

Chemical Pollution and One Health – from Reactivity to Proactivity October 2023

Managing emerging health risks in the feed and food chain

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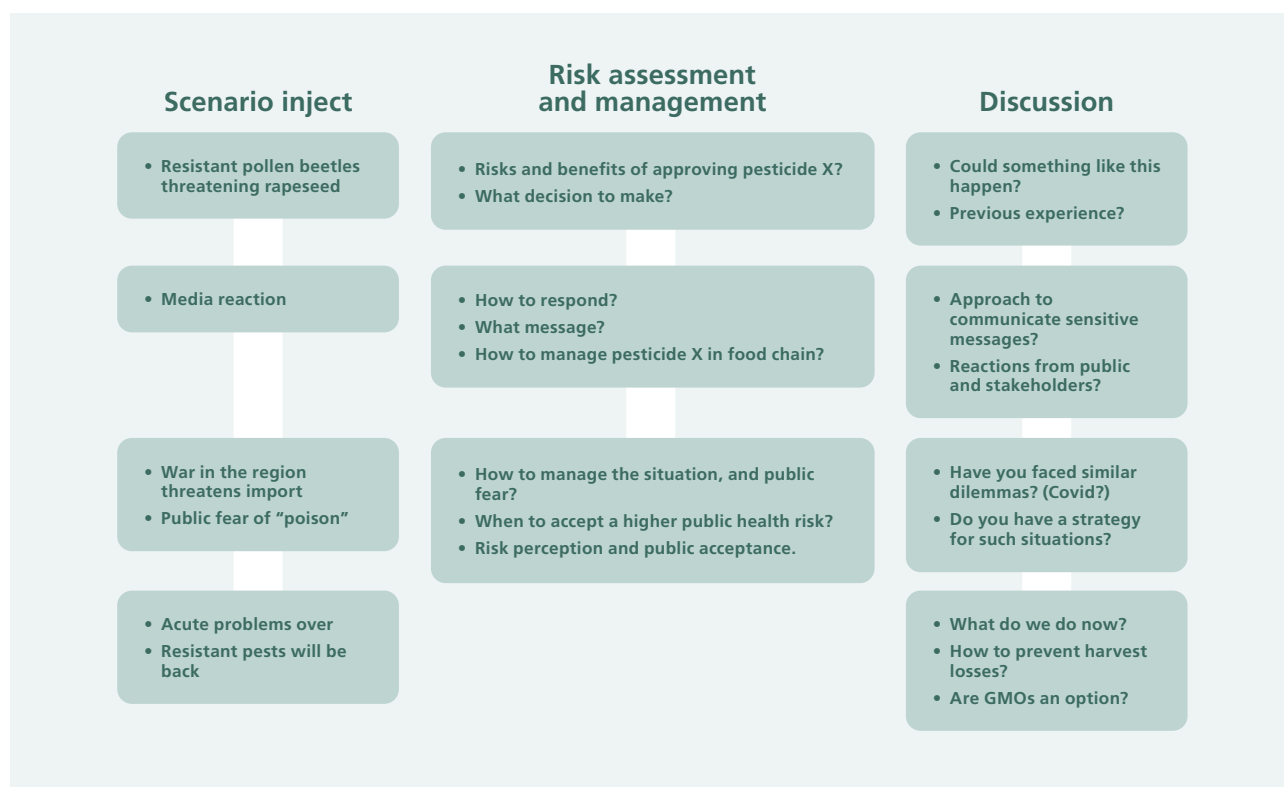


Figure 1. Schematic summary of the workshop exercise.

Brief background

In an ideal world, a proactive society would protect its population from hazardous pollutants by preventing their release. This, however, is not always possible. Sometimes risks are overlooked and not acted on in time to prevent human exposure. In other cases, misconduct, greed or even the intention to do harm may result in the release of pollutants. Finally, contamination may be, from the outset, the result of a trade-off between conflicting goals, for example, when medical products reach the environment via untreated wastewater and

sewage sludge¹ or when pesticides are allowed as a means of reducing harvest losses and food spoilage. Moreover, many contaminants come from natural sources and historical cases of pollution.

History has numerous examples of consumers who have been exposed to chemical pollutants. In many cases, the pathways have involved contaminated animal feed and water supply for both animal and humans, e.g., PFAS pollution in places like Kallinge in Sweden² and West Virginia in the US³. The rise of a new food- or waterborne health hazard will create challenges for authorities at the national, regional, and municipal



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levels. It is not only that decisions must be made that balance the potential public health risk against other values, such as food security, economy, and the sustainability of society and agriculture. Authorities in different countries also need to communicate the risk to the public and other stakeholders in a good way^{4,5}.

Playing down a risk that later turns out to have a public health impact is detrimental to public trust. On the other hand, if the public perceives the health risk to be greater than it is, this may place a social stigma on the commodity, as well as affecting the public trust in authorities⁶. In low-income countries, such a stigma may result in food insecurity, which may have a greater impact on health than the chemical risk itself. There is an equality dimension of food safety, where the richest and most affluent countries can afford a very high standard by importing premium products. However, as history shows, reliance on imports is likely to result in shortages in times of war or financial crisis. When the Covid-19 pandemic arose, it was discovered that making trade-offs with public health was very controversial. In addition, the ethical dilemmas associated with adapting to a situation with a widespread pollutant may also come into conflict with legislation and regulators. The main purpose of food safety legislation is of course to protect the health of consumers, but at the same time, the decisions should not hinder food production as such. Consequently, the legislation cannot support all stakeholders at the same time, leading to challenges such as how to deal with substances for which no regulatory limits yet exist and obvious differences in legislation worldwide. Legislation may be a particular challenge for prohibited substances for which no regulatory limit exists in one part of the world, whereas other countries allow the use of these substances based on national standards. These

differences lead to serious trade conflicts, as can be seen, for example, concerning the use of hormones with growth-promoting properties in various parts of the world⁷. These examples demonstrate that a unified set of food safety rules is needed, and that serious discussion, e.g., on the ethics of using chemical substances and the sustainability of production techniques is key.

Approach

In the workshop, we explored emerging health risks in the feed and food chain, with a specific focus on risk analysis and effective communication between risk assessors, risk managers, and the public.

The goals of the workshop were to:

- Foster a proactive mindset among risk assessors and managers, to effectively manage complex health threats in the feed and food chain.
- Exchange experiences from different parts of the world and identify areas in which research and further knowledge are needed.
- Facilitate networking and collaboration between individuals and organizations with diverse roles and expertise in the feed and food chain.

The workshop was arranged as an exercise in which the participants, in groups of 5-6 persons, were presented with a scenario (Figure 1) where decisions had to be taken regarding application of an undesired pesticide to prevent a harvest loss.

In subsequent injects (Figure 1), participants were faced with the public's response to the decisions and the risk of a regional war that may challenge the import sector. The participants were encouraged to discuss beyond the scenario and think of other scenarios, historical or fictive, where similar challenges and dilemmas have arisen or could arise.

RECOMMENDATION:

The workshop identified several themes that need to be further explored in order to manage a crisis, including (i) the format of risk assessments, (ii) stakeholder involvement, (iii) risk perception and (iv) ethical dilemmas. The scenario further stresses the inherent goal conflict between food safety – food security – equality and sustainability.

Theme risk assessment

Several participants pointed out that they needed more information about health risks to take a decision. This is partly due to the simplifications in the scenario, but also reflects the present approach to chemical risk assessment. Risk assessments in the EU are largely based on a “preventive approach”⁸, where a “tolerable daily intake” is defined. However, to balance the expected health effects of a decision, a predictive risk assessment approach is needed (as in, e.g., a risk-benefit- or a cost-benefit assessment). If no predictive risk assessment is available for the compound of interest, the risk manager will need substantial help from risk assessors to interpret the available information, including risk assessments and scientific literature as well as the possibility to deviate from the preventive approach. A predictive approach to chemical risk assessment may also be needed if risk managers are to include sustainability goals in the risk analysis in response to proposed Legislative framework for sustainable food systems in the European Union⁹, which was also stressed in a multi-actor dialogue in the FoodSafety4EU¹⁰.

RECOMMENDATION

Risk assessors need to be prepared to provide “fast” predictive assessments to risk managers in an emerging crisis, or at least to provide policymakers and other food chain actors with an informed guess as to the magnitude of the health impact. The assessment should include a (semi-) quantitative evaluation, rather than the present approach of a “safe” versus “unsafe” situation. This should lead to a series of “scenarios” concerning the possible outcome of a situation, and the possibility to deviate from the preventive approach. (Risk assessors, European commission and EFSA)

Develop the methods needed to create more “predictive” assessments, and to decide on the interpretation of the results of these studies. For the latter, the perceptions of all of the different stakeholders is to be taken into account. (European Commission and EFSA)

Theme stakeholders

The workshop pointed out the importance of being able to

discuss outside the “expert box” in a food crisis. It also stressed the early involvement of stakeholders in the risk analysis process. This is in accordance with conclusions from work supporting the implementation of a ‘General Plan for Risk Communication’, i.e., an integrated framework for EU food safety risk assessors and risk managers at the Union and national level, as required by the revised EU General Food Law Regulation¹¹, the transparency directive¹² and the outcome from the ENCOMRAN project¹³. The food chain actors will need to manage conflicting goals. Naturally, this includes economic factors as well as other aspects including food security and sustainability. In this context, lobbying powers have a considerable impact.

RECOMMENDATION:

Authorities need to have mental preparedness and a comprehensive overview of the food safety system. (food chain actors)

In the risk analysis process, the “values” that need to be weighed against each other need to be defined early, with stakeholders. (food chain actors)

Develop a description of the food safety system for the purpose of providing information of the different stakeholders, to assure a “level playing field”.

Follow up this work with more “elaborate” exercises including more stakeholders. (food chain actors)

Theme: Ethics and the perception of risk

In the exercise, different groups took different decisions, and this largely resulted from different understandings and interpretations of the health risk. A possible solution in a crisis that challenges food safety and food security would be to direct products containing pollutants/residues to non-risk groups. One example raised was to protect the dairy chain, to minimize impact on children, but accept some contamination of feed for meat-producing animals. Participants noted that it may be a challenge to persuade consumers to eat food containing low levels of a pollutant/residue even if experts have concluded that it would be the best trade-off between goals. Some also noted that those who are rich enough might act selfishly by trying to secure the best (safest) products for themselves, even if that means an elevated risk for others. Such a decision may be unspoken. For example, this could occur if a contaminated product were exported to countries with less control and replaced with an imported product, at the cost of impaired food security in the exporting country. Irrational and selfish consumer behaviours (and marketing strategies where branding includes a declaration of freedom from a substance) could be magnified by biased risk perception and result in “biased” decisions, where a relatively small human health risk is eliminated/reduced at a large cost to other sustainability goals, for example, biodiversity, carbon footprint, sustainable communities, food security, and equality.

Risk means different things to different people, and the perception of risk plays a prominent role in the people's judgments and decisions regarding food safety – food security – equality and sustainability. This has implications for risk assessment, which is complex and difficult partly as a result of miscommunication between risk managers (e.g., controllers following strict legislation) and risk assessors (scientists with no or limited knowledge of the legislation). This discord is characterized by conflicting goals in managing contaminants and residues that have a wide range of impacts on human and environmental health. Risk perception is a complex product of social, cultural, political, emotional, and intuitive factors. Standards and precautionary principles within the feed and food value chain control trade, but not patterns of human consumption. Risk communication is important but also difficult if we do not have all the information. The public consists of consumers and non-consumers, and non-consumers of a particular food may not be worried or concerned about risks associated with that food (e.g., sports fishermen consuming their own catch).

RECOMMENDATION:

Study how risk perception will impact acceptance of management strategies by the public and stakeholders and take this into account in the risk communication – including the communication between risk assessors, risk managers, and stakeholders throughout the risk analysis process. (Scientists – in cross-disciplinary setting)

Define the impact of a policy decision; it is necessary to develop a “unified” terminology to assure that the result of an evaluation is understood by all parties in a similar manner. (Scientists – in cross-disciplinary setting)

A risk communication strategy aimed at raising awareness and having tools to provide information on the magnitude of the risks and other consequences for stakeholders and the public in relation to other, more familiar, risks. (food chain actors)

Theme: “out of the trap”

Can we provide safe food for all? The scenario stresses the inherent goal conflict between food safety – food security – equality and sustainability.

Discarding food, e.g., due to contamination, may increase the climate impact of food production. Could a solution be to increase crop diversity: diversity and nutrition. A larger world population and higher demand for food will, all else being equal, increase the density of crops and speed up the evolution of resistant pests. A more diversified agriculture may be less sensitive to pests. But this is hard to reverse when equipment and facilities are adapted to large-scale high-productivity agriculture (which might be good from a climate perspective)

GMOs may help to speed up the propagation of resistant crops, in particular the gene editing strategies that do not leave any traces in the genome, but the inserted mutation.

However, GMOs as a solution may not yet be accepted by consumers in all countries, as they suffer from their association with Monsanto and patent crops (although patent crops appeared before GMOs).

RECOMMENDATION:

When taking decisions in the food system, it is important to consider multiple sustainability goals together and not optimize only one parameter. The goals include the “triple crisis – pollutants, biodiversity and climate”, but also food security and social sustainability goals. This will be a challenge for the risk manager, who will need input from experts in multiple domains, including, but not limited to, food safety risk assessment and environmental risk assessment. (food chain actors)

We need to develop methods and working practices as well as conduct training and education. Work is ongoing in EFSA and EC, and we need to keep up with developments.

There is a need for exercises and training to tackle the disconnect between risk assessors, risk managers, and the public (food chain actors).

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