

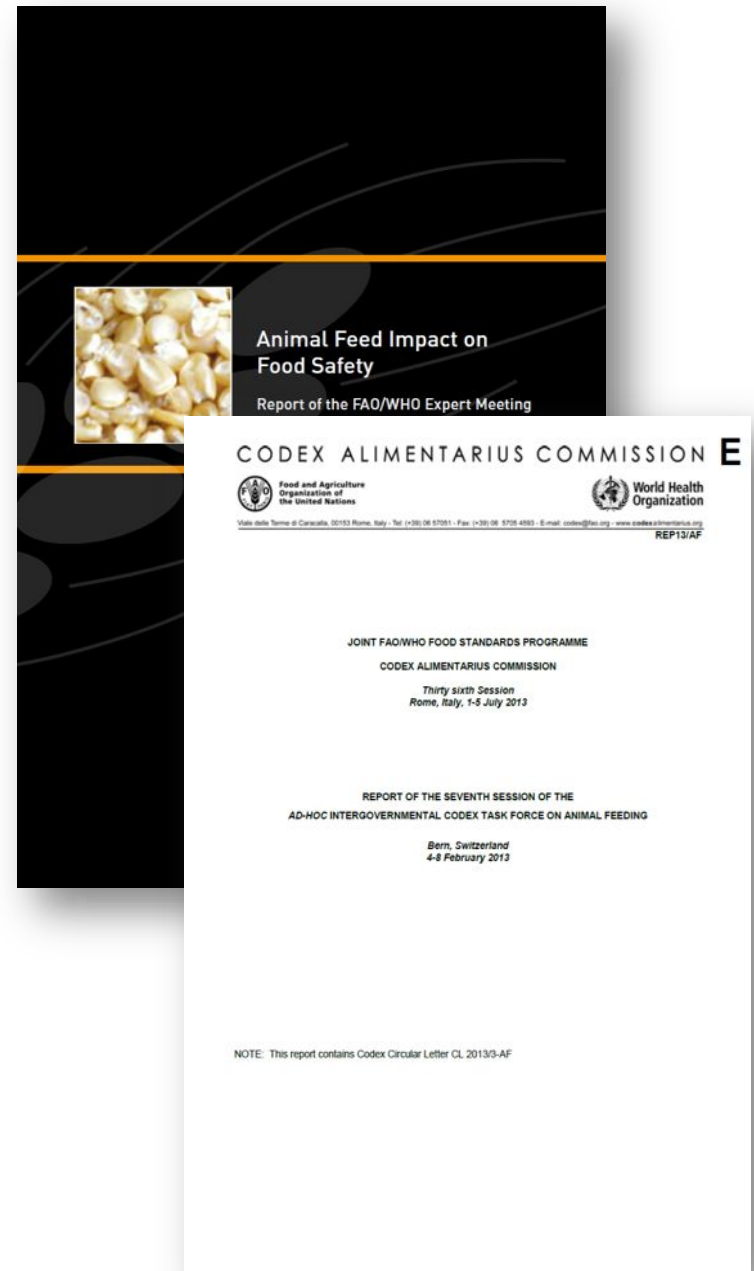
# Key Outcome of the FAO/WHO Expert Meeting on Hazards Associated with Animal feed 2015

5<sup>th</sup> GFFC – Plenary III: Global Regulations & Feed Trade Facilitation  
Antalya 19 April 2016

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# Background

- **2007 Joint WHO/FAO Expert meeting on Feed Impact on Food Safety**
- **2012/2013 Codex Ad hoc Intergovernmental Task Force on Animal Feed**
- **Request to FAO/WHO to provide updated information on hazards of relevance for food safety in animal feed**



# Objective



Food and Agriculture Organization  
of the United Nations



World Health  
Organization

JOINT FAO/WHO EXPERT MEETING  
ON HAZARDS ASSOCIATED WITH ANIMAL FEED

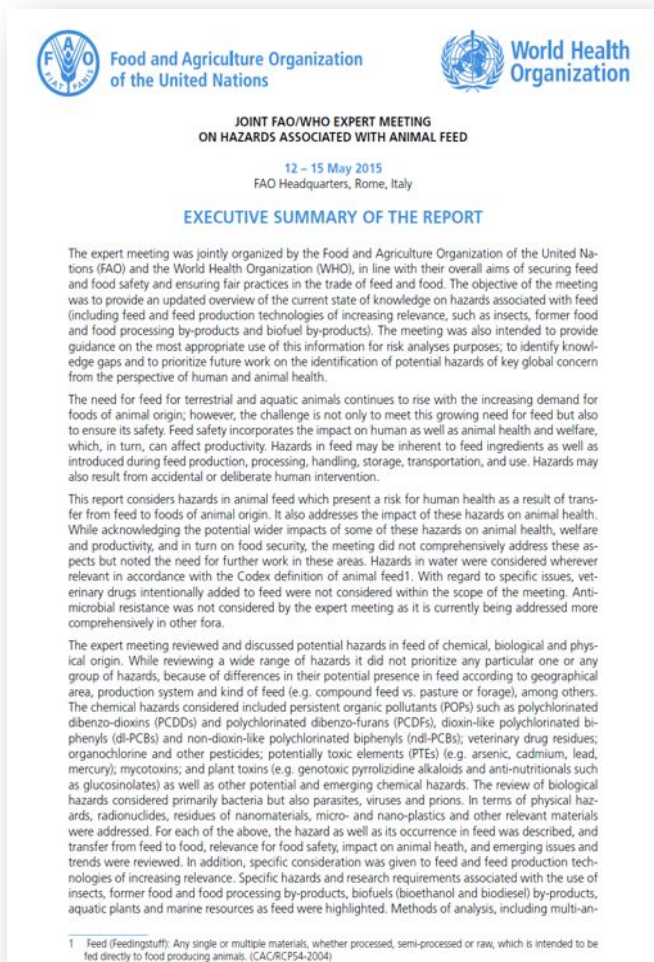
12 – 15 May 2015

Ethiopia Room (C285/9) FAO Headquarters, Rome, Italy

## ANNOTATED AGENDA

*The objective of the meeting is to provide FAO and WHO Member Countries with an updated overview of the current state of knowledge on hazards associated with conventional, novel and unconventional feed, feed ingredients (including feed additives, but not veterinary drugs) and feed production processes (e.g. insects, food waste, biofuels by-products). The meeting should also provide guidance on the most appropriate use of this information for risk analyses purposes; it should identify knowledge gaps and prioritize future work on the identification of potential hazards of key global concern from the perspective of human and animal health.*

# Report



## Overview of findings

### Overview of

- Chemical hazards
- Biological hazards
- Physical hazards
- Hazards of feed and products of feed production technologies of increasing relevance

## Recommendations

# Overview of findings



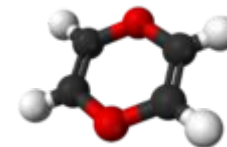
- **Hazards in feed** may present an important risk for **human health**, and can have a negative impact on **animal health and welfare**.
- **Prevention and control** of hazards in animal feed is important for food safety.
- **Standards, guidelines and practical measures** need to be developed and implemented.
- **Capacity development** is important for improving feed safety.
- The wide range of hazards is a **challenge for risk assessment** of feed.
- **Changing environment** in which feed is being produced and used (climate, farming practices, feed sources etc.) needs regular review and awareness of the potential for hazards.

# Overview of findings



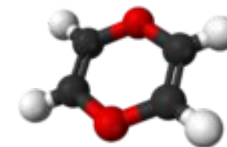
- **Industry** as well as **national authorities** and **international bodies** play an important role in generating data for risk assessment and using them to identify and implement risk management measures.
- **Codex Alimentarius** has been working on feed safety, but explicit consideration of feed is recommended when developing or revising Codex texts for biological and chemical contaminants.
- Differences between countries' **regulatory frameworks** on feed have an impact on the potential to manage hazards.
- The ongoing development of **new products and technologies** need institutional and regulatory frameworks.

# Chemical hazards



- **Persistent organic pollutants**, such as dioxins (PCDDs), furans (PCDFs), dl-PCBs and ndl-PCBs
- **Veterinary drug** residues
- Residues of organochlorine and other **pesticides**
- **Toxic elements** (e.g. arsenic, cadmium, lead, mercury)
- **Mycotoxins**
- **Plant toxins** (e.g. pyrrolizidine alkaloids, glucosinolates)
- **Other potential chemical hazards** (e.g. brominated flame retardants, perflourinated compounds, chloroparaffins)

# Chemical hazards



Hazard	POPs: dioxins, furans, dl-PCBs, ndl-PCBs
<b>Health impact</b>	Dioxins/dl PCB: reproductive, immune and endocrine systems are sensitive targets, especially in developing organisms Ndl-PCBs : difficult to identify particular effects
<b>Source</b>	Natural and anthropogenic sources, processing (e.g direct drying with inappropriate fuel)
<b>Occurrence in feed</b>	Plants harvested from contaminated areas (e.g. flood plains); fish oil/meal produced from fish harvested from contaminated areas
<b>Transfer from feed to food</b>	Transfer to lipid rich-products (e.g. milk and eggs) depends on congener profile
<b>Relevance for food safety</b>	Accumulation in edible tissues and products depends on the levels in feed and the duration of exposure
<b>Emerging issues/trends</b>	Better define the risk associated with ndl-PCBs that are generally present at much higher levels in feed than dioxins and dl-PCBs



# Biological hazards



**Bacteria** (e.g. *Salmonella*, *Mycobacterium*, *Brucella*, *Clostridium* spp., *enterohaemorrhagic Escherichia coli*, and *Listeria*)

## **Parasites, Viruses and Prions**

- Risk of contamination of feed by microbial pathogens exists throughout the production chain up to feeding of the animals.
- Diverse sources for contamination make it difficult to control or fully eliminate specific pathogens.
- Microbial contamination of feed should be kept at such a level to ensure that animals fed do not become infected with the risk for a subsequent spread within a herd and to the environment and ultimately to consumers.

# Physical hazards



## **Radionuclides, Residues of nanomaterials, micro- and nano-plastics and other relevant materials (e.g. residues from packaging)**

- Packaging materials from former foodstuffs and nano-plastics from marine environments can have a significant impact on animal health.
- Nanomaterials can exhibit different physico-chemical properties and biological effects compared to their respective bulk materials.
- Some of these materials can transfer to animal tissues.

# Hazards of feed and products of feed production technologies of increasing relevance

- **Insects**
- **Food processing by-products and former food products**
- **Biofuel by-products**
- **Aquatic plants**
- **Marine resources**

# Hazards of feed and products of feed production technologies of increasing relevance



## Insects

- Only limited studies on the microbiological and chemical safety of insects reared and used as feed are available.
- Information about the possible transfer of specific hazards from feedstock used for insect rearing are limited.
- Concerns exist regarding allergenic risks for animals and humans due to exposure during feed manufacturing.

# Hazards of feed and products of feed production technologies of increasing relevance



## Algae

- Algae may concentrate toxic elements (e.g. arsenic, chromium, cadmium, lead, iodine).
- Toxin-producing micro algae may be unintentionally harvested.
- More information is needed on potential to accumulate toxic elements, the speciation of such elements (e.g. organic or inorganic) and the influence of environmental conditions, as well as the conditions influencing the accumulation of toxins in algal species and the potential carry-over of toxins from feed to food.

# Hazards of feed and products of feed production technologies of increasing relevance



## Krill

- Krill may lead to lower exposure to conventional hazards associated with aquaculture feed such as mercury.
- Krill may contain relatively high amounts of fluoride compared to conventional fish feed (can be reduced by removing the exoskeleton).

# Hazards of feed and products of feed production technologies of increasing relevance

## Food waste and former food products



- Recycling and reuse of food waste and former food products in the feed chain is increasing.
- These products can include materials that remain after, or are produced during, the processing, manufacture, preparation or sale of human food.
- Lack of traceability may increase the risk for cycling of hazards in the feed-food chain.

# Recommendations



**The expert meeting recommended to FAO, WHO, OIE, OECD, the Codex Alimentarius, the industry and the scientific community**

- to raise awareness, advocate and provide information on hazards in feed, the impact of feed to food safety and the importance to ensure feed safety,
- to support risk assessment with research, data collection, method development including sampling and analysis,
- to develop, update and disseminate international standards, codes of practice and guidelines,
- to develop guidelines for production and feeding of feed and products of feed production technologies of increasing relevance,
- to provide specific training workshops on risk assessment and management of hazards in feed.



# For more information

- FAO web site on Animal Production and Health:  
[www.fao.org/ag/aga.html](http://www.fao.org/ag/aga.html)
- subscribe to the FAO mailing list on animal feeding and nutrition
- contact: [daniela.battaglia@fao.org](mailto:daniela.battaglia@fao.org)