Scientific Colloquium Series

EFSA Scientific Colloquium XV on Emerging Risks in the Food Chain

- From Identification to Communication -

12 – 13 October 2010, Parma, Italy

Briefing notes for discussion groups

These briefing notes, with a lexicon including working definitions of key terms related to emerging risks, are provided to participants, along with selected references for further background, so as to be prepared for an interactive exchange of views and expertise during the Colloquium.

Scope of the colloquium

According to EFSA's Founding Regulation, the Authority is required to *"undertake action to identify and characterise emerging risks"* in the field of food and feed safety[1]. The Emerging Risks Unit (EMRISK) contributes to this mission by supporting the development of an operational capacity to identify emerging risks.

The scope of the Colloquium is to bring together international experts from different sectors for an open scientific debate on key issues related to the identification of emerging risks in the food chain, aiming at providing practical inputs for the development of the EFSA's methodological framework for emerging risks identification.

EFSA definition of "emerging risk"

The definition of an "emerging risk" currently in use in EFSA is that developed by the Scientific Committee in 2007[2]: "*an emerging risk to human, animal and/or plant health is understood as a risk resulting from a newly identified hazard to which a significant exposure may occur, or from an unexpected new or increased significant exposure and/or susceptibility to a known hazard*".

Thus, the identification of emerging risks should be considered clearly separated from the assessment of risks under emergency (or crisis) conditions, as the latter are dealt with through well defined dedicated procedures at a community level[3].

[1] EC (2002). Article 34 and Recital 50 Regulation 178/2002/EC. EFSA.
[2] EFSA (2007). Definition and description of "emerging risks" within the EFSA's mandate. Parma, EFSA.
[3] European Commission (2004). Corrigendum to Commission Decision 2004/478/EC of 29 April 2004 concerning the adoption of a general plan for food/feed crisis management. Official Journal of the European Union L 160 of 30 April 2004.

Background[4]

In a rapidly changing world, governments are frequently confronted with unforeseen crises as well as longer term challenges arising from a broad range of domains. As a consequence, policy makers are now becoming increasingly aware of the importance of having robust systems in place to identify emerging risks at their early inception. Ideally, such a system would provide an opportunity for risk assessors to undertake their full risk characterization, and for risk managers to put in place strategies for prevention and control, and also avoiding unnecessary scares in the general population.

The emergence of new risks, including those in the food chain, may depend on a variety of different factors and circumstances which may be very difficult to predict. As data leading to a correct identification of risks at their early inception are likely to be characterised by considerable limitations and uncertainties, the identification of emerging risks requires a structured intelligence approach, based on a high level of organization and expertise in a broad range of sectors.

A number of competent bodies addressing emerging risk issues, along with some network systems designed to identify emerging risks in different sectors including food, already exist. The challenge is, therefore, to harmonise terminology and procedures and to develop a network system involving key partners from all interested European, (inter-)national institutions and organizations, and stakeholders, sharing relevant information on emerging risks in real time.

EFSA is developing a methodological framework, including a data monitoring capacity, data filtering methodology and networking structures to identify emerging risks and drivers of emerging risks in a timely fashion and to communicate these to the risk manager.

Objectives

The objective of this Colloquium is to bring together international experts from different sectors for an open scientific debate on four main topics related to emerging risks identification, namely on available methods to identify emerging risks, strategic sources of information and strategies for data collection, identification of drivers of change as underling causes of emerging risks, and on opportunities for the establishment of an international network to communicate on emerging risks to risk managers and policy makers.

[4] **Selected references**

EFSA (2009). Report of the EFSA Scientific Cooperation (ESCO) Working Group on Emerging Risks. EFSA Technical Report(224): 1-33.
Habegger, B. (2009). Horizon Scanning in Government. Concept, Country Experiences, and Models for Switzerland. Zurich, Center for Security Studies 1-35.
Kocharov, A. (2010). EFSA and Identification of Emerging Risks. European Food and Feed Law Review 3: 144-155.
International Risk Governance Council (2009). Emerging Risks. Sources, drivers and governance issues. . Concept note: 1-40.
EFP European Foresight Platform – supporting forward looking decision making. http://www.foresight-platform.eu/

DISCUSSION GROUP 1 - *Methods for the identification of emerging risks*

Introduction[5]

EFSA's Emerging Risks unit (EMRISK) is responsible for supporting EFSA in establishing a capacity for identifying emerging risks. This requires the development of a structured methodological approach for the implementation of a fully operational capacity. Such a framework will ensure a transparent procedure for gathering anticipatory information from a wide range of sources, with the aim of supporting the systematic examination of potential unexpected threats, key drivers of change, and possible future scenarios across various domains (in)directly related to the food chain. Such a horizon scanning tool would serve as a valuable preventive tool for policy makers for strategic planning and crisis anticipation.

Objective

The main objective of this discussion group is to provide practical suggestions to EFSA on methods that can be applied by EFSA to identify emerging risks related to food safety. In particular, the discussion will focus on methods to integrate information collected from different sources and to filter the relevant information. The following questions should be addressed by the discussion group participants.

1. What are the available methods for the identification of emerging risks?

2. What are the existing available methods for integrating and filtering relevant information collected from different sources?

3. How should we select the best methods that can be applied by EFSA?

4. Propose possible solutions to the following obstacles for using the presented methods:

4.1 Lack of harmonization in methodology and terminology;

4.2 Too resource demanding;

4.3 Validation of the available methods;

4.4 Access to data and information;

[5] **Selected references**

JRC-EU, (2010). "European Foresight ", from http://foresight.jrc.ec.europa.eu/index.html.
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DISCUSSION GROUP 2 - *Data types and sources for the identification of emerging risks*

Introduction

Emerging risks may depend on a variety of different factors and circumstances directly or indirectly related to the food chain which may be difficult to anticipate. The systematic examination of potential hazards or risks and likely future developments across an extensive range of domains requires the early recognition of reliable information sources and a structured system that ensures that an objective assessment can be conducted.

Objective

The aim is to provide data sources and tools for the identification of examples of emerging risk in the food chain (e.g. emerging risks of biological and/or chemical origins) and to identify existing data gaps for their exploitation. The following questions should be addressed by the discussion group participants.

1. What are most suitable data sources for data collection?

For each case (biological or chemical hazards), provide examples of data sources (e.g. databases, institutions, organizations) or highlight where data gathering is needed, for the identification of emerging risks. Describe the strengths and limitations of the proposed sources (e.g. required expertise, reliability, robustness, accessibility, etc.).

2. What are the operational tools for data monitoring and analysis?

For each case, provide a list of tools (e.g. software, libraries, surveillance networks) for retrieving, monitoring and analyzing data (e.g. identifying trends, first time reporting) on emerging risks that could be applied to the above-mentioned data sources, and provide real-life examples.

3. What are the possible strategies for data collection?

For each case, provide criteria to prioritize data sources and tools. Describe strategies to be put into place for the collection of data sources on emerging risks.

DISCUSSION GROUP 3 - *How to build a European risk assessment network, and to communicate successfully with risk managers on emerging risks*

Introduction[6]

A number of competent bodies that address emerging risks, along with some network systems designed to identify emerging risks in different sectors including food, already exist. At the same time, the potential volume of data that could be analyzed is immense. The challenge is, therefore, to develop a network system involving key partners from all interested European, (inter-)national institutions and organizations, and stakeholders, to share data and screening activities on emerging risks in a timely manner, so as to make efficient use of the limited resources available.

EFSA aims to establish networking structures to identify emerging risks and drivers of emerging risks in a timely fashion and to communicate these to the risk manager. Such a capacity would provide an opportunity for risk assessors to undertake their full characterization in a timely manner and, for risk managers to implement strategies of prevention and control.

Communication on emerging risks poses a number of concerns. These are centred around the most appropriate moment to communicate on potential risks, considering the large uncertainties that may be involved, and the risk of causing unnecessary concern.

Objective

The purpose of this discussion group is to identify key players for the identification of emerging risks, and the most appropriate level of interaction (e.g. exchange of raw data, and/or potential signals and/or identified emerging risks), and how information could be usefully exchanged.

Concerning communication on emerging risks, the discussion group is asked to explore how emerging risks should be communicated to the risk manager, to best enable them to assess the need for action concerning future potential risks against current real risks. The following questions should be addressed by the discussion group participants.

1. **Who should be involved in a Europe-wide network for addressing emerging risks in the food/feed chain?**

2. **What would be the most appropriate level of interaction?** (e.g. exchange of raw data, and/or potential signals and/or identified emerging risks)

3. **Who should coordinate communication on food and feed emerging risks at a European level, and to whom should they be communicated?**

4. **How should emerging risks be communicated to the risk manager, and in particular how should the uncertainties be addressed?**

5. **When should information on potential emerging risks be communicated to the risk manager?**

[6] **Selected references**

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DISCUSSION GROUP 4 - *Potential drivers of change and their consequences – an expert opinion elicitation*

Introduction

The occurrence of emerging food and feed safety risks depends on a variety of different factors and circumstances directly or indirectly related to the food chain which, in some cases, are difficult to anticipate. Such events, trends and other types of issues shaping their development are often referred to as "drivers of change".

Some current developments which are likely to have a major impact in terms of emerging food and feed safety risks include globalisation, an ageing population, innovation, migration and the financial crisis. One of the most obvious on-going trends is the increase in food and feed production prices. This is partly due to: (i) changing diets, with resulting increased demand for animal protein in wealthier developing countries; (ii) the impact of climate change on vegetable protein and cereal production; (iii) and the large scale diversion of, for example, cereals, into biofuel production. Possible consequences include, in developing countries, the potential for poor quality food products being diverted into the supply chain, and the increased risk of hunger and malnutrition for those living at subsistence levels; whereas in developed countries, the increase in food prices is likely to further stimulate the search for alternative food sources, including the importation of food into the EU from new areas.

Objective

The purpose of the discussion group is to identify two drivers of change that the participants from different scientific backgrounds consider most important and to examine which consequences these major drivers of change might have on food and feed safety. The experts' opinion will be elicited in a structured manner involving group and sub-group discussions. In this process the following questions will be addressed:

1. Which drivers of change do participants consider the most important with regards to emerging risks in food and feed safety?

2. Why do participants consider these to be more important than other drivers of change?

3. What are the probable consequences for food and feed safety of these drivers?

Consequences will be considered according to different criteria, e.g. their likelihood and imminence of occurring and the directionality and severity of their impact.

LEXICON

The purpose of this lexicon is to provide working definitions to be used at the colloquium. Description of selected terms related to the identification of emerging risks has been drawn and readapted from selected references listed at the end of this document.

Term	Description
Brainstorming	Brainstorming is a creative and interactive method used in face-to-face and online group working sessions to generate new ideas around a specific area of interest. Aiming at removing inhibitions and breaking out of narrow and routine discussions, it allows people to think more freely and move into new areas of thought, and to propose new solutions to problems. The first step involves sharing and exchanging views from a selected group of people. These views are gathered and made available for inspection as they arise, crucially without being criticised or discussed in depth. Subsequently, all ideas are discussed and clustered into categories (e.g. social, technological, environmental, etc.).
Delphi	Delphi is a well-established technique that involves repeated polling of the same individuals, feeding back (sometimes) anonymous responses from earlier rounds of polling, with the idea that this will allow for better judgements to be made without undue influence from forceful or high-status advocates. Delphi surveys are usually conducted in two, and less commonly three, rounds. They are most often employed to elicit views as to whether and when particular developments may occur, but the technique can be used for any sort of opinion or information – such as the desirability of specific outputs, impacts of policies or technologies, etc.
Drivers	Drivers have been defined as issues shaping the development of a society, organisation, industry, research area, technology, etc. Drivers can be classified in categories such as STEEP (i.e. Social, Technological, Economic, Environmental, Political). One important characteristic of drivers is that they may act as modifiers of effect on the onset of emerging risks, namely they can either amplify or attenuate the magnitude or frequency of risks arising from various sources. A large body of literature is available on drivers in different fields, including economy, social sciences, technology, health and environmental sciences.
Emerging risks	Several definitions of emerging risks are available. In general, the common traits of an emerging risk are its ultimate preventive scope, the novelty of the (scientific) evidence, and the difficulties in assessing and quantifying its possible impacts. The terms "potential threat" is sometimes used as a synonym of emerging risk. The definition of emerging risk currently in use in EFSA: "*An emerging risk to human, animal and/or plant health is understood as a risk resulting from a newly identified hazard to which a significant exposure may occur, or from an unexpected new or increased significant exposure and/or susceptibility to a known hazard*". This definition distinguishes clearly between the identification of new hazards and the identification of known re-emerging hazards. For the identification of new hazards, this implies having robust systems in place to identify and evaluate systematically the new scientific evidence that becomes available. Two additional dimensions are included in this definition. The first one is the evaluation of exposure. Namely, in order to pinpoint an emerging risk, an exposure for the population must be present or envisaged. The second is the consideration of the susceptibility of the population to the hazard. "Emerging issue" is often used as a synonym of emerging risk, especially when the quantitative information available is extremely limited.
Foresight	In English, one of the meanings of "foresight" is "the act of looking forward". Foresight, in the context of emerging risks identification, is generally defined as a process of systematic future intelligence gathering and medium-to-long-term visioning-building, aimed mainly at supporting decision making. Foresight has been also described as an iterative process that involves gathering large amounts of information from various sources and domains, analysing and evaluating relevant information through wide consultations (e.g. expert panels, stakeholders), developing future scenarios, and providing risk governance recommendations or options for decision makers. Foresight has been characterised by a set of essential principles, including future-orientation, participation, multidisciplinarity, evidence-based, and action-oriented. A key component of foresight is the systematic examination of potential threats and emerging risks.
Hazard	A hazard is a source of potential harm. In food safety, "biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect". "Threat" is sometimes used as a synonym of hazard.
Hazard characterization	In the context of food safety, the qualitative and/or quantitative evaluation of the nature of the adverse health effects associated with biological, chemical and physical agents which may be present in food. A dose-response assessment should be performed if the data are obtainable.
Hazard identification	The identification of biological, chemical, and physical agents capable of causing adverse

	health effects and (in the context of food safety) which may be present in a particular food or group of foods.
Horizon scanning	Horizon scanning is often used as a synonym of "foresight". In addition, horizon scanning or environmental scanning, or simply scanning also refer to the specific process of observation, examination, monitoring and systematic description of the technological, socio-cultural, political, ecological and economic contexts of the issue in question. Data and information are gathered across a wide range of sources and domains (e.g. Social, Technological, Economic, Environmental, and Political, i.e. STEEP). Scanning techniques can be more or less formalised (e.g. literature reviews, web and media searching, bibliometrics and patent analyses), and supported by technology intelligence tools. The insights uncovered by horizon scanning can later be themed as key trends, assessed as drivers or provide the basis for further investigation or priority setting. Horizon scanning is often a first activity for many futures programmes, in order to frame and contextualise the issues that merit further investigation. Examples of horizon scanning outputs are strategic scans that cover a broad range of issues, disseminated in the form of policy briefs, reports, or scenarios.
Indicators	In very general terms, indicators are qualitative or quantitative figures to measure changes over time. Indicators are generally built on statistical data with the purpose of describing, monitoring, and measuring the evolution and the current state of issues under investigation. Indicators can be related to economy (e.g. GDP, labor costs), the environment (e.g. gas emission, temperature, rainfall), science and technology (e.g. RTD expenditure, publications, patents, innovations), and health (e.g. death rates and infant mortality, health service admissions, drug prescriptions, syndromes incidence) among others. In field of food safety, an indicator has been defined as a component of risk assessment (ideally) comprised of a focused selection of parameters, directly or indirectly related to the food chain that can be measured/calculated qualitatively and/or quantitatively. Ideally, an indicator "should be reliable, sensitive, quantifiable, and should provide the information on the nature of the hazard (agent/process involved) and the source of the risk. The use of indicators has become more popular in the last decades in different fields of public health, in order to try to enhance the performance of traditional surveillance systems and to support policy activities. Although indicators are used in several fields of public health, there is limited evidence of their ability to detect (specific) emerging risks. Clearly, the development of operational indicators requires in-depth evaluation, especially with respect to false positives and gaps in coverage. Lack of specificity, in particular, may be a primary limitation of indicators. This can result in an overload of signals that require verification.
Intelligence	Broadly defined as the capacity to acquire and apply knowledge. Epidemic intelligence refers to all activities related to early identification of potential health hazards that may represent a risk to health, and their verification, assessment and investigation so that appropriate health control measures can be recommended.
Risk	Risk is a function of the probability of occurrence of harm and the severity of that harm. In food safety, a function of the probability of an adverse health effect and the severity of that effect, consequential to a hazard(s) in food.
Risk assessment	A scientifically based process consisting of the following steps: (i) hazard identification, (ii) hazard characterization, (iii) exposure assessment, and (iv) risk characterization.
Risk communication	The interactive exchange of information and opinions throughout the risk analysis process concerning risk, risk-related factors and risk perceptions, among risk assessors, risk managers, consumers, industry, the academic community and other interested parties, including the explanation of risk assessment findings and the basis of risk management decisions.
Risk characterization	The qualitative and/or quantitative estimation, including attendant uncertainties, of the probability of occurrence and severity of known or potential adverse health effects in a given population based on hazard identification, hazard characterization and exposure assessment.
Risk management	The process, distinct from risk assessment, of weighing policy alternatives, in consultation with all interested parties, considering risk assessment and other factors relevant for the health protection of consumers and for the promotion of fair trade practices, and, if needed, selecting appropriate prevention and control options. EFSA deals exclusively with risk assessment and risk communication, and not with risk management.
Scenarios	Scenarios refer to a wide range of approaches involving the construction and use of scenarios – more or less systematic and internally consistent visions of plausible future states of affairs. They may be produced by means of deskwork, workshops, or the use of tools such as computer modelling. Scenario workshops commonly involve working groups dedicated to the preparation of alternative futures. There are numerous ways of articulating and elaborating such scenarios – for example, using a 2*2 matrix cross-cutting key parameters; using "archetypal" scenarios such as "better than expected", "worse than expected", "different to expected". One can also find workshops aiming at the creation of an aspirational or success scenario, for example, elaborating a vision of a desirable and feasible aspirational future. Such a scenario requires the identification of specific objectives, targets

	and actions towards its achievement.
Trend analysis	Trend analysis is among the longest-established tools of forecasting. The method provides a rough idea of how past and present developments may look in the future – assuming, to some extent, that the future is a kind of continuation of the past. There may be large changes, but these are extensions of patterns that have been previously observed. Essentially, it is assumed that certain underlying processes – which may or may not be explicated – will continue to operate, driving the trend forwards. In practice, of course, most, if not all, trends will confront limits and countertrends at some point in their evolution.
Wild cards / Black swans	Wild cards (or black swans) are situations/events that have a low perceived probability of occurring, but a high potential of causing major impacts if they were to occur. Wild cards include negative disruptive events such as the recent Icelandic volcanic ash incident, or the H1N1 influenza pandemic, the 2001 attack to the World Trade Centre, sudden shifts in the dominance of nations or political ideologies, major disasters in environmental or technological systems, but also positive events such as historical scientific breakthroughs. The identification of wild cards and black swans can involve the identification of "not necessarily important things" which do not seem to have a strong impact in the present, but which could be the trigger for major events in the future (e.g. changes in public attitudes to one thing or another, an emerging pattern of concern about emerging health problems). These are usually identified by such means as brainstorming, science fictioning and genius forecasting. It has been suggested that gaming and role playing may encourage participants to think of novel patterns of behaviour and responses.
Weak signals	Weak signals are signals for which limited and scattered evidence is available. Analyses on weak signals are usually carried out by small groups of highly skilled people capable of combining expertise, examining data and creative thinking. The search for weak signals may be undertaken as part of the process of scanning. Finding weak signals is one of the most challenging tasks in futures research and their analysis often leads to the identification of wild cards.

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