range of exposure situations from the natural presence of chemicals in the environment to their extraction or synthesis, industrial production, transport, use and disposal.





http://www.who.int/ipcs/assessment/public_health/chemicals_phc/en/index.html

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IPCS Home

Health impacts of chemicals

Tools for assessing chemical risks

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WHO Human Health Risk Assessment Toolkit: Chemical Hazards

The WHO Human Health Risk Assessment Toolkit: Chemical Hazards provides users with guidance to identify, acquire and use the information needed to assess chemical hazards, exposures and the corresponding health risks in their given health risk assessment contexts at local and/or national levels. The Toolkit contains road maps for conducting a human health risk assessment, identifies information that must be gathered to complete an assessment and lists electronic links to international resources from which the user can obtain information and methods essential for conducting the human health risk assessment.

The Toolkit has been developed for public health and environmental professionals, regulators, industrial managers and other decision-makers with at least some training in the principles of risk assessment and who have a role in assessing and managing human health risks of chemicals.

World Health Organization

WHO Human Health Risk Assessment Toolkit: Chemical Hazards
 pdf, 3.35Mb

http://www.who.int/ipcs/methods/harmonization/areas/ra_toolkit/en/index.html

For more information

- Codex web site: <u>www.codexalimentarius.org</u>
- FAO food safety website: <u>http://www.fao.org/ag/agn</u>
- WHO food safety website: http://www.who.int/foodsafety/en/

Resources from ICD



- Industry Council for Development ; created in 1992; NGO status with FAO and WHO
- 2012 members: Ajinomoto, Mars, Nestlé, Unilever, Nestlé Progastronomia
- Mission: to improve public health through practical partnership projects aimed at food safety and nutrition
- Major activities:
 - Development of training materials in food safety and nutrition, applicable worldwide
 - Running training programmes in developing/less experienced countries
 - Hubs in Jakarta and Accra to disseminate ICD further
ICD Training courses





- WHO/ICD Food Safety for nutritionists and other health professionals
 - WHO/ICD Manual on HACCP: principles and practice
 - ICD Progastronomia package for catering establishments
 - FAO/ICD/WHO Manual on microbiological risk assessment

MRA



FAO/WHO/ICD BASIC AWARENESS COURSE ON MICROBIOLOGICAL RISK ASSESSMENT

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Guidelines

Technology transfer

Resources

Chemical risks and JECFA

Other scientific advice

Emergency prevention system for food safety

Publications & tools

Partnerships

Food Safety Expert Roster

Microbiological risk assessment training courses and tools

FAO/WHO together with the Industry Council for Development (ICD) have developed a short introductory course on microbiological risk assessment and its use in risk management.

This course has been developed with both risk managers and scientists/future risk assessors in mind. It is aimed towards participants from both government and scientific institutions or academia.

Related training material

- Workshops and seminars
- Risk Analysis Manual



http://www.fao.org/food/food-safety-quality/scientific-advice/jemra/technology/en/

MRA

FAO/WHO/ICD BASIC AWARENESS COURSE ON MICROBIOLOGICAL RISK ASSESSMENT



About this course Training presentations	Resource materials	Internet links	
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Microbiological risk assessment (MRA) is a new tool in the management and control of microbiological hazards in foods, with the objectives of reducing food-borne disease and facilitating food trade. Codex Alimentarius has issued documents that describe its methodology and application. In response to questions from the Codex Committee on Food Hygiene, a few "global" MRAs have been performed by expert committees of FAO/WHO. The time has now come for governments to become acquainted with the general concept of risk analysis and with how MRA fits into the framework of microbiological risk management (MRM); this course will contribute to this.

This course has been developed to target food safety risk managers in governmental and parastatal organizations, as well as scientists from academia, governments or industry who are involved in risk assessment or who may not yet be very familiar with microbiological risk assessment and its application but are planning to use it in the future. The objectives of the course are as follows:

- Raise awareness among policy-makers and risk managers of the principles and procedures for microbiological risk assessment in the context of risk management.
- » Explain the concept of microbiological risk assessment.
- Explain the type of data, other resources and set-up required for microbiological risk assessment and factors influencing these.
- Describe the work of the organizations involved in risk assessment at national or international level, their outputs and relevant resources material.



Guidance for users

Guidance for users [.pdf]

Course overview

PowerPoint presentation PDF file

Proposed programme structures - suggestions for implementation of this course

3-day programme [.pdf] 4-day programme [.pdf] 5-day programme [.pdf]

MRA

FAO/WHO/ICD BASIC AWARENESS COURSE ON MICROBIOLOGICAL RISK ASSESSMENT



MRA

FAO/WHO/ICD BASIC AWARENESS COURSE ON MICROBIOLOGICAL RISK ASSESSMENT



Working group exercises

» Exercise 1

Situation analysis: The food safety and risk management situation in your country Brief for working groups

» Exercise 2

a) Risk assessment of Staphylococcus aureus in fermented sausages

- Brief for working groups
- Brief for trainers

b) Risk assessment of choleragenic Vibrio cholerae in warm water shrimp in international trade

- Brief for working groups
- » Exercise 3

Risk analysis applied to risk management of Case of *Salmonella enteritidis* in eggs Brief for working groups

» Exercise 4

New look at the outcome of the country situation: The future food safety and risk management situation in your country Brief for working groups

Guidance for use of working group exercises Guidance for use of working group exercises

Outline

- ICMSF & resources
- International Resources (Codex, FAO, WHO; ICD)
- Regional Resources (European Commission, EFSA, ILSI-Europe)
- Resources @ Risk.org (USA-based)



Regional level Europe





- <u>The General Product Safety Directive Committee</u>
- Consumer Safety Network
- Risk Assessment Working Group

The General Product Safety Directive Committee

The General Product Safety Directive (GPSD) Committee consists of delegates from national ministries or authorities responsible for product safety on the national level.

The committee assists the European Commission in several tasks related to the implementation of the GPSD. In particular, when the Commission takes decisions requiring the Member States to urgently introduce temporary measures restricting the placing on the market of products or requiring the withdrawal of products posing serious risks, it is assisted by the GPSD Committee.

http://ec.europa.eu/consumers/safety/committees/index_en.htm



Risk Assessment Working Group

Workshop on the new risk assessment Guidelines

Workshop documents:

- Agenda 🖾 pdf
- The new draft risk assessment Guidelines Defined
- Keynote address ^D ^{pdf}

Presentations

- Risk Assessment for Dummies ^D pdf
- Risk Assessment of chemical & physical hazards: A similar approach 2 pdf
- Related Risk Assessment Activities EU and internationally ¹/₂ P^{df}
- Managing Risk in the Supply Chain ^B pdf

http://ec.europa.eu/consumers/safety/committees/index_en.htm#rawg



en

Home > About EFSA > What we do > Risk assessment

Who we are	Risk assessment	
What we do		
Risk assessment	The European Food Safety Authority (EFSA) was established to assess risks associated with the food	
Scientific output definitions	chain, its main mandate. EFSA's risk assessment work contributes to improving food safety in Europe and to building public confidence in the way risk is assessed. Risk assessment is a specialised field applied science that involves reviewing scientific data and studies in order to evaluate risks associate with certain hazards.	
Risk communication		
How we work		
Who we work with		
Corporate documents	In its first five years EESA delivered over 450 scientific opinions on a wide variety of risk issues. These	
10th Anniversary	included Bovine Spongiform Encephalopathy (BSE) and Transmissible Spongiform Encephalopathy	
Jobs	(TSE), the safety of food additives such as aspartame, allergenic food ingredients, genetically modified	
Contact us	organisms (GMOs), wild and farmed fish, pesticides, and animal health issues including Avian Influenza.	

http://www.efsa.europa.eu/en/efsawhat/riskassessment.htm



European Food Safety Authority

Advisory Forum & scientific cooperation

Animal health & welfare

Biological hazards

Biological monitoring

Contaminants

Dietary & chemical monitoring

Emerging risks

Feed

Food ingredients and packaging

GMO

Nutrition

Pesticides

Plant health

Scientific assessment support

Scientific Committee

Units & Panels

Risk assessment and scientific assistance

- Animal health and welfare (AHAW Panel)
- Biological hazards (BIOHAZ Panel)
- Biological monitoring
- Contaminants (CONTAM Panel)
- Dietary and chemical monitoring
- Plant health (PLH Panel)
- Scientific assessment support

Scientific evaluation of regulated products

- Feed (FEEDAP Panel)
- Nutrition (NDA Panel)
- Food ingredients and packaging (ANS Panel, CEF Panel)
- GMO (GMO Panel)
- Pesticides (PPR Panel)

http://www.efsa.europa.eu/en/panels.htm



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Search for term:	risk assessment	
Subject	Biological hazards	•

- <u>Annual Report of EFSA"s MRA Network</u> Technical report Published: 10 January 2012
- <u>AMR in commensal microorganisms</u> Technical report Published: 27 October 2011
- <u>Salmonella spp. in broiler (Gallus gallus) meat production</u> External Scientific Report Published: 26 July 2011
- <u>A quantitative microbiological risk assessment of *Campylobacter* in the broiler meat chain External Scientific Report - Published: 7 April 2011
 </u>
- <u>Revision of the quantitative risk assessment (QRA) of the BSE risk posed by processed animal</u> proteins (PAPs) Scientific Opinion of the BIOHAZ Panel - Published: 11 January 2011
- <u>Salmonella in slaughter and breeder pigs</u> Scientific Opinion of the BIOHAZ Panel Published: 19 April 2010
- <u>QMRA on Salmonella in Slaughter and Breeder pigs</u> External Scientific Report Published: 19 April 2010
- <u>Risk assessment on parasites in fishery products</u> Scientific Opinion of the BIOHAZ Panel-Published: 14 April 2010



- Citrinin in food and feed , Scientific Opinion of the CONTAM Panel Published: 23 March 2012
- T-2 and HT-2 toxins in food and feed, Scientific Opinion of the CONTAM Panel Published: 19 December 2011
- Alternaria toxins in feed and food, Scientific Opinion of the CONTAM Panel Published: 26 October 2011

Results 1 - 10 of 63

- Zearalenone in food , Scientific Opinion of the CONTAM Panel Published: 21 June 2011
- Nitrate in vegetables children, Statement of the CONTAM Panel Published: 9 December 2010
- Ergot alkaloids in food and feed, Scientific Opinion of the CONTAM Panel Published: 19 July 2012
- Mineral oil hydrocarbons in food, Scientific Opinion of the CONTAM Panel Published: 6 June 2012
- Brominated phenols and their derivatives in food, Scientific Opinion of the CONTAM Panel -Published: 16 April 2012
- TBBPA and its derivatives in food, Scientific Opinion of the CONTAM Panel Published: 19 December 2011

	Publications	3	Results 1 - 10 of 654		
The etsa	Search for term:	risk assessment			
European Food Safety Authority	Subject	Pesticides	·		

- <u>Peer review of the pesticide risk assessment of the active substance Paecilomyces fumosoroseus</u> <u>strain FE 9901</u> Conclusion on Pesticides - Published: 12 September 2012
- <u>Peer Review of the pesticide risk assessment of confirmatory data submitted for the active</u> <u>substance diflubenzuron</u> Conclusion on Pesticides - Published: 7 September 2012
- <u>Peer review of the pesticide risk assessment of the active substance *Spodoptera littoralis* <u>nucleopolyhedrovirus</u> Conclusion on Pesticides - Published: 4 September 2012</u>
- <u>Peer review of the pesticide risk assessment of the active substance *Helicoverpa armigera* <u>nucleopolyhedrovirus</u> Conclusion on Pesticides - Published: 4 September 2012</u>
- <u>Peer review of the pesticide risk assessment of the active substance penflufen</u> Conclusion on Pesticides - Published: 21 August 2012
- <u>Peer Review of the pesticide risk assessment of the active substance methiocarb</u> Conclusion on Pesticides Published: 30 July 2012
- <u>Toxicological relevance of pesticide metabolites</u> Scientific Opinion of the PPR Panel Published: 26 July 2012



Advisory Forum & scientific cooperation	Development of a user-friendly interface version of the Salmonella source-
Animal health & welfare	attribution model External Scientific Report - Published: 25 July 2012
Biological hazards	
About us	
Topics A-Z	Development of a risk ranking framework on biological hazards Scientific
Panel members	Opinion of the BIOHAZ Panel - Published: 14 June 2012
Events	
Working groups	Lessons learnt from modelling biological hazards Scientific Opinion of the
Networks	BIOHAZ Panel - Published: 14 June 2012
Publications	Biolin 2 Function Fusioned. 1 France 2012
BSE & TSE	Public health risks represented by certain composite products Scientific
Requests & mandates	Opinion of the BIOHAZ Banel – Bublished: 14 May 2012
Biological hazard applications	Opinion of the bioliaz ranel - rubiished. 14 way 2012
Biological monitoring	
Contaminants	



ILSI Research Foundation

ILSI Health and Environmental Sciences Institute

Regional Branches IL SI Argentina IL SI Brasil IL SI Brasil IL SI Europe IL SI Focal Point in China IL SI Focal Point in China IL SI I-India IL SI Japan IL SI Japan IL SI Japan IL SI Mexico IL SI Mexico IL SI Morth Africa and Gulf Region IL SI North America IL SI North Andean IL SI South Africa IL SI South Africa

International Committees IL SI International Food Biotechnology Committee IL SI International Organizations Committee



Assessment of Benefits and Risks



Weight Management in Public Health

http://www.ilsi.org/Europe/Pages/HomePage.aspx



Three types of publications:

Concise Monograph Series



3-MCPD ESTIRS IN FOCO PRODUCTS

Articles in peer-reviewed journals

obesityreviews

http://www.ilsi.org/Europe/Pages/Publications.aspx

Resources from ILSI-Europe

http://www.ilsi.org/Europe/Pages/TF_RiskAnalysis.aspx



Risk Analysis in Food Microbiology Task Force

Mission

To advance the scientific basis of microbiological risk analysis.

Objectives

- To contribute to the development of a conceptual framework and an agreed terminology for microbiological risk assessment, and
- To develop and improve tools to manage safety hazards and risks in food production systems.

Risk Analysis in Food Microbiology TF - Reports

D. Bean, F. Bourdichon, D. Bresnahan, et al. Risk Assessment Approaches to setting Thermal Processes in Food Manufacture. ILSI Europe Report Series 2012: 1-40.

J. Bassett, M. Nauta et al. Tools for Microbiological Risk Assessment. ILSI Europe Report Series 2012: 1-40.

J. Bassett, et al., Impact of Microbial Distributions on Food Safety. ILSI Europe Report Series 2010: 1-64.

A. Lammerding. Using Microbiological Risk Assessment (MRA) in Food Safety Management. ILSI Europe Report Series 2007: 1-36.

M. Reij, E. van Asselt, J-L Cordier, L. Gorris. Recontamination as a Source of Pathogens in Processed Foods. ILSI Europe Report Series 2005: 1-28.

M. Stringer. Food Safety Objectives - Role in Microbiological Food Safety Management. ILSI Europe Report Series 2004: 1-36.

Risk Analysis in Food Microbiology TF- Articles & Monograph

S. Brul et al. 'Omics' technologies in quantitative microbial risk assessment. Trends in Food Science & Technology 2012: 1-13.

Jongenburger, I., L. Gorris, et al., Impact of Microbial Distributions on Food Safety. Quantifying impacts on public health and sampling. Food Control 26, 546-554.

Food Safety Objectives – Role in Microbiological Food Safety Management. Food Control 2005; 16(9): 775-830.

L.G.M. Gorris, J-L. Jouve and M.F. Stringer, Editors. Microbiological Risk Assessment. International Journal of Food Microbiology 2000; 58(3): 141-246.

JL Jouve, M.F. Stringer and A.C. Baird-Parker. Food Safety Management Tools. Food Science and Technology Today 1999; 13(2): 82-91.

M. van Schothorst. A Simple Guide to Understanding and Applying the Hazard Analysis Critical Control Point Concept -Third Edition. ILSI Europe Concise Monograph Series 2004 :1-23

Resources from ILSI-Europe

http://www.ilsi.org/Europe/Pages/TF_RiskAssessment.aspx



Risk Assessment of Chemicals in Food Task Force

Scope

To critically review the risk assessment process in order to ensure the safety of chemicals in food, and examine the science base for new qualitative and quantitative methods to assess risks from components in the food chain (e.g. low molecular weight chemicals, micronutrients, macronutrients).

Objectives

- The task force aims to improve methodologies and tools to assess the risk of food chemicals, and
- to develop a structured approach to weigh possible health risks of chemicals in foods against health benefits resulting from the same or different substances found in a particular food item.

Risk Assessment of Chemicals in Food Task Force

C. Crews. Summary report of the workshop on MCPD and Glycidyl Esters in Food Products held in November 2011. ILSI Europe Report Series 2012: 1-24.

Summary report of the workshop on 3-MCPD Esters in Food Products. ILSI Europe Report Series 2009:1-32.

J.F. Borzelleca and H. Verhagen, Editors. Risk Characterisation of Chemicals in Food and Diet – Final part of Food Safety in Europe (FOSIE): Risk Assessment of Chemicals in Food and Diet. Food and Chemical Toxicology 2003;41(9):1205-1271.

S. Barlow et al., Guest Editors. Food Safety in Europe (FOSIE): Risk Assessment of Chemicals in Food and Diet. Food and Chemical Toxicology 2002;40(2/3):139-427.

Resources from ILSI-Europe

http://www.ilsi.org/Europe/Pages/TF_RiskAssessmentGen.aspx



Risk Assessment of Genotoxic Carcinogens Task Force

Background

Carcinogens are chemicals that can increase the occurrence of tumours; those carcinogens that can damage DNA are referred to as genotoxic. There is no international consensus on how to evaluate the risk of genotoxic carcinogens that can be contained in food at low levels.

Objective

• To improve risk assessment of cancer caused by genotoxic carcinogens.

Risk Assessment of Genotoxic Carcinogens Task Force

A. Boobis, Editor. Application of the Margin of Exposure (MoE) Approach to Substances in Food that are Genotoxic and Carcinogenic. Food and Chemical Toxicology 2010; 48(Suppl.1): S1-S111.

A. Constable and S. Barlow. Application of the Margin of Exposure Approach to Compounds in Food which are both Genotoxic and Carcinogenic. ILSI Europe Report Series 2009: 1-35.

S. Barlow et al. Risk Assessment of Substances that are both Genotoxic and Carcinogenic. Food and Chemical Toxicology 2006; 44(10): 1636-1650.

J. O'Brien et al. Approaches to the Risk Assessment of Genotoxic Carcinogens in Food: A Critical Appraisal. Food and Chemical Toxicology 2006; 44(10): 1613-1635.

Risk Assessment of Genotoxic Carcinogens Task Force

MOE values for the 12 Examples

Higher priorities for risk management: acrylamide, aflatoxins, furan, methyleugenol: MOEs <1000 Intermediate priorities for risk management: PAHs and ethylcarbamate, MOEs 10,000-100,000 Low priorities for risk management: PhIP and 1,3-dichloro-2-propanol, MOEs >100,000 Very low priority for risk management: Benzene (diet only) Sudan I: broad range of MOEs, based on spice consumption and adulteration level Leuchomalachite green, 1-methylcyclopropene and its impurities: Large MOEs, > 1,000,000

Note: The numerical values of the MOEs require interpretation based on the source and quality of data used and are not necessarily directly comparable. The MOE acts as a guide for risk prioritisation.

Softwares used by the Expert Group on Margin of Exposure Source code for the version of mabmd Source code for the R package used to run mabmd (includes a GUI interface to facilitate using mabmd) Executable or binary of the R package (which includes the executable for mabmd) Instructions for setting up the compilation environment for turning the source codes into executables

Resources from ILSI-Europe

http://www.ilsi.org/Europe/Pages/TF_NovelFoods.aspx



Novel Foods and Nanotechnology Task Force

Scope

The remit of the task force is to review how novel foods, novel food ingredients and new processing techniques should be evaluated scientifically from safety and nutritional viewpoints.

Due to its work on food biotechnology, the task force gained substantial knowledge in assessing the safety and nutrition of novel foods.

This knowledge was broadened in recent years due to various networking activities and the project on the safety assessment of engineered nanomaterials (ENMs) in food.

Novel Foods and Nanotechnology Task Force

J. Howlett. Practical Guidance for the Safety Assessment of Nanomaterials in Food. ILSI Europe Report Series 2012: 1-16.

A.Cockburn, R. Bradford et al. Approaches to the safety assessment of engineered nanomaterials (ENM) in food. Food and Chemical Toxicology 2012; 50: 2224-2242.

P. Hepburn, J. Howlett et al. The Application of Post-Market Monitoring to Novel Foods. Food and Chemical Toxicology 2008; 46: 9-33.

A. Constable, D. Jonas et al. History of Safe Use as Applied to the Safety Assessment of Novel Foods and Foods Derived from Genetically Modified Organisms. Food and Chemical Toxicology 2007; 45: 2513-2525.

J. Howlett, D.G. Edwards et al. The Safety Assessment of Novel Foods and Concepts to Determine their Safety in Use. International Journal of Food Sciences and Nutrition 2003; 54: 1-32.



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Outline

- ICMSF & resources
- International Resources (Codex, FAO, WHO; ICD)
- Regional Resources (European Commission, EFSA, ILSI-Europe)
- Resources @ Risk.org (USA-based)







FoodRisk.org is operated by Joint Institute for Food Safety and Applied Nutrition (JIFSAN) in collaboration with the <u>Center for Food Safety and Applied</u> <u>Nutrition</u> from US Food and Drug Administration (CFSAN/FDA) and the <u>Food</u> <u>Safety and Inspection Services</u> from US Department of Agriculture (FSIS/USDA).

The aim of FoodRisk.org is to assist professionals involved with the many aspects of risk analysis as it pertains to the safety of our food.

On FoodRisk.org you will find unique datasets, tutorials, tools, and links to numerous sources of information.

While initial emphasis was on microbial pathogens and their toxins, this is being expanded to other chemicals and toxins.

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Risk Assessment Models

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European Food Safety Authority	Scientific Opinion on the revision of the quantitative risk assessment (QRA BSE risk posed by processed animal proteins (PAPs) Following a request from the European Commission (EC), the Panel on Biole Hazards (BIOHAZ) was asked to deliver a scientific opinion on the revision Quantitative Risk Assessment	 of the logical n of the w details 	2011
University of Georgia Center for Food Safety, University of Cordoba	MicroHibro: On-line tool of Microbial Risk Assessment in Vegetables A quantitative risk assessment model was built based on potential prevaler concentration distribution data coming off the farm and then using cross- contamination, survival, and intervention rates as key	nce and	2011
Institute of Food Research	Salmonella predictions: An Excel add-in to predict Salmonella spp. in food environments The Salmonella_Predictions.xls Excel add-in has been developed at the Ins Food Research, Norwich, UK under European funding (BIOTRACER project software is a complementing tool for bio-tracing in	stitute of st). The w details	2011

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Microbial Risk Assessment Repository

The repository contains completed food safety microbiological risk assessments.

The documents deal with zoonotic pathogens, as well as mycotoxins, viruses, and parasites, in both food and water.

Antibiotic resistance risk assessments are also included.

All
Bacteria
Viruses
Parasites
Prions
Mycotoxins
Antibiotic resistance

Please select a hazard:
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Epidemiology & Surveillance	
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Other



Exclusives

Estimation of Listeria monocytogenes transfer coefficients and efficacy of bacterial removal through cleaning and sanitation

The Food Handling Practices Model (FHPM)

A swift Quantitative Microbiological Risk Assessment (sQMRA) tool

FDA's Fresh Produce Risk Ranking Tool

Consumer Storage Practices for Refrigerated Ready-to-Eat Foods

Australian Risk Assessment model for Listeria monocytogenes in ready-to-eat meats

Risk Assessment

FoodRisk.org

Risk assessment is the scientific foundation of risk analysis consisting of four steps:

- Hazard Identification
- Hazard Characterization
- Exposure Assessment and
- Risk Characterization

For people new to the field, we have a brief introduction to the field of food safety risk analysis.

Below is a selection of the most relevant documents in our database and we invite you to search our FoodRisk database for more resources.



Summary

- Around the world, governments are adopting Risk Analysis as the framework for risk-based decision making.
- While risk assessment approaches and methods for chemical hazards are long established, those for microbiological hazards are rather new.
- Many resources are available to food safety professionals that need to acquire skills in risk assessment.
- True skills will only develop through experience and use in practice.
- In support of this, an international community of practice of risk assessors would be very beneficial.

Thank you