

Background to JEMRA

Introduction

Food safety has always been an important issue, and currently it is high on the political agenda of many countries. The reasons for this are manifold. More than ever before, there is strong consumer awareness of food quality and safety, and this continues to increase. New risks and challenges are emerging as a result of changes in the methods of food production at the farm and processing levels. Further challenges arise from the emergence and re-emergence of food-borne pathogens. Consumption patterns and consumer demands regarding such issues as the variety and shelf-life of foods, as well as the preservation techniques used, are changing. International trade in food has also increased the risk of infectious agents being disseminated from the original point of production to locations thousands of kilometres away. The consequence of this is that there is an increased risk to human health as well as implications for international trade in food and ultimately the food producers. As a result there has been a realisation in many countries of the need for an integrated approach to food safety. This involves looking into all parts of the food chain and linking this with the human health outcome. However the implementation of such a holistic approach to food safety is not necessarily an easy one as it requires the expertise, interaction and collaboration of a wide range of people of many different backgrounds and professions. The development of the risk analysis process has however provided us with a tool to make this possible.

Risk analysis

Risk analysis has evolved over the last decade within the Codex Alimentarius Commission (CAC). Since the Uruguay Round Trade [Agreement on the Application of Sanitary and Phytosanitary Measures](#) (SPS) entered into force in 1995, the importance of risk analysis has increased.

In 1991, a Joint FAO/WHO Conference on Food Standards, Chemicals in Foods and Food Trade, convened in Rome, Italy, highlighted the importance of scientific committees such as [JMPR](#) and [JECFA](#) in providing evaluations based on sound science and risk assessment principles and recommended that FAO and WHO take steps to increase awareness of these principles. FAO and WHO subsequently convened a series of three expert consultations to address the three components of Risk analysis: risk assessment, risk management and risk communication.

Risk analysis



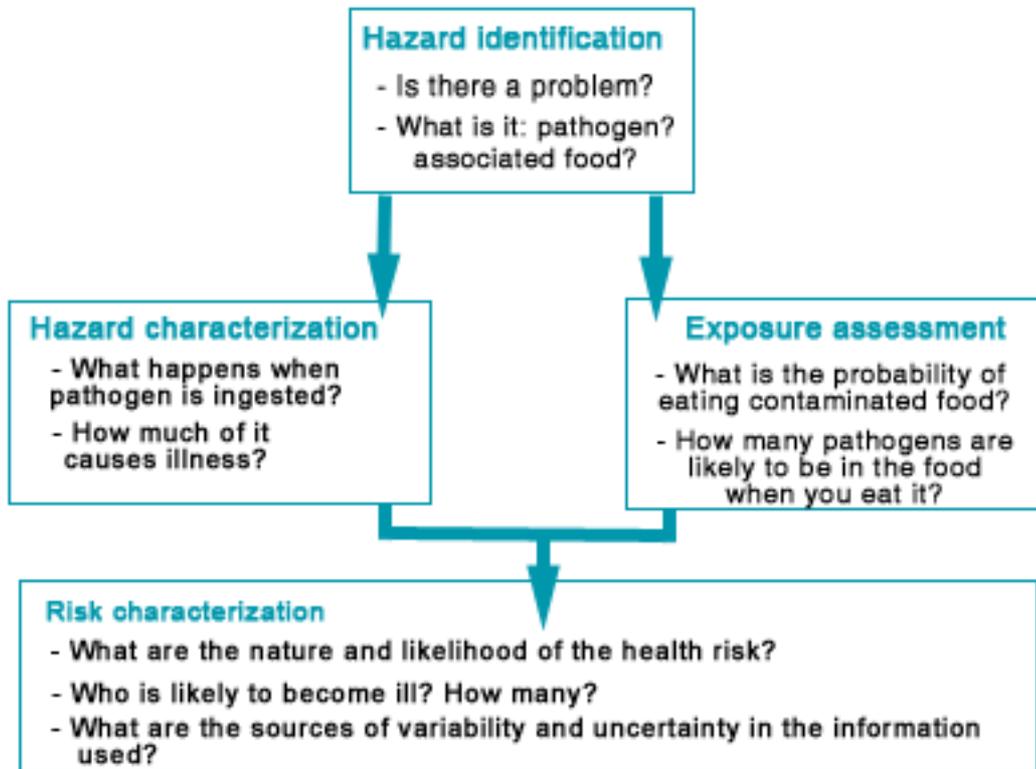
The Joint FAO/WHO Expert Consultation on the [Application of Risk Analysis to Food Standards \[pdf 105kb\]](#) in 1995 was the first in this series. It delineated the basic terminology and principles of risk assessment and concluded that the analysis of risks associated with microbiological hazards presents unique challenges. The report of the Joint FAO/WHO Expert Consultation on [Risk Management and Food Safety](#) identified a risk management framework and the elements of food safety risk management. The Joint FAO/WHO Expert Consultation on the Application of [Risk Communication to Food Safety Matters](#) identified elements and guiding principles of risk communication and strategies for effective risk communication.

Risk analysis is now considered to be an integral part of the decision-making process of Codex. CAC has adopted definitions of risk analysis terms related to food safety and statements of principle relating to the role of food safety risk assessment. Furthermore, in 1999, it adopted the [Principles and Guidelines for the Conduct of Microbiological Risk Assessment \[pdf 23kb\]](#). These were developed by the Codex Committee on Food Hygiene (CCFH), which is currently developing Principles and Guidelines for the Conduct of Microbiological Risk Management.

In addition to these developments in risk assessment, the 22nd Session of CAC requested FAO and the World Health Organization (WHO) to convene an international advisory body on the microbiological aspects of food safety in order to address, in particular, microbiological risk assessments. In response to this and as follow-up on their previous activities in the area of risk analysis, FAO and WHO convened an expert consultation in March 1999 to examine the [issue of microbiological risk assessment \[pdf 80kb\]](#) (MRA) in an international forum. The main outcome of this expert consultation was an outline strategy and mechanism for addressing MRA at the international level. Subsequently, at its [32nd Session \[pdf 297kb\]](#) in November 1999, CCFH recognized that there are significant public health problems related to microbiological hazards in foods. It identified 21 pathogen-commodity combinations of concern and prioritized these according to such criteria as the significance of the public health problem, the extent of the problem in relation to geographic distribution and international trade and the availability of data and other information with which to conduct a risk assessment. CCFH suggested that FAO and WHO convene ad hoc expert consultations to provide advice on MRA, and also recommended that these consultations be conducted according to the format outlined at the 1999 expert consultation.

Microbiological risk assessment: an international approach

Risk assessment is one of the components of risk analysis - which can be defined as being an overall strategy for addressing risk - that also includes risk management and risk communication. The importance of an overlap between these three elements (risk assessment, risk management and risk communication) is well recognized, but some functional separation is also necessary. In relation to risk assessment, such separation ensures that issues are addressed in a transparent manner using a scientific basis. CAC defines risk assessment as a scientifically based process consisting of the following four steps:



The risk assessment process is a means of providing an estimate of the probability and severity of illness attributable to a particular pathogen-commodity combination. The four-step process enables this to be carried out in a systematic manner, but the extent to which the steps are carried out will be dependent on the scope of the risk assessment. This can be defined clearly by the risk manager through ongoing dialogue with the risk assessor.

The carrying out of an MRA, particularly quantitative MRA, is recognized as a resource-intensive task requiring a multidisciplinary approach. While MRA is becoming an important tool for assessing the risks to human health from food-borne pathogens and can be used in the elaboration of standards for food in international trade, it is not within the capacity of many, perhaps even most, countries to carry out a complete quantitative MRA.

As well as as a tool that can be used in the management of the risks posed by food-borne pathogens, risk assessment can also be used to justify the introduction of more stringent standards for imported foods. A knowledge of MRA is therefore also important for both health and economic purposes, and there is a need to provide countries with the tools for understanding and, if possible, carrying out MRA. This need, combined with CAC's and CCFH's requests for scientific advice on MRA, has led FAO and WHO to undertake a programme of activities to address the issue of MRA at the international level.

Strengths of an international approach

- Information, frameworks and tools, which are applicable to microbiological risk assessment the world over can be collected or elaborated and centralised. This facilitates both the distribution and accessibility of the technology and related information.
- Undertaking microbiological risk assessment at the international level enables the identification of areas which are similar or common to a particular region or even to all countries.

- It provides a means of addressing issues of international concern or issues of concern to a large number of countries.
- It enables the identification of available data on a global scale and equally important the areas where knowledge and data are lacking.
- This work is undertaken with the assistance of internationally recognised experts in the field with the objective of providing the highest quality information.
- Undertaking this work at the international level results in the provision of valuable information on particular pathogen-commodity combination for use by risk managers at both the national and international levels. At the national level in particular this should help facilitate optimal use of limited resources.

Limitations of an international approach

- It is important to recognise that risk assessment at the international level is substantially different from risk assessment at the national level. It cannot consider the situation in all countries and therefore tends to be more generic in nature and cannot capture local scenarios and country to country variations e.g. in processing, farming practices, contamination levels, consumer behavior, consumption etc.
- It cannot produce a globally applicable risk estimate i.e. one risk estimate that's valid for all countries. Due to the variation that exists such a metric would be meaningless.
- There are also limitations to what can be undertaken at the national level due to the availability of resources. Ultimately, international work is very dependant on national and regional expertise and data.

Activities

The activities of JEMRA can be categorised as follows:

1. Generation of scientific information - risk assessments
2. Elaboration of guideline documents
3. Data collection and generation
4. Use of risk assessment within a risk management framework
5. Information and technology transfer

Objectives

Risk assessments: One of the main aims of JEMRA is to provide a transparent review of scientific opinion on the state of the art of MRA, and to develop the means of achieving sound quantitative risk assessments of specific pathogen-commodity combinations. The work includes an evaluation of existing risk assessments; a review of the available data and current risk assessment methodologies, highlighting their strengths and weaknesses and how they may be applied; provision of examples; and identification of ongoing data and information needs.

Much of the work of JEMRA focusses on risk assessment of pathogen-commodity combinations. The documentation relating to these risk assessment is elaborated through the establishment of expert drafting groups and the implementation of expert meetings. The time required to undertake these risk assessments depends on the resources available and the priority of the work as well as the scope and complexity of the issue to be addressed.

This work aims to meet the needs of two customers:

- i. The Codex Alimentarius Commission, primarily the Codex Committee on Food Hygiene (CCFH), to assist them in the development of standards, guidelines and recommendations for food in international trade, and

- ii. FAO and WHO Member Countries to assist them overcome problems related to the microbiological hazards in foods and achieve a greater level of consumer protection

Guidelines: The purpose of developing guidelines in relation to the different steps of risk assessment is to help the risk assessor, the risk manager and other interested parties to understand the principles and science behind the risk assessment steps. The guidelines are being developed with the collaboration of internationally recognized experts in the relevant disciplines.

Data collection and Generation: Data is critical for risk assessment and it is something that is being generated on a daily basis. Yet much of the available data is unsuitable for risk assessment. JEMRA aims to identify the types and characteristics of data that can be used in MRA. The identification of data sources, generic information, and data gaps and future research needs will be an ongoing activity. As our experience in risk assessment increases further guidance on the generation and selection of data for risk assessment will be developed.

Application of risk assessment in risk management: A further aim of JEMRA is to provide guidance on how risk assessment can be effectively used by risk managers as a decision support tool. It is the risk manager who will firstly decide whether a risk assessment would facilitate his/her task. It is also the risk manager who will be one of the ultimate users of the the outputs from the risk assessment. Therefore assisting risk managers in understanding the risk assessment process and its scientific basis is critical to ensure optimal use of this tool.

Technology transfer: Finally JEMRA aims to make this information available to all those who may benefit from it such as national governments, risk managers, scientists, Codex etc. This will be primarily achieved by making the information available in publications, on the Internet and CD-ROM. Secondly, information sessions, seminars and workshops will be implemented. In the longer term risk assessment "tool-kits" will be developed for use in training and national situations.