

The application of risk communication to food standards and safety matters

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1. Introduction

A Joint FAO/WHO Expert Consultation on the Application of Risk Communication to Food Standards and Safety Matters was held from 2-6 February 1998 at the Italian Ministry of Health, Rome. The Consultation participants are listed in Annex 1.

Mr John R. Lupien, Director, Food and Nutrition Division, FAO, opened the Consultation by welcoming the participants on behalf of the Director-General of the FAO. Mr Lupien informed the participants that this was the third in a series of FAO/WHO expert consultations in the broad area of risk analysis. The first consultation addressed those elements of risk analysis concerning the process of risk assessment and was held in Geneva in March 1995. The second consultation was held in Rome in January 1997 and addressed those elements of risk analysis involved in the process of risk management. He noted that risk communication was once thought to be the process of communicating accurate and science-based messages about food risks from experts to non-experts or between experts. Present experience, however, has shown that there is a distinction between the preparation and dissemination of risk messages and the process of communicating these messages. Mr Lupien stressed that modern approaches include an interaction and dialogue between the risk communicator and the receiver of the communication, to develop the necessary understanding and confidence among all concerned that risks are being properly assessed and controlled.

Mr Lupien noted that risk communication includes all communication among scientists, policy makers and the public during the risk assessment and management processes. These various communications require different approaches and often result in varying levels of understanding. This results in differing degrees of communication effectiveness. Mr Lupien indicated that therein lies one of the major challenges facing this Consultation. In closing, Mr Lupien thanked the Italian Ministry of Health for providing the venue for the Consultation. He stated that this was a further example of the continuing co-operation between the Government of Italy and international agencies such as FAO and WHO.

Dr Fritz Käferstein, Director, Programme of Food Safety and Food Aid, WHO, welcomed the participants on behalf of the Director-General of the WHO. Dr Käferstein outlined the ongoing WHO activities related to food safety risk communication. He recalled that the WHO Constitution, which established the organization 50 years ago, foresaw a broad mandate for WHO in health risk communication as well as food safety. In particular, WHO's role in the Codex Alimentarius Commission (CAC) is to assure that Codex recommended standards and codes of practice are protective of public health. He pointed out that WHO is also involved in a broad range of food safety activities in which risk communication plays a critical role. He emphasized WHO's advice to member governments on risk analysis related to food safety. He noted that two WHO publications would be issued in 1998 which address risk communication in food safety (1,2). He stated that it was clear that the deliberations of this Consultation and the ensuing recommendations will be very important to governments, industry, the consumer and the international agencies.

Dr Romano Marabelli, Director-General of the Department of Food, Nutrition and Public Health, Italian Ministry of Health, added his welcome to the participants on behalf of the Ministry of Health. He stated that risk communication is a very difficult process. He pointed out that good risk management strategies lead to real food security and that there is therefore a need to

communicate to the public what is being done. He stressed the importance of this Consultation in providing guidance in this area.

The Consultation elected Dr Marabelli (Italy) as the Chairman and Mrs Helga Reksnes (Norway) as the Vice Chair. Dr Michael Bolger (USA) was appointed Rapporteur.

2. Background

A Joint FAO/WHO Expert Consultation on the Application of Risk Analysis to Food Standards Issues was held during March 1995 in Geneva. That consultation focused mainly on the use of risk assessment to assure a sound scientific basis for decision-making when considering food safety (3). It further recognized that the process of risk analysis is actually comprised of three interrelated processes, namely risk assessment, risk management and risk communication. The Twenty-first Session of the CAC, held in Rome later in 1995, endorsed this concept in principle and called on FAO and WHO to jointly convene additional consultations to address risk management and risk communication (4). In January 1997, a Joint FAO/WHO Expert Consultation on the Application of Risk Management to Food Safety Matters was held in Rome. That consultation proposed a risk management framework, definitions of key terminology and general principles of food safety risk management (5).

Risk communication was defined by the March 1995 Consultation on the Application of Risk Analysis to Food Safety Issues as "an interactive process of exchange of information and opinion on risk among risk assessors, risk managers, and other interested parties". The practical application of risk communication in relation to food safety involves all aspects of communications among risk assessors, risk managers and the public. This includes the mechanisms of delivery; message content; timeliness of the communication; the availability and use of supporting materials and information; and the purpose, credibility and meaningfulness of the communication.

With increased public concern regarding food safety, greater demands are placed on risk communicators to involve the public and other interested parties in an interactive dialogue and to explain the magnitude and severity of risks associated with foodborne hazards in clear and comprehensible terms that convey credibility and trustworthiness. This requires communicators to recognize and overcome gaps in knowledge as well as obstacles inherent in the uncertainties of scientific risk assessment.

The present Consultation completes the review of the three component parts of risk analysis and addresses the process of risk communication. The objectives of the Consultation were:

1. To identify the elements of, and recommend guiding principles for, effective risk communication;
2. To examine the barriers to effective risk communication and to recommend means by which they can be overcome;
3. To identify strategies for effective risk communication within the risk analysis framework; and,
4. To provide practical recommendations to FAO, WHO, Member Governments, the CAC, other international and national organizations, industry and consumers in order to improve their communication on matters related to the risk assessment and management of food safety hazards.

In addressing these issues, the Consultation was to consider the entire scope of the application of risk communication to food standards and safety matters related to health and trade. This includes the interaction between risk assessors and risk managers, and among risk assessors, risk managers, risk communicators and the public. In doing so, the Consultation was also to take note of the reports of the two previous joint FAO/WHO expert consultations (3,5).

3. Elements and guiding principles of risk communication

Introduction and definition

Effective communication of information and opinion on risks associated with real or perceived hazards in food is an essential and integral component of the risk analysis process. Risk communication may originate from official sources at international, national or local levels. It may also be from other sources such as industry, trade, consumers and other interested parties. In the context of this report, interested parties may include government agencies, industry representatives, the media, scientists, professional societies, consumer organizations and other public interest groups and concerned individuals. In some cases, risk communication may be carried out in conjunction with public health and food safety education programmes.

In 1997, the CAC adopted the following definition of risk communication: "an interactive exchange of information and opinions concerning risk among risk assessors, risk managers, consumers and other interested parties" (6). Risk communication has also been described as all those integrated processes and procedures: a) that involve and inform all interested parties within the risk analysis process; b) that assist the development of transparent and credible decision-making processes; and c) that can instil confidence in risk management decisions. A wide variety of communication strategies can be used in the management of food-related risks, ranging from the development of international standards, to management of acute outbreaks of foodborne disease, to long-term programmes aimed at changing food production, food handling and dietary practices.

The Consultation considered the Codex definition to be too narrow, since it does not take into account the need to communicate factors other than the probability of the adverse health effect and the severity and magnitude of that effect. Understanding and communicating risk has clearly been shown to be influenced by a host of additional factors, such as whether the risk is voluntary or involuntary; whether the distribution of risk and benefit is equitable; the transparency of the process; the extent to which risk managers are trusted; the degree of personal control; the individual dread of the adverse effect; and the extent to which the risk is unknown (7). To encompass this wider concept, the Consultation recommended that the Codex definition be modified by inserting the words "and risk related factors" so that the definition would read "***Risk communication is the exchange of information and opinions concerning risk and risk-related factors among risk assessors, risk managers, consumers and other interested parties.***"

The goals of risk communication

The fundamental goal of risk communication is to provide meaningful, relevant and accurate information, in clear and understandable terms targeted to a specific audience. It may not resolve all differences between parties, but may lead to a better understanding of those differences. It may also lead to more widely understood and accepted risk management decisions. Effective risk communication should have goals that build and maintain trust and confidence. It should facilitate a higher degree of consensus and support by all interested parties for the risk management option(s) being proposed.

The Consultation considered that the goals of risk communication are to:

1. Promote awareness and understanding of the specific issues under consideration during the risk analysis process, by all participants;
2. Promote consistency and transparency in arriving at and implementing risk management decisions;
3. Provide a sound basis for understanding the risk management decisions proposed or implemented;
4. Improve the overall effectiveness and efficiency of the risk analysis process;
5. Contribute to the development and delivery of effective information and education programmes, when they are selected as risk management options;
6. Foster public trust and confidence in the safety of the food supply;
7. Strengthen the working relationships and mutual respect among all participants;
5. Promote the appropriate involvement of all interested parties in the risk communication process; and,
6. Exchange information on the knowledge, attitudes, values, practices and perceptions of interested parties concerning risks associated with food and related topics.

Risk communication as an integral part of risk analysis

Risk communication is generally accepted as one of the three components that constitute the process of food safety risk analysis. Risk assessment is the process that is used to quantitatively or qualitatively estimate and characterize risk. Risk management is the weighing and selecting of options and implementing controls as appropriate to assure an appropriate level of protection. This Consultation recognized that risk communication, being an integral part of risk analysis, is a necessary and critical tool to appropriately define issues and to develop, understand and arrive at the best risk management decisions.

For many years, those responsible for assessing and managing risks associated with hazards in the food supply have communicated information and opinion about those hazards in the interests of protecting and promoting public health. These communications were expressed mainly in qualitative terms regarding the hazards as there were often no clear quantitative data concerning the resultant risks. More recently, the formal development and application of risk-based approaches to food safety and the availability of quantitative information related to risks in human populations, has provided the opportunity for improved implementation of risk-based management strategies. Risk communication has played an important role in the application of such risk-based approaches, by providing a means to interactively consider all relevant information and data. Of course, risk communication is also applicable in the many situations where the qualitative consideration of hazards is undertaken. In such cases, the principles and strategies of risk communication as elaborated by this Consultation would still apply.

In the present Codex context, the CAC and its subsidiary bodies are responsible for establishing a risk assessment policy. This provides the guidance for those necessary value judgements and policy choices that may need to be applied at specific decision points in the risk assessment process. It is vital that risk managers and assessors maintain open communications with each other and with other interested parties in defining and applying policy in this area.

Before a formal risk assessment is initiated, appropriate information must be obtained from interested parties to prepare a "risk profile". This describes the food safety problem and its context, and identifies those elements of the hazard or risk which are relevant to various risk management decisions. This often involves a range of preliminary risk evaluation activities,

which rely on effective risk communication (e.g., ranking for international standard setting or putting a food safety problem in an appropriate national or international context).

Risk characterization is the primary means by which food safety risk assessment findings are communicated to risk managers and other interested parties. Numerical estimates in the characterization, therefore, should be supported by qualitative information about the nature of the risk and about the weight of evidence that defines and supports it. There are inherent difficulties in communicating the quantitative aspects of a risk assessment. They include ensuring that the scientific uncertainties inherent in the risk characterization are clearly explained and that scientific terminology and technical jargon do not render the presentation of risk less understandable to the target audience. Communications among risk assessors, risk managers and other interested parties should use language and concepts that are suitable for the intended audience.

Risk communication facilitates the identification and weighting of policy and decision alternatives by risk managers in the risk analysis process. Interactive communication among all interested parties tends to assure transparency, facilitate consistency and improve the risk management process. To the extent that it is practical and reasonable, interested parties should be involved in identifying management options, developing the criteria for selecting those options and providing input to the implementation and evaluation strategy. When a final risk management decision has been reached, it is important that the basis for the decision be clearly communicated to all interested parties.

During the selection of risk management options, the risk manager may often need to consider factors in addition to science in the evaluation of a risk. This is particularly important at the national government level. Interactive communications are essential to identify social, economic, religious, ethical, and other concerns, so that these can be openly considered and addressed.

Preparation of risk messages for dissemination is an important part of the risk communication process. It is also a deliberate and specialized undertaking and should be treated as such. Good risk communication and proper risk messages will not always decrease conflict and mistrust, but inadequate risk communication and poorly developed messages will almost certainly increase both.

Roles and responsibilities for risk communication

International Organizations

The "Codex system"

The Codex Alimentarius Commission is an inter-governmental organization with established procedures for input from member governments and other interested parties such as consumer and industry representatives as well as other international standards organizations. The organizational structure and processes of the CAC and its subsidiary bodies, provide many opportunities for effective risk communication, both within the Codex system (i.e., among the various Committees) and external to Codex. Annex 2 provides an outline of how risk communication is used in the development of Codex standards for foods.

The Codex Committee on General Principles (CCGP) deals with procedural and general matters, including establishment of principles that define the purpose and scope of Codex work. In the context of risk analysis, the CCGP is currently elaborating principles and guidelines for the application of risk-based approaches to food safety throughout the Codex system. These will

allow all interested parties to understand the agreed framework for risk management decision making within Codex.

Normally, the general subject Committees are involved in risk management, such as the development of standards, guidelines and other recommendations. Their work is supported by risk assessment information often supplied by FAO/WHO expert advisory groups. These include the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Joint FAO/WHO Meeting on Pesticide Residues (JMPR). Other international expert bodies such as the International Commission for Microbiological Specifications for Foods (ICMSF) also may provide scientific support. Established channels exist for co-ordination with other international scientific bodies.

Co-ordination of Codex risk management activities is carried out by the FAO/WHO Codex Secretariat. The Secretariat is also responsible for some risk communication activities such as the publication of a variety of documents, including standards, reports and other texts from the Codex committees. Reports of Codex meetings provide a record of the deliberations and the outcome of food safety discussions leading to the elaboration of Codex standards. The Internet World-Wide Web is increasingly being used to rapidly disseminate these reports and other Codex information.

The Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO)

FAO and WHO provide advice to member governments and other interested parties from internationally recognized experts through consultations on specific issues. Technical and developmental assistance to member governments on matters related to public health and the quality and safety of the food supply are also provided. The agencies have a responsibility to develop and promote the principles and procedures of risk analysis and to communicate these to member governments to assist them in the development of effective strategies and information programmes at the national level. Where FAO and WHO jointly undertake to conduct risk assessment activities (e.g., JECFA, JMPR, expert consultations), they communicate the results and recommendations to their member governments, as well as other interested parties, through published reports and the Internet World-Wide Web.

World Trade Organization (WTO)

The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) encourages harmonization and places a strong emphasis on the risk communication principles of transparency and consistency in the development and application of food safety measures. Harmonization includes the establishment, recognition, and application of common sanitary measures by different member countries, and this is clearly dependent on effective risk communication. The WTO SPS Committee manages the implementation of the SPS Agreement for WTO member countries and, through the notification procedure required by the SPS Agreement, it communicates risk management decisions among those member countries.

***Governments* [For the purposes of this section, the term "governments" is meant to represent the responsibilities typically assumed by national governments, but which may be delegated to a regional organization (e.g. the European Community), or which may be subsumed by international agreements between countries.]**

Governments have a fundamental responsibility for risk communication when managing public health risks, regardless of the management methods used. With the responsibility for managing risks comes the responsibility to communicate information about risks to all interested parties to an acceptable level of understanding. Decision-makers within governments have the obligation

to ensure effective communication with interested parties when developing scientific and technical analyses and to appropriately involve the public and other interested parties in the risk analysis process. Risk managers also have the obligation to understand and respond to the underlying bases of public concerns about health risks.

Governments should work towards a consistent and transparent approach when communicating risk information. Communication strategies may differ for different issues and different target audiences. This is most apparent when dealing with issues where specific groups have differing views of a risk. These differences in perception, which may be due to economic, social or cultural differences, should be recognized and respected. It is the outcome, i.e. effectively managed risk, which is most important. Differing methods of reaching the outcome may be acceptable.

Governments that are members of the CAC have a responsibility to play an active role in the Codex process. They should ensure that all interested parties within their countries (industry, consumers, national organizations, etc.) have an opportunity to contribute to national positions on Codex matters, to the extent practicable and reasonable. They should also ensure that these positions are transmitted to Codex in a timely manner. Governments need to take an active role in the deliberations during Codex meetings and ensure that interested parties at the national level are aware of and understand the decisions reached at those meetings. The CAC is actively encouraging the formation of National Codex Co-ordinating Committees within member governments, to assist in meeting these responsibilities.

Governments are often responsible for public health education and delivery of appropriate messages to the health community. In these roles, risk communication enables the delivery of important information to specific target groups, such as pregnant women and the elderly.

Industry

Industry is responsible for the quality and safety of the food it produces. It also has a corporate responsibility to communicate information regarding risks to affected consumers. Industry participation in all aspects of risk analysis is essential for effective decision making and can serve as a major source of information for risk assessment and risk management. The routine information flow between industry and government usually involves communications necessary to set standards or gain approvals for new technologies, ingredients, or labels. In that connection, food labels have been and are routinely used to communicate information on the ingredients and instructions on the safe handling of food products, as a form of risk management using the label as the communicating device.

One goal of risk management is to identify the lowest reasonably achievable risk. This may require a knowledge of the specific process variables and capabilities within a food processing and handling system. The industry has the best understanding of those variables and capabilities and the information that they can provide would be vital for risk managers as they work with risk assessors to prepare the context and scenarios necessary for the risk assessment process.

Consumers and consumer organizations

Broad and open participation in risk analysis at the national level is viewed by the public as an essential element of what constitutes appropriate public health protection. Early participation in the risk analysis process by the public or consumer organizations can help to ensure that consumer concerns are addressed and will generally result in a better public understanding of the risk assessment process and how risk-based decisions are made. It can further provide support

for the risk management decisions that result from the assessment. Consumers and consumer organizations have a responsibility to present their concerns and opinions on health risks to risk managers. International consumer organizations that are Codex observers have direct input into Codex discussions on these matters. International and national consumer organizations play an important role in disseminating information on health risks directly to consumers. Consumer organizations also often work with governments and industry to ensure that risk messages addressed to consumers are appropriately formulated and delivered.

Academia and research institutions

Members of the academic and research community may play an important role in risk analysis by contributing scientific expertise on health and food safety matters and assisting in the identification of hazards. They may be asked by the media or other interested parties to comment on government decisions. They often have a high level of credibility with the public and the media, and may serve as independent sources of information. Researchers involved in studies of consumer perception or communication methods and the assessment of communication effectiveness, may also be helpful to risk managers seeking expert advice on risk communication approaches and strategies.

Media

The media clearly play a critical role in risk communication. Much of the information that the public receives on food-related health risks comes to them through the media. The many varieties of mass media have roles which vary depending on the issue, the context and the type of media involved. The media may merely transmit a message, or they may create or interpret a message. They are not limited to official sources of information and their messages often reflect the concerns of the public and other sectors of society. This can and does facilitate risk communication since risk managers may become aware of concerns of which they were not previously cognizant.

Elements of effective risk communication

Depending on what is to be communicated and to whom, risk communication messages may contain information on the following:

The nature of the risk

- The characteristics and importance of the hazard of concern.
- The magnitude and severity of the risk.
- The urgency of the situation.
- Whether the risk is becoming greater or smaller (trends).
- The probability of exposure to the hazard.
- The distribution of exposure.
- The amount of exposure that constitutes a significant risk.
- The nature and size of the population at risk.
- Who is at the greatest risk.

The nature of the benefits

- The actual or expected benefits associated with each risk.
- Who benefits and in what ways.
- Where the balance point is between risks and benefits.
- The magnitude and importance of the benefits.
- The total benefit to all affected populations combined.

Uncertainties in risk assessment

- The methods used to assess the risk.
- The importance of each of the uncertainties.
- The weaknesses of, or inaccuracies in, the available data.
- The assumptions on which estimates are based.
- The sensitivity of the estimates to changes in assumptions.
- The effect of changes in the estimates on risk management decisions.

Risk management options

- The action(s) taken to control or manage the risk.
- The action individuals may take to reduce personal risk.
- The justification for choosing a specific risk management option.
- The effectiveness of a specific option.
- The benefits of a specific option.
- The cost of managing the risk, and who pays for it.
- The risks that remain after a risk management option is implemented.

Principles of risk communication

Know the audience

In formulating risk communication messages, the audience should be analyzed to understand their motivations and opinions. Beyond knowing in general who the audience is, it is necessary to actually get to know them as groups and ideally as individuals to understand their concerns and feelings and to maintain an open channel of communication with them. Listening to all interested parties is an important part of risk communication.

Involve the Scientific Experts

Scientific experts, in their capacity as risk assessors, must be able to explain the concepts and processes of risk assessment. They need to be able to explain the results of their assessment and the scientific data, assumptions and subjective judgements upon which it is based, so that risk managers and other interested parties clearly understand the risk. They further must be able to clearly communicate what they know and what they do not know, and to explain the uncertainties related to the risk assessment process. In turn, the risk managers must be able to explain how the risk management decisions are arrived at as well.

Establish Expertise in Communication

Successful risk communication requires expertise in conveying understandable and usable information to all interested parties. Risk managers and technical experts may not have the time or the skill to perform complex risk communication tasks, such as responding to the needs of the various audiences (public, industry, media, etc.) and preparing effective messages. People with expertise in risk communication should therefore be involved as early as possible. This expertise will likely have to be developed by training and experience.

Be a Credible Source of Information

Information from credible sources is more likely to influence the public perception of a risk than is information from sources that lack this attribute. The credibility accorded a source by a target audience may vary according to the nature of the hazard, culture, social and economic status, and other factors. If consistent messages are received from multiple sources then the credibility of the message is reinforced. Factors determining source credibility include recognized competence or expertise, trustworthiness, fairness, and lack of bias. For example, the terms that consumers have associated with high credibility include *factual*, *knowledgeable*, *expert*, *public welfare*,

responsible, truthful, and good "track record". Trust and credibility must be nurtured and can be eroded or lost through ineffective or inappropriate communication. In studies, consumers have indicated that distrust and low credibility resulted from exaggeration, distortion and perceived vested interest.

Effective communications acknowledge current issues and problems, are open in their content and approach, and are timely. Timeliness of the message is most important since many controversies become focused on the question, "why didn't you tell us sooner", rather than on the risk itself. Omissions, distortions and self-serving statements will damage credibility in the longer term.

Share Responsibility

Regulatory agencies of governments at the national, regional and local levels, have a fundamental responsibility for risk communication. The public expects the government to play a leading role in managing public health risks. This is true when the risk management decision involves regulatory or voluntary controls, and is even true when the government decision is to take no action. In the latter event, communication is still essential to provide reasons why taking no action is the best option. In order to understand the public concerns and to ensure that risk management decisions respond to those concerns in appropriate ways, the government needs to determine what the public knows about the risks and what the public thinks of the various options being considered to manage those risks.

The media play an essential role in the communication process and therefore shares in these responsibilities. Communication on immediate risks involving human health, particularly when there is a potential for serious health consequences, such as food-borne illnesses, cannot be treated the same as less immediate food safety concerns. Industry also has a responsibility for risk communication, especially when the risk is as a result of their products or processes. All parties involved in the risk communication process (e.g. government, industry, media) have joint responsibilities for the outcome of that communication even though their individual roles may differ. Since science must be the basis for decision making, all parties involved in the communication process should know the basic principles and data supporting the risk assessment and the policies underlying the resulting risk management decisions.

Differentiate between Science and Value Judgement

It is essential to separate "facts" from "values" in considering risk management options. At a practical level, it is useful to report the facts that are known at the time as well as what uncertainties are involved in the risk management decisions being proposed or implemented. The risk communicator bears the responsibility to explain what is known as fact and where the limits of this knowledge begins and ends. Value judgements are involved in the concept of acceptable levels of risk. Consequently, risk communicators should be able to justify the level of acceptable risk to the public. Many people take the term 'safe food' to mean food with zero risk, but zero risk is often unattainable. In practice, 'safe food' usually means food that is 'safe enough.' Making this clear is an important function of risk communication.

Assure Transparency

For the public to accept the risk analysis process and its outcomes, the process must be transparent. While respecting legitimate concerns to preserve confidentiality (e.g. proprietary information or data), transparency in risk analysis consists of having the process open and available for scrutiny by interested parties. Effective two-way communication between risk managers, the public and interested parties is both an essential part of risk management and a key to achieving transparency.

Put the Risk in Perspective

One way to put a risk in perspective is to examine it in the context of the benefits associated with the technology or process that poses the risk. Another approach that may be helpful is to compare the risk at issue with other similar, more familiar risks. However, this latter approach can create problems if it appears the risk comparisons have been intentionally chosen to make the risk at issue seem more acceptable to the public. In general, risk comparisons should *not* be used unless:

- both (or all) risk estimates are equally sound;
- both (or all) risk estimates are relevant to the specific audience;
- the degree of uncertainty in all risk estimates is similar;
- the concerns of the audience are acknowledged and addressed; and
- the substances, products or activities themselves are directly comparable, including the concept of voluntary and involuntary exposure.

4. Barriers to effective risk communication

Effective communication about food-related health risks requires more than just an understanding of the risks in the context of the risk assessment and risk management processes. Barriers to risk communication exist and recognizing those barriers and knowing how to overcome them are essential for effective risk communication.

Three categories of barriers to effective communication are addressed here. The first two include institutional and procedural barriers that can limit communication within the risk analysis process itself. Communication barriers in the third category apply to all contexts, and especially to efforts by the expert community to communicate with the general public and other interested parties about food-related health risks.

Barriers within the risk analysis process

Communication plays a vital role throughout the risk analysis process to assure that risk management strategies effectively minimize foodborne risks to public health. Many communication steps in the process are internal, iterative exchanges between risk managers and risk assessors. Two key steps - hazard identification and selection of risk management options - require risk communication with all interested parties to help improve the transparency of decisions and increase the potential level of the acceptance of the outcomes.

Access to information

Vital information needed to carry out the risk analysis process may not always be made available by those who possess it. Occasionally, industry or other private parties may have proprietary information about a risk, which they are reluctant to share with government agencies because of a need to protect their competitive position or for other business reasons. In other instances, government agencies may be unwilling to openly discuss facts they possess about food risks for a variety of reasons. Complete access to all relevant data about a food-related health risk, both for risk managers and for other interested parties, may not exist in all situations. Lack of access to critical data about a risk makes the communication steps involved in hazard identification and risk management even more difficult.

Participation in the process

Lack of participation in the risk analysis process by those parties having a significant interest in the outcome, can be an important barrier to effective communication about the risk. Broad participation in the process improves risk communication by presenting opportunities to identify

and address the concerns of interested parties when decisions are made. It increases the overall understanding of the process and the decisions, and makes it easier to communicate later with the public about those decisions. Those who were involved in the decision-making process are less likely to challenge the outcome, especially if their concerns have been addressed.

The Codex has made an effort to involve all interested parties in the risk analysis process. For example, at its 22nd Session in June 1997 (6), the CAC unanimously agreed on the importance of risk analysis in Codex work and adopted an Action Plan for Codex-wide Development and Application of Risk Analysis Principles and Guidelines. This Action Plan is detailed in Annex 3. Despite these efforts, effective participation in the process by all interested parties has not been an easy goal to achieve. In general, governments and industry, at least from the industrialized nations, have been well represented, while many developing countries and consumer organizations have been under-represented in the risk analysis process. In theory, wider participation in the risk analysis process is more feasible at the national level than at the international level, but many national governments have not yet established mechanisms for involving all interested parties in the critical steps of risk analysis.

Some reasons for non-participation are external to the process itself. For example, most consumer organizations and some governments lack experienced, knowledgeable food safety specialists who can play effective roles in risk analysis. In some cases it is a lack of resources that prevents support for ongoing participation in international decision-making processes. There are also some barriers to participation within key steps of the risk analysis process itself. For example, certain critical sessions at which key decisions are made, such as meetings of JMPR and JECFA and the Executive Committee of the Codex Alimentarius, are closed to observers. While there are historical and administrative reasons why this is so, excluding interested parties from vital steps of the process is a communication barrier.

This barrier can be overcome through continuing and increasing efforts now being made by FAO, WHO and the Codex to involve consumer organizations and other interested parties more effectively in food safety risk analysis processes, especially at the international level. Consumer organizations should increase their efforts to identify and nominate experts for consideration as participants for international expert advisory committees. Training programmes can be designed to provide the knowledge and skills needed for representatives from non-participating governments, consumer organizations and other interested sectors to participate effectively in risk analysis processes at the national and international levels.

Barriers within the Codex process

The workload of some Codex committees has increased while budgetary resources have remained fixed or shrunk, with a result that there is sometimes insufficient time during sessions to fully discuss the many agenda items. Many Codex documents are not available far enough in advance of meetings, and reports on Codex sessions tend to focus on what was decided, rather than how it was decided, which often leaves the basis for decisions unclear. At its 22nd Session (6), the CAC recognized these problems and expressed concern that reducing the duration of Codex sessions (proposed for budgetary reasons) would not allow sufficient time for consideration of the matters in question and that limiting the length of Codex meeting reports would make them less useful for understanding how positions were reached. This in turn could decrease the transparency and efficiency of Codex work.

Also at the 22nd Session, the CAC agreed to evaluate the application of "legitimate factors" other than science in adopting maximum residue limits for a specific veterinary drug. The lack of

a general policy guideline on the application of factors other than science, in risk analysis, has been a barrier to communication as this results in a lack of clarity over which issues are or are not within the scope of Codex deliberations.

Elaboration of a policy on what legitimate factors other than science may be considered in risk analysis is a critical step towards removing this barrier and improving the context for risk communication in Codex. Efforts to improve the timeliness of documents might be increased, and the style of reports of meetings could be amended to explain more clearly the basis for decisions.

Barriers to communication in all contexts

Many barriers to risk communication are not specific to the food safety risk analysis process, but reflect difficulties intrinsic to most efforts to communicate about complex technical and value-laden issues. There is a large literature of academic research on the subject of risk communication and why it succeeds or fails in different circumstances. This report highlights some major themes of this body of knowledge. Those seeking more detailed information are encouraged to consult references provided in the bibliography attached to this report as Annex 4.

Differences in perceptions

Individuals can perceive the risk from the same hazard very differently. Some of the public may disagree with risk assessors and managers regarding important hazard characteristics, the relative magnitude or severity of the risks associated with those hazards, the priority of risks, and other issues. Other segments of the public also may not pay attention to risk information if the message does not address their actual concerns, but instead addresses only technical risk assessments provided by the experts. For example, a low-risk hazard that some people perceive to be involuntarily imposed upon them, may appear more threatening than another, perhaps higher-risk hazard that those same individuals perceive to be under their personal choice and control.

The effectiveness of risk communication can be enhanced by efforts to establish dialogues with interested parties and the general public, through open meetings, focus groups, surveys and other methods. The goal of this effort should be to gain an understanding of how the public and other interested parties perceive the risk.

Differences in receptivity

Many individuals believe they are personally less at risk from a given hazard than other people are, and perceive that risk messages concerning, for example, nutritional and food hygiene hazards are directed towards other people. Some people also tend to believe that they personally are more knowledgeable than the average member of society is, and will ignore risk messages they believe are directed toward less informed people. Also, some risk-taking behaviours may be perceived as normal or desirable within particular groups, and members of these groups may therefore discount risk messages as inappropriate.

To communicate effectively with such unreceptive groups, it is essential to understand their attitudes, beliefs and concerns, and to address those concerns in risk communication messages.

Lack of understanding of the scientific process

Over-reliance on precise scientific terminology may obscure the meaning of facts for the general public. If messages are not kept relatively simple, they may be misunderstood. Unless scientific uncertainties are acknowledged and put into context, the public may not gain an accurate perception of what is and is not known about the risk. Also, unless value judgements that are necessary components of risk assessments and risk management decisions are explicitly stated,

the public may not grasp the basis for decisions that are made. Public attitudes, once formed, are difficult to change as people tend to select information which supports already held beliefs.

To overcome these barriers, risk communicators should use non-technical terms to the greatest extent possible, and explain the technical terms that are used. Non-technical people should review proposed messages for clarity. Communicators should try to minimize the differences between themselves and the public and should address any uncertainties and value judgements involved in the risk analysis, both explicitly and clearly.

Source credibility

The public does not equally trust all sources of information about food safety. In situations where different risk messages are received from different sources, the public will respond to the messages from the more credible source and discount the messages from the other sources.

Factors that enhance trust and credibility include public perceptions of the communicator's accuracy, knowledge and concern for public welfare. Addressing the public's concerns about risks will also facilitate trust. Distrust is associated with perceptions of bias or with failure by the communicator to provide accurate information in the past. Trust is more important under conditions of great uncertainty or when the public believes that accurate estimates of risk are unavailable. Trust also depends on the extent to which the risk assessment and risk management processes are believed to be transparent and open to public scrutiny. Once lost, trust is not easily regained. Communication is generally most effective when all sources, including those trusted most by the public, convey similar messages about the risk.

The media

The public generally gets their information on food safety issues from the media, as with other topics. Sometimes the mass media do not accurately convey risk information. Relatively few reporters have much experience with the complex scientific and policy aspects of food safety issues, and it can be difficult for them to prepare a story on highly technical matters, especially under deadline pressure. The media also have their own agenda and make their own independent judgements on what is newsworthy. It often may appear to risk managers and other technical experts that the news media focus unduly on conflict and controversy, and occasionally they sensationalize or exaggerate risks in order to draw attention to the story. While problems with media coverage of food-related risks are by no means universal, when they do occur they can make communication about risk more difficult.

Risk managers and others who serve as risk communicators often are not familiar enough with the media to understand how to work with reporters to enhance the quality and accuracy of media reports. During a food safety emergency, in particular, the urgency of the hazard and the high level of public anxiety tend to promote more co-operative relationships between media and risk managers, but communication problems may still occur.

Risk communicators need training in media skills and should work to establish long-term relationships with members of the media. In planning for, or responding to, emergency situations, it is essential to include a person responsible for the media on any crisis response team. In those situations where certain necessary information is not considered newsworthy by the media and is therefore not disseminated by them, the authorities can still get the information to the public by considering the use of paid advertisements or public service announcements.

Societal characteristics

Some barriers to risk communication are not associated with attributes of the senders or receivers of risk information or with the medium or the message itself, but with the nature of the society in which the communication occurs. Societal factors that can make risk communication more difficult include language differences, cultural factors, religious dietary laws, illiteracy, poverty, a lack of legal, technical and policy resources and a lack of infrastructures that support communication. These and other factors vary within countries and from one country to another.

Societal barriers to communication may be especially acute in those countries, where, in addition to the foregoing factors, there are extreme differences in socio-economic status among groups. Hunger and malnutrition may relegate food safety to secondary status among food-related concerns. Other barriers include physical or geographic ones - some geographic areas or groups of people can be physically inaccessible to risk communicators. Also, free exchange of information may be limited by political constraints.

To the extent possible, cultural and social attributes that hamper risk communication need to be identified and addressed, as part of the process of designing messages for target audiences. Targeted messages such as displays, posters and leaflets at market places, health centres, schools, bus terminals and the like can be used as suited to local social norms. In some countries, general improvements in the economic and social well-being of the citizens, including progress in alleviating poverty, increasing personal and political freedom, expanding access to education and information for all sectors, community involvement and ongoing training of key personnel, can all contribute to improved risk communication. Enhancing the status of rural women is likely to be a particularly effective social strategy for enhancing food safety communication.

5. Strategies for effective risk communication

Risk communication occurs in many different contexts and both research and experience suggest that different risk communication strategies are appropriate for these different contexts. Although there are many similarities, the strategies needed during a food safety emergency differ in many respects from strategies needed to engage the public in dialogue about risks and benefits of new food technologies, and from those for communicating about chronic low-level food-related risks. Items to consider when developing strategies for risk communication during a food safety crisis are presented separately here, following a discussion of more general risk communication requirements.

General considerations for effective risk communication

Many considerations for effective risk communication, especially those involving the public, can be grouped in a sequence following the systematic approach of the risk communication process. This starts with gathering background and needed information, followed by the preparation and assembly of the message and its dissemination and distribution, with a follow-up review and evaluation of its impact.

Background/information

- Understand the scientific basis of the risks and attendant uncertainties.
- Understand the public perception of the risk through such means as risk surveys, interviews and focus groups.
- Find out what risk information people want.
- Be sensitive to related issues that may be more important to people than the risk itself. Expect different people to see the risk differently.

Preparation/assembly

- Avoid comparisons between familiar risks and new risks, as they may seem flippant and insincere unless presented properly.
- Recognize and respond to the emotional aspects of risk perceptions. Speak with sympathy and never use logic alone to convince an audience characterized by emotion.
- Express risk in several different ways, making sure not to evade the risk question.
- Explain the uncertainty factors which are used in risk assessment and standard setting.
- Maintain an openness, flexibility, and recognition of public responsibilities in all communication activities.
- Build an awareness of benefits associated with a risk.

Dissemination/distribution

- Accept and involve the public as a legitimate partner by describing risk/benefit information and control measures in an understandable way.
- Share the public's concern rather than deny it as not legitimate or as unimportant. Be prepared to give people's concerns as much emphasis as the risk statistics.
- Be honest, frank, and open in discussing all issues.
- If explaining statistics derived from risk assessment, explain the risk assessment process before presenting the numbers.
- Co-ordinate and collaborate with other credible sources.
- Meet the needs of the media.

Review/evaluation

- Evaluate the effectiveness of risk messages and communication channels.
- Emphasize action to monitor, manage, and reduce risk.
- Plan carefully and evaluate efforts.

Points to consider regarding public concerns

Risks that involve some or all of the following aspects tend to concern the public more than those risks that lack these aspects:

- Unknown, unfamiliar or rare events as opposed to well-known or common hazards.
- Risks that are controlled by others, rather than those where the public or the individual is in control.
- Risks resulting from industry action or from new technology, rather than those perceived as natural.
- Risks where there is significant scientific uncertainty, or where there is open controversy among experts as to the probability and severity of the hazard.
- Risks that raise moral or ethical questions, such as the fairness of the distribution of risks and benefits, or the rights of one group in society to put others at risk.
- The decision-making process by which a risk is assessed is seen as being unresponsive or is unknown.
- Therefore, in order to mitigate public concern about risks, the following strategies may be used:
 - Make risks voluntary by giving consumers choices, whenever possible;
 - Acknowledge uncertainty;
 - Show that expert disagreement on an issue is merely uncertainty, by estimating risks as a range that includes estimates from both sides of the debate;
 - Determine where control is and look to share it with interested parties;
 - Treat all interested parties with courtesy; and

- Always consider concerns and complaints seriously.

Strategies for risk communication in non-crisis situations

Risk communication is obviously very important during a food safety crisis; however, it is equally important when there is no immediate crisis and routine risk analyses are being made to address identified hazards. The following should be considered in preparing risk communication strategies in such situations.

Background/information

- Anticipate emerging public health hazards before they become significant.
- Determine the public's perception of the hazard being considered and their knowledge and behaviour regarding the risks involved.
- Analyze the target audience of a risk communication and understand their motivations. Try to determine the full range of the audience's concerns and their perceived importance.
- Analyze which information channels and messages are best to be used. Use the mass media and other appropriate channels to convey information.

Preparation/assembly

- Describe to concerned groups how risk is determined, how it can be monitored and how an individual can control or reduce risk.
- Identify shared values and help individuals identify an approach to meet their values.
- Make messages interesting and relevant by emphasizing the human rather than the statistical aspects of a story.
- Use extra care to make a message interesting enough for the media to publish. Claims of risk are usually considered by the media to be more newsworthy than claims of safety.

Dissemination/distribution

- Use the mass media where possible to address those consumer concerns which have been identified. For example, public forums with local opinion leaders can be televised.
- Sustain communication, thus enabling the public to make decisions based upon personal values and goals and to gain a greater understanding of the potential risks and benefits involved.
- Make risk communication multi-directional, not just from technical experts to the public, but from the public back to the experts.
- Use participation to sustain efforts. People have to feel that they are at the centre of a health promotion action or decision for the process to be effective.
- Use health education and access to health information to foster effective participation of people and communities.

Review/evaluation

- Add an evaluation component into any risk communication strategy.
- Test the clarity and understanding of the message with a representative segment of the target audience.
- Integrate risk communication with risk assessment and risk management activities, to increase the effectiveness of risk analysis and ensure proper utilization of resources.
- Educate and train risk assessors and risk managers in the principles and uses of risk communication.
- Effective risk communication can break through traditional boundaries within government sectors, between governmental and non-governmental organizations, and between the public

and private sectors. Co-operation is essential and this requires the creation of equal partnerships between the different sectors at all levels of governance in societies.

Strategies for risk communication during a food safety crisis

The typical food safety crisis envisioned here is one in which disease-causing organisms are discovered in a widely consumed food. The strategies suggested, however, also will apply to other kinds of crisis situations involving, for example, chemical contamination or physical adulteration of foods.

While the general strategies for non-crisis situations referred to previously still apply, a crisis situation calls for special considerations. Communication strategies should be an integral part of the crisis management plan. Effective crisis management requires a comprehensive plan that can be updated through periodic evaluations. Having good channels of communication to the public during a crisis is extremely important; first to prevent panic and second to provide positive information on the situation to help decide on what course of action should be undertaken. This should include information on:

- the nature and extent of the crisis and the measures taken to control it;
- the sources of contaminated foods and what to do with any suspected foods held in households;
- the identified hazard and its characterization, and when and how to seek medical attention or other assistance as warranted;
- how to prevent further spread of the problem; and
- Safe food handling practices by the population during the crisis.
- To achieve these objectives the risk communicator may:
 - Manage a series of media communications.
 - Establish appropriate mechanisms to deliver information, e.g. local visits, radio announcements, a toll-free telephone help line, etc.
 - Arrange for one-to-one advice on infection risk in a special clinic, if a foodborne disease is involved.
 - Provide daily updates on the crisis and crisis management activities to all health care and other relevant professionals.
 - Hold regular briefings for government officials, and other official representatives as well as representatives of the public. Involve the media.
 - Evaluate the effectiveness of the crisis communications and make adjustments as appropriate
 - Those responsible for managing a food safety crisis should establish a network for interactively sharing information. Central government research institutions, local governments, hospitals and private enterprises should make information accessible to each other in an accurate, concise and usable form.

Crisis Situations: International Responses

Early warning systems in countries or regions should be established to allow rapid communication of emerging crises. Once the cause of a foodborne disease outbreak has been established, action can be taken across international borders. For example, European Sal Net has helped prevent widespread illness due to specific outbreaks.

Member governments should follow the Codex Code for Ethics for International Trade in Food (8) and Guidelines for the Exchange of Information in Food Control Emergency Situations (9) which allows for rapid exchange of information during a crisis situation.

International organizations can serve as neutral fora for risk assessment and the development of appropriate risk management strategies and risk communication messages for national or international dissemination.

Crisis Situations: National Responses

National governments need to be prepared to rapidly disseminate accurate information to the mass media and the public when a food safety crisis arises. Essential steps in preparing for such a crisis include: identifying reliable sources of information and expert advice; arranging an administrative organization to handle communications during a crisis; and developing staff skills in dealing with the media and the public.

A national government might consider opening a Food Safety Information Office which can serve as a crisis centre if needed, while serving as an information centre to receive routine inquiries from consumers about the safety of foods. Food control authorities may also consider developing a home page on the Internet World-Wide Web to provide information on food and food safety including questions and answers about issues of common concern.

Crisis Situations: Industry Responses

When a crisis is emerging or has emerged, the involved industry should assure that the public authorities are fully informed about the potential cause and extent of the problem, and the anticipated effectiveness of any recall of food products already on the market. In dealing with the public during a crisis, consumer safety comes first and company actions and communications should reflect this. The following policies and actions have proven to be effective:

- Assess the problem as if you were the consumer. Take responsibility for finding a solution to the problem and protecting and advising your customers by providing the facts to the public in a clear and reasonable way. This will demonstrate to the public that you are worthy of trust.
- Be certain that any company pronouncements are from a single unified source. Conflicting messages only confuse the issue, erode confidence and disrupt the process of crisis resolution.
- Choose a spokesperson who is trained and skilled in dealing with the media. Make the spokesperson accessible to the media at all times.
- The spokesperson should consider the public, not just the food company. Companies can appear to be impersonal and only concerned about profits and losses whereas an effective spokesperson would express concern for the people and their needs.
- Have an "open door" policy relative to communications with the media. Remember that communication messages must be consistent and should be updated as soon as new information is received
- Communicate quickly and often. Work with the media using the tools and timetables that work best for them. Communicate with those inside and outside the company who are working on the problem, especially government agencies.
- Inform company employees, especially those in sales and marketing positions, as to progress on the situation, what is being done to resolve it and the risk messages being communicated.
- Establish a mechanism for developing feedback from consumers. Free consumer call-in numbers and survey polls are ways of accomplishing this.
- Know your company's objectives and how they can be used to formulate risk communication messages.

Crisis Situations: Local Responses

The first lines of contact in a crisis are usually the local officials. It is critical that they communicate conditions to the appropriate authority quickly so a crisis can be contained and appropriately managed.

- Provide complete, up-to-date and accurate information. When the situation is resolved, tell the public that "it is over."
- Keep your message simple. Too many facts are overwhelming. If appropriate, use videotape or other communication means to emphasise your point.
- Chose a media-trained spokesperson. During a crisis, consumers should know who is responsible for information and updates. Make the trained spokesperson accessible to the media at all times.

Specific guidelines for communication within the risk analysis process

Risk communication about food safety within the risk analysis process is carried out on an ongoing basis from the local through the international levels. While many of the strategies presented above also apply in the risk analysis process, there are additional considerations that can help frame those risk communication strategies that are part of risk analysis.

Specific Guidelines: International Considerations

Communication can be considered at two levels in the international context. The first level involves international organizations like FAO and WHO, and intergovernmental organizations like Codex. The second level involves national governments on bi-lateral and multi-lateral bases. At both levels, effective internal and external risk communication requires development and documentation of a comprehensive risk analysis policy. Matters of concern include:

- Continuing efforts to refine the concepts and understanding of food safety risk analysis in general and risk communication in particular;
- Improving the organizational infrastructure for internal and external risk communication to meet emerging situations;
- Addressing the critical role of effective risk communication in determining the equivalence of food control measures in different countries; and
- Establishing credible sources for risk assessments and technical advice.

In regard to the latter point, a joint FAO/WHO expert committee for food microbiological hazards (as is now the case for food additives, veterinary drug residues, pesticide residues and other food contaminants) would provide internationally recognized microbiological risk assessments for member governments and for Codex. The Consultation was aware that at its 22nd Session, the CAC recognized this problem and requested FAO and WHO to convene an international expert advisory body similar to JECFA and JMPR, to specifically address microbiological risk assessment in food.

Advice and assistance from international organizations may be sought when local authorities wish additional technical information and support. This may lead to specific international development projects. In such situations it would be necessary to maintain continuity in the composition of national counterpart staff. Co-ordination within such projects is essential.

Specific Guidelines: National Considerations

National Codex Co-ordinating Committees should have responsibility and appropriate support to communicate issues involving risk to consumers, local food industry and those national authorities involved in risk analysis.

International organizations like WHO and FAO have, over the years, developed documentation related to risk assessment and management. National organizations should make use of this information. National organizations should integrate food safety into primary health care for the public. This should penetrate down to the local marketplace.

It was previously suggested that national governments consider opening a Food Safety Information Office to address routine food safety inquiries as well as serving as a crisis centre when needed. Governments may wish to consider establishing a Food Safety Council comprised of microbiologists, physicians and toxicologists and other scientists with appropriate public health and food control expertise, as well as representatives of consumer organizations and industry, to evaluate and advise government officials regarding food safety. The Council's deliberations and recommendations could be made available to the public through official bulletins or administrative notices as well as through the mass media. It could also provide input for national delegations to Codex meetings.

Specific Guidelines: Industry Considerations

Industry should be more proactive and establish or strongly support non-profit information centres to provide science-based information on food safety and nutrition to the public, educators, health professionals, government officials and the media.

If consumer food handling, storage, or other practices can assist in controlling a food-borne illness or disease outbreak, then the industry should communicate clearly what actions the consumers should take. This communication should be based on a realistic estimate of the level of knowledge of the consumers. Safe handling, preparation and storage instructions should be presented in clear and unambiguous language, using graphics and pictograms when and where appropriate.

Judicious use of labelling holds promise as a risk management/risk communication strategy but its effectiveness needs further study. Labelling has been extensively used to convey certain types of information to the consumer, e.g., product composition, nutrition, weights and measures, and warnings on certain health issues. Labelling should not be used as a substitute for consumer education. In assessing the use of food labels in risk communication, it is essential that the public's concerns be identified and addressed.

Specific Guidelines: Local Considerations

Experience has shown that local government, being closer to the local population, is often more likely to be regarded as a trustworthy and credible source of risk information. Therefore local officials should be involved as key participants in ongoing risk communication activities.

Local bodies should be encouraged to integrate food safety information into primary health care which should also include key risk communication messages using appropriate delivery systems (e.g. mass media, street plays, posters, leaflets, video, etc.).

The need for evaluation of communication activities

Risk communication efforts and programmes need to be evaluated both regularly and systematically to determine their effectiveness and to provide for change where needed.

Communication aims and objectives need to be clearly stated if an evaluation is to be effective. This could include the proportion of at-risk population to be reached, adoption of appropriate risk reduction practices, and the extent of resolution of the crisis. It is important to learn from both positive and negative risk communication experiences, in order to adjust and improve ongoing communication activities. Only through systematic evaluations, which are performed throughout the communication process, can that process be strengthened.

6. Conclusions and recommendations

In this report, the Consultation has outlined the elements and principles of effective risk communication, as well as describing those barriers which may prevent or interfere with the communication process. These elements and principles are followed by proposed strategies to be considered for risk communication in both non-crisis and crisis situations. This final section will not repeat specific recommended strategies or suggested actions found earlier in the body of this report, but will focus on broad issues concerning risk communication and its application, which were considered and discussed by the Consultation.

The risk analysis process

Risk communication is essential throughout the risk analysis process. It was clear to the Consultation that if risk communication is to be effective, then several key issues dealing with the process itself, must be addressed. These include:

- Involvement and interaction of all interested parties.
- Use of persons trained in risk communication.
- Assurance that the risk communication is received and understood.
- Fostering transparency during the entire process.
-

The Consultation therefore RECOMMENDS that:

1. National governments and international agencies involved in food safety risk analysis, should seek to involve and gain input from all interested parties. This input will help risk assessors and managers to become aware of and consider, valid issues and concerns other than science.
2. Persons with training and experience in the application of the principles and procedures of risk communication, should be part of any crisis management team involved in a food safety issue. Governments should establish training programmes in the principles and practices of risk communication for both risk assessors and risk managers. Risk communication training could also extend to selected members of national and international food safety standards-setting bodies.
3. Communications between and among risk assessors, risk managers and other interested parties should use language and concepts that are readily understood by the target audience. This includes clearly identifying what is science, what are value judgements and what benefits, if any, are involved.
4. Governments and agencies involved in risk analysis should use risk communication procedures to make the risk assessment process and the resulting risk management decisions as transparent as possible. This will increase the likelihood of both public understanding and acceptance of the risk management option(s) selected.

Codex and international agencies

The global nature of the food supply and world food trade has made food quality, safety and food security international issues. It is critical, therefore, that the Codex Alimentarius Commission

(CAC) and international agencies such as FAO and WHO, who are directly involved in food safety risk analysis, take the lead in establishing policies and procedures consistent with the principles of effective risk communication.

The Consultation therefore RECOMMENDS that:

5. The CAC should consider amending the interim definition of risk communication contained in the Codex Procedural Manual, to read, "Risk communication is the exchange of information and opinions concerning risk and risk-related factors among risk assessors, risk managers, consumers and other interested parties."
6. The CAC should consider permitting the attendance of qualified observers at meetings of the Executive Committee of the Codex Alimentarius, which are presently closed sessions. This will improve transparency.
7. The CAC should proceed as swiftly as possible to elaborate a Codex policy on what legitimate factors other than science should be considered in risk analysis.
8. The CAC should continue and expand its efforts to increase the participation of those national governments and NGOs who are members or observers of the CAC but who are not presently active participants in Codex matters.
9. FAO and WHO should identify and involve experts with a wider range of scientific perspectives in the work of international advisory bodies (such as JECFA and JMPR) and expert consultations. In this connection, consumer and other interested organizations should submit names and information on proposed experts for consideration.
10. FAO and WHO should develop training or other programmes designed to increase the understanding of the risk analysis process and the role of risk communication, both for member countries and for international organizations active in Codex work.

National governments

The national government is responsible for food quality and safety within a country. The national agencies involved in food control are the primary sources for risk communication to the public on food safety issues. These agencies are typically also involved in any food-related risk analyses being conducted at the national level. The capability to effectively communicate risks should, therefore, be one of the highest priorities for these agencies.

The Consultation therefore RECOMMENDS that:

11. Governments should increase their efforts to involve consumer and other interested organizations or groups in the national risk analysis process. Such groups can provide viewpoints and public perceptions that should be considered both in making risk decisions and in communicating those decisions.
12. Member governments of the CAC should participate actively in Codex work so that the CAC may deal more effectively with food safety issues. To do so requires that governments consider the views of all interested parties when formulating the national position on a Codex matter. It further requires that governments communicate and explain the decisions of Codex to those same interested parties and to the public at large. The formation of National Codex Co-ordinating Committees should be given high priority to assist in this process.

7. References

1. WHO. 1998. *Communicating about risks to environment and health in Europe*. Gray, P.C.R., R.M. Stern & M. Biocca, eds. WHO Regional Office for Europe in collaboration with the Centre

for Environmental and Risk Management, Dordredv, Dordrecht, The Netherlands. Kluwer Academic Publishers

2. WHO. 1998. *Health Education in Food Safety*. WHO, Geneva.
3. FAO/WHO. 1995. *Application of risk analysis to food standards issues. Report of the Joint FAO/WHO Expert Consultation*. WHO Document WHO/FNU/FOS 195.3. WHO, Geneva.
4. FAO/WHO. 1995. *Codex Alimentarius Commission. Report of the twenty-first session*. FAO, Rome.
5. FAO/WHO. 1997. *Risk management and food safety*. FAO Food and Nutrition Paper 65. FAO, Rome.
6. FAO/WHO. 1997. *Codex Alimentarius Commission. Report of the twenty-second session*. FAO, Rome.
7. National Research Council. 1989. *Improving Risk Communication*. Report of the Committee on Risk Perception and Communication, Commission on Social Sciences. Washington DC, National Academy Press.
8. FAO/WHO. 1995. Code of ethics for international trade in food. CAC/RCP 20-1979, Rev. 1 (1985). *Codex Alimentarius Vol. 1A, General Requirements*. 2nd Ed. Section 3. FAO, Rome.
9. FAO/WHO. 1995. Guidelines for the exchange of information in food control emergency situations. CAC/GL 19-1995. *Codex Alimentarius Vol. 1A, General Requirements*. 2nd Ed. Section 8.2. FAO, Rome.

Annexes

Annex 1: List of participants

Experts

Dr. Monique **Astier-Dumas**, Vice President, Commission d'études des Produits Destinés à use Alimentation Particulière 28 Rue Basfroi, F-75011 Paris, France

Dr Sassan **Behjat**, Projects & Development Manager, International Health Department, Ministry of Health, Abu Dhabi, United Arab Emirates

Dr. Dane **Bernard**, Vice President for Food Safety Programs, National Food Processors Association, 1401 New York Avenue, N.W., Washington, DC, 20005, USA

Dr Michael **Bolger**, Head, Contaminants, Standards Monitoring and Programs Branch, Center for Food Safety and Applied Nutrition, Food and Drug Administration, Washington, DC, USA

Dr. Christine M. **Bruhn**, Director, Centre of Consumer Research, University of California, Davis, CA 95616-8598, USA

Dr. Junshi **Chen**, Deputy Director, Institute of Nutrition and Food Hygiene, Chinese Academy of Preventive Medicine, Beijing, P.R. of China

Dr. Karen L. **Dodds**, Health Protection Branch, Health Canada, Ottawa, Ontario K1A 0L2, Canada

Dr Lynn **Frewer**, Head, Risk Perception and Communication Group, Institute of Food Research, Earley Gate, Reading, Berkshire RG6 6BZ, United Kingdom

Dr Simon **Gerrard**, Centre for Environmental and Risk Management, University of East Anglia, Norwich NR4 7TJ, United Kingdom

Dr Edward **Groth** III, Consumers Union of the US, Inc. 101 Truman Ave., Yonkers, New York, N.Y, 10703-1057, USA.

Dr Steve C. **Hathaway**, National Manager (Research and Development), MAF Regulatory Authority (Meat and Seafood), Gisbone, New Zealand

Dr. Romano **Marabelli**, Direttore Generale del Dipartimento degli Alimenti, Nutrizione e Sanità Pubblica, Ministero della Sanità, Piazzale Marconi 25, 00144 Roma, Italy

Mrs Debi **Mukherjee**, Assistant Director General, Food Safety and Quality Control, Ministry of Health and Family Welfare, Nirman Bhawan, New Delhi, India

Dr. Herve **Nordmann**, Director, Regulatory Affairs, Europe, Africa and Middle East, Monsanto, CH-1143 Apples, Switzerland

Mrs Helga Odden **Reksnes**, Manager, The Norwegian Food Safety Risk Communication Programme, Oslo, Norway

Dr Jun **Sekizawa**, Chief, Division of Chem-Bio Informatics, National Institute of Health Sciences, Tokyo, Japan

Dr Stuart **Slorach**, Deputy Director-General, National Food Administration, Box 622, SE-75126 Uppsala, Sweden

Dr Theodore **van de Venter**, Director, Food Control, Department of Health, 0001 Pretoria, South Africa

Secretariat

Dr S. **Ahmed**, Consultant in Public Health Medicine, Greater Glasgow Health Board, Glasgow, Scotland, United Kingdom (*WHO Temporary Advisor*)

Dr Carlos **Dora**, WHO European Centre for Environment and Health, Rome, Italy

Dr Fritz **Kaferstein**, Director, Programme of Food Safety and Food Aid, World Health Organization, CH 1211 Geneva, Switzerland

Raj **Malik**, 28 Feroze Shah Road, New Delhi 110001, India (*FAO Consultant*)

Dr Bettina **Menne**, WHO European Centre for Environment and Health, Rome, Italy

Dr Kazuaki **Miyagishima**, Scientist, Programme of Food Safety and Food Aid, World Health Organization, CH-1211 Geneva, Switzerland

Dr Yasmine **Motarjemi**, Scientist, Programme of Food Safety and Food Aid, World Health Organization, Geneva, Switzerland

Dr Gerald **Moy**, Food Safety Unit, Programme of Food Safety and Food Aid, World Health Organization, Geneva, Switzerland (*WHO Joint Secretary*)

Dr T. **Nakayama**, Surveillance, Division of Food Hygiene, Ministry of Health and Welfare, Tokyo, Japan (*WHO Temporary Advisor*)

Gregory **Orriss**, Chief, Food Quality and Standards Service, Food and Nutrition Division, Food and Agriculture Organization of the United Nations, Rome, Italy

Dr Pakdee **Pothisiri**, Deputy Permanent Secretary, Ministry of Public Health, Nonthaburi 11000, Thailand (*Chairman, Codex Alimentarius Commission*)

Richard **Ronk**, 10027 Llewellyn Court, Fairfax, Virginia 22032, USA (*FAO Consultant*)

Mrs Sylvia **Rowe**, President, International Food Information Center, 1100 Connecticut Ave, NW #430, Washington DC 20036, USA (*WHO Temporary Advisor*)

Dr Michiel van **Schothorst**, International Commission on Microbiological Specifications for Food, Agricultural University, PO Box 8129, 6700EV Wageningen, The Netherlands (*WHO Temporary Advisor*)

John **Weatherwax**, 14933 Excelsior Drive, La Mirada, California 90638, USA (***FAO Consultant***)

Anthony **Whitehead**, Senior Officer, Food Quality Liaison Branch, Food and Nutrition Division, Food and Agriculture Organization of the United Nations, Rome, Italy (***FAO Joint Secretary***)

Annex 2: Risk communication in the development of Codex Standards

SOURCE	RECIPIENT¹	INTENT	MEANS	NOTE
Member Countries	Codex Committee	Hazard identification	Official nomination	May include discussion paper(s)
Codex Committee	Member Countries and Commission	Establish priorities for assessment	Meeting and report	
Commission	Codex Committee and Member Countries	Approval of new work	Meeting and report	Codex Step 1
Codex Committee	Risk assessment body	Request risk assessment	Committee report	
Risk assessment body		Request for risk assessment data	Circular letter	
Member States, NGOs & Industry	Risk assessment body	Submission of risk assessment data	Official submission	May contain proprietary data
Risk assessment body	Member States, NGOs, and Codex Committee	Provide risk characterisation and proposed Draft Standard	Report and monograph	
Codex Secretariat		Preparation of proposed Draft Standard based on work of risk assessment body		Codex Step 2 (for microbial hazards ²)
Codex Secretariat	Member Countries and NGOs	Request comment on proposed Draft Standard	Circular letter	Codex Step 3
Member Countries & NGOs	Codex Secretariat	Submit comments	Official submission	Codex Step 3
Codex Committee	Commission and Member Countries	Forward to Commission for adoption at Step 5	Meeting and report	Codex Step 4
Codex Commission	Member States	Acceptance of Draft Standard	Meeting and report	Codex Step 5
Member Countries & NGOs	Codex Secretariat	Submit comments	Official submission	Codex Step 6
Codex Committee	Commission and Member Countries	Forward for adoption	Meeting and report	Codex Step 7
Commission	Member Countries	Adoption	Report of Commission	Codex Step 8
Codex Secretariat	Member Countries	Information	Publication and CD ROM of Codex Alimentarius	
Codex Secretariat	Member Countries	Forward for acceptance by Member Countries	Circular letter	
Member Countries	Codex Secretariat	Acceptance of Codex Standard	Official letter	
Codex Secretariat	Member Countries	Information	List of acceptances	

¹ "Member Countries" refers to those which are members of the Codex Alimentarius Commission and "Member States" refers to the countries which are members of FAO and/or WHO. "NGOs" are international non-government organizations recognized as observers by the CAC. "Risk assessment body" refers to, for example, JECFA and JMPR.

² Microbial specifications included in Codex Standards or Codes of Practice developed by Codex committees have to be approved by the Codex Committee on Food Hygiene. These proposed specifications are developed according to the Codex document CAC/GL 21-1997. In certain instances, such specifications have been prepared by the International Commission for Microbiological Specifications for Food. Proposed microbial specifications enter the Codex system at Step 2

Annex 3: Action plan for Codex-wide development and application to risk analysis principles and guidelines

(Taken from the report of the 22nd Session of the Codex Alimentarius Commission, 1997)

The Commission will:

1. Circulate the proposed Definitions for *Risk assessment policy* and *Risk profile* to governments, Codex committees and interested international organizations for comment, and request the Codex Committee on General Principles to consider these comments with a view to making firm recommendations for adoption of these definitions to the 23rd Session of the Commission;
2. Request the Codex Committee on General Principles to elaborate integrated principles for risk management and risk assessment policy setting, risk communication and documentation for inclusion in the Procedural Manual;
3. Once principles have been established, prepare specific guidelines as required to aid in the uniform application of the principles. The Codex Committee on General Principles should be requested to co-ordinate this exercise and all relevant Codex Committees should be involved [This would include requiring that Codex Committees involved in any aspect of risk analysis formally describe their implementation of the Codex principles and guidelines, using a standardized summary format, for publication in their respective reports and recommend that advisory bodies such as JECFA and JMPR do the same. It would also require that Codex Committees develop standards using these principles and guidelines as a checklist, and in doing so adhere closely to their documented risk assessment/risk management policies.] ;
4. As the principles and guidelines are established, include them in the Procedural Manual, with the addition of an introductory narrative on risk analysis in the Codex system and identification of the responsibilities of Committees in implementation of the principles and guidelines;
5. Recognize that the judgement of equivalence of food control systems in different countries is a critical issue, and that Codex principles and guidelines associated with determination of equivalence will facilitate this process;
6. Until such time as the principles are adopted by the Commission, request JECFA, JMPR and other advisory bodies and Codex Committees to continue evaluating and improving the application of the elements of risk assessment and risk management that they have prioritized for attention;
7. Encourage further development of qualitative risk assessment approaches so as to achieve early improvements in elaboration of food standards.

Annex 4: Bibliography for further reading

Covello, V & Allen, F. 1988. *Seven cardinal rules of risk communication*. Environmental Protection Agency. Washington D.C.

Covello, V., Slovic; P. & von Winterfeldt, D. 1988. *Risk communication: a review of the literature*. National Science Foundation, Washington, DC.

Covello, V. 1992. Risk communication: An emerging area of health communication research. In S. Deetz, ed. *Communication Yearbook 15*. P. 359-373. Sage Publications, Newbury Park and London.

Davies C.J., Covello, V.T. & Allen, F.W., eds. 1987. *Risk Communication*; Proceedings of the National Conference on Risk Communication., Washington, DC., The Conservation Foundation.

Fischhoff , B. 1989. Risk: A guide to controversy. *Report of the Committee on Risk Perception and Communication*, Commission on Social Sciences and Education. Appendix C, p. 211-319. Washington DC, National Research Council.

Frewer, L; Raats; M. & Shepherd, R. 1993. Modeling the media: the transmission of risk information in the British quality press. *Journal of Mathematics Applied in Business & Industry*. 5:235-247.

Frewer, L & Shepherd, R. 1994. Attributing information to different sources: effects on the perceived qualities of information, on the perceived relevance of information, and on attitude formation. *Public Understand Sci*. 3:385-401.

Frewer, L; Shepherd, R. & Sparks, P. 1994. The interrelationship between perceived knowledge, control and risk associated with a range of food-related hazards targeted at the individual, other people and society. *Journal of Food Safety*. 14(14):19-40.

Frewer, L.J., Howard, C., Hedderley, D. & Shepherd, R. 1996. *What determines trust in information about food-related risks? Underlying psychological constructs*. Risk Analysis 16, 473-486.

Groth, E. 1991. Communicating With Consumers About Food Safety and Risk Issues. *Food Technology* 45(5):248-253.

Hathaway, S.C. 1993. Risk assessment procedures used by the Codex Alimentarius Commission and it's subsidiary and advisory bodies. *Food Control* 4(4):189-201.

Hilgartner, S. & Nelkin, D. 1987. Communication controversies over dietary risks. *Sci. Tech. Human Values*. 12:41-47

Kahneman, D. & Tversky, A. 1979. Prospect theory: an analysis of decision under risk. *Econometrica*. 47:263-91.

Needleman, J. 1988. Sources and policy implications of uncertainty in risk assessment. *Statistical Science*. 3:328-338.

Paling, J. 1997. *Up to your armpits in Alligators?: How to sort out what risks are worth worrying about!* The Risk Communication and Environmental Institute. Gainesville, Florida., USA

Powell, D.A. 1996. Eat, drink and be wary, a risk communications workshop. International Association of Milk Food and Environmental Sanitarians annual meeting. June 29. Seattle Washington, USA

Powell, D.A. & Leiss, W. 1997. *Mad cows and mother's milk: The perils of poor risk communications.* McGill University Press. Montreal & Kingston

Sandman, P.M. 1987. Risk communication: Facing public outrage. *EPA Journal*. 13(9):21-22

Slovic, P. 1986. Informing and educating the public about risk. *Risk Analysis*. 6(4):403-415.

Slovic, P. 1987. Perception of risk. *Science*. 236:280-285.

Slovic, P. 1990. The Legitimacy of Public Perceptions of Risk. *Journal of Pesticide Reform* 10(1):13-15.