

**Critical and Emerging issues in Food Safety and Quality  
CCEURO 2016**

**Response from Norway**

We have participated in the discussions held by EFSA and would like to give our support to EFSA's input below. Furthermore we have included an issue related to trade agreements.

**# 1 - Identification of critical and emerging issues**

Please identify what you believe to be the 3-5 most **critical issues** related to Food Safety and Quality, from **present to the next 2 - 5 years**.

- 1) Invasive plant pests and diseases
- 2) Invasive animal diseases
- 3) Antimicrobial Resistance
- 4) Food supplements
- 5) Emerging marine biotoxins
- 6) Exposure to multiple chemicals
- 7) Food fraud
- 8) Mega Regional Partnership Agreements**

Please identify what you believe to be the 3-5 most important **emerging issues** related to Food Safety and Quality **in the next 2 to 5 years**.

- 1) Circular economy
- 2) New food production technologies
- 3) Change of consumption pattern towards "healthier" food choices.
- 4) Constraints on natural resources: water availability

**# 2 - For each issue identified above please find a short explanation**

**Critical issues**

1) *Invasive plant health issues*

Strongly driven by climate change, global trade, change in consumer preference and mass migration, the establishment of specific plant pests and diseases in areas where they were previously absent will challenge maintaining food production. Intensification on agricultural practices, monoculture and the use of genetically selected species are also important factors to take in consideration when assessing susceptibility to pests. In addition, as new pests and diseases establish themselves in new areas, there could be further adaptation in terms of vector and/or host range so changing the plants at risk and the behaviour of the hazard. Recent examples in the EU would include *Xylella fastidiosa*, tomato leaf miner.

2) *Invasive animal health issues*

As above. In addition the driver on human and animal migration due to political unrest plays a role in introducing exotic animal diseases into Europe. Recent examples concerning the EU would include Schmallenberg, Lumpy skin disease, African swine fever. In addition, with diseases of animals there is the risk that they may also cause disease in humans examples are west nile fever or Ebola virus disease. An additional driver for disease emergence in animals has been the increase of contact between wild animals

and domestic animals caused by changes of habitats of the latter, mainly through human activities, but where climate change could also play a role.

3) *Antimicrobial resistance*

Already identified through many different exercises as one of the major threats to human and animal health over the coming years, the development of multiple-resistance to commonly used and last resort antimicrobials is of great concern. Considerable antimicrobial use through veterinary and growth promoting practice occurs in the livestock including the aquaculture sector, therefore any global strategy to control the development and spread of antimicrobial resistance must take into account livestock use. Data already exists to demonstrate the rapid spread of specific resistance determinants across populations and regions. The problem is therefore shared by the global community. With increased prevalence of resistance and resistance to an increasing range of antimicrobials one would expect increased livestock production costs, but ultimately a real impact on human life expectancy.

4) *Food supplements/ alternative distribution channels*

Food supplements currently fall between a number of regulations (food labelling, medical claims, health claims, novel foods, nutrition information, herbal preparations to name a few). In addition, considerable volumes are sold directly to consumers via alternative distribution channels (eg. on line) through business operators which are not registered or registered in countries different from the ones where the products are sold making official controls difficult to implement. As a consequence many items sold are poorly defined, mislabelled, make unsubstantiated health claims or contain non-approved ingredients. In the future, increased internet sales not only of food supplements, but also of food items may lead to a need to change how food controls and inspection services are implemented. This is a challenge for the food sector and all involved parties.

Many of these supplements contain botanicals which have become progressively more popular in European countries over the past years. Very often they are included in complex mixtures and marketed as food supplements. Botanicals contain active substances which are sometimes only partly identified and toxicologically characterized. A recent example: green tea extracts.

A critical eye is needed for products evading the expensive and time-consuming approval process for medicinal products in which safety and efficacy has to be proven first, and for recommended consumption (or indeed lack of indications) that may encourage high levels of exposure to potentially toxic ingredients, particularly in at risk groups (recent example: apricot kernels).

5) *Emerging marine biotoxins linked to climate change*

An increased detection of exotic marine biotoxins has been observed in European waters possibly linked to climate change and related increase in sea surface water temperatures, but also to globalisation (increased international trade – transport in ballast water), and even adaptation/evolution of existing species to new and changing environments. Recent examples include: (1) Introduction of ciguatera toxin producing algae into EU waters (2) Introduction of okadaic acid producing microalgae into northern Mediterranean through the establishment of exotic macro-algae. (3) First detection of TTX in European bivalve shellfish. The emergence of such biotoxins in regions where they were previously unknown raises challenges in raising awareness throughout the whole control food chain,

as well as generating risk assessment expertise and data. Potential impact on fisheries and human health should be assessed.

6) *The risk of increased (through synergism, potentiation) adverse health effects through exposure to multiple stressors including multiple chemical residues (chemical mixtures).*  
The potential simultaneous exposure to a multitude of hazards (chemicals, micro-organisms and other effectors) possibly through different routes (oral, inhalation and dermal) highlights the necessity to move beyond the single hazard approach and consider e.g. chemical mixtures (combined exposure to multiple chemicals). Such effects have already been described on bee populations, and although not yet fully understood the consequences both on biodiversity and the sustainability of pollination are severe. Human risk assessment of combined exposure to multiple chemicals: “chemical mixtures” is a major challenge to scientists, risk assessors and risk managers particularly from the methodological point of view in relation to the complexity of the terminology and problem formulations, the diversity of chemical entities, and the toxicological profiles and exposure patterns in test species and humans.

7) *Food fraud*

The world is a market place and there are large profits to be made in trading substandard or non-authentic food (and plant protection products, packaging material, counterfeited veterinary drugs etc) that may or may not be safe. Global drivers of emerging risk will also drive monetary gain providing financial opportunities for substitution, dilution and fake origin designation.

The need for new sophisticated analytical methods (e.g. DNA barcoding, NMR) has become more evident in order to detect and prevent food adulteration. Early warning systems based on data analytics applied to big data would be advantageous.

8) *Mega Regional Partnership Agreements*

Mega regional partnerships agreements, like TTIP and TPP, are setting standards for both trade of goods and regulations concerning food safety. We are concerned about these standards compromising our established health and safety level as set out in the standards of the Codex Alimentarius, OIE and IPPC.

## **Emerging Issues**

1) *Circular economy*

With new legislation on the horizon, the promotion of a circular economy, one that ideally aims at minimizing waste and pollution, raises questions about the management of risks. For many contaminants (organic and inorganic) accumulation in different matrices is unknown and quantitative data on contaminants in waste is not available.

For example, various types of contaminants have been reported in recycled paper and many have not been specifically evaluated for their safety at the EU level. The ability of selected contaminants of various types to potentially transfer from recycled paper to foods has not been fully investigated. Recycling of waste electric and electronic equipment plastic in the manufacture of black food contact articles may result in migration of unknown substances or substances of unknown toxicity at levels which could endanger human health. Another example is the use of sewage sludge for agricultural purposes. Past risk assessment identified several knowledge gaps and many contaminants could not be risk assessed due to lack of data.

Past experience indicates that recycling within food systems can lead to the rapid amplification of infectious diseases, as well as the potential emergence of new problems (one has only to think of BSE). Therefore when designing such recycling, this concerns have to be anticipated.

2) *New production technologies*

The emergence of new technologies such as cloning, synthetic biology, 3-d food printing etc raise new challenges for assessing and managing food safety. In addition, with the increasing aversion to new technology in certain markets (eg the EU) there is a risk of a lack of relevant expertise to risk assess such new developments. New technologies in unrelated areas may introduce new and unforeseen risks into the food chain (eg use of nanotechnology in other areas such as sun creams, with residues ending up in the foodchain or waste from biofuel production being introduced into the foodchain through animal feed). New technologies may require the development of new risk assessment approaches in order to be able to assess them. An obvious example would be the case of synthetic biology, where the current approach of comparative risk assessment for GMO / non-GMO crops would not be applicable.

3) *Change of consumption pattern towards “healthier” food choices.*

The driver is the change of dietary habits. Linked to a healthier lifestyle, food that was traditionally cooked is now consumed raw. While previous traditional knowledge and related cooking practices reduced the potential hazards in these foods trendy raw food consumption habits seem to be the culprits of the emergence of “old” and new hazards and food borne disease (FBD) outbreaks across Europe.

Recent examples: (1) Green vegetables (e.g. spinach or kale) consumed raw in green smoothies with a high content of oxalic acid; (2) Raw beetroot salad linked to several FBD outbreaks; (3) shiitake mushrooms consumed raw linked to acute dermatitis; (4) *Yersinia pseudotuberculosis* outbreaks linked to consumption of unpasteurized milk.

4) *Constraints on natural resources: water availability*

Agriculture accounts for some 70% of global freshwater withdrawals, with higher shares in many developing countries. Over the past century, global water demand has increased about twice as fast as total population, even though freshwater abstraction within the OECD area has not increased since 1990 (OECD, 2012). Water is probably abundant at a global scale, however a large number of countries face increasingly severe water shortages during growing seasons. Severe water stress has been identified for large regions in southern North America, Mediterranean Europe, South Africa and the southern half of Asia, and estimates suggest that water stress will become more widespread in the decades to come. Given the importance of water supplies for agricultural production, this may have substantial implications for food markets. In addition to the availability of sufficient freshwater volumes, water quality is increasingly threatened by nutrient runoffs and poor wastewater treatment outside the OECD in particular, as well as by a range of micro-pollutants (OECD 2016). With these pressures will come a need to use different grades of water for different purposes in the food chain. Increased use of recycled/reclaimed water for irrigation may be a consequence. Recent reports indicate that some food crops have the ability to concentrate contaminants such as residues of pharmaceutical/veterinary drugs or personal care products from water.