Feed Safety: Importance, Codex Standards & FAO Initiatives

for

First OIE/FAO-APHCA Regional Workshop on Feed Safety - Feed borne Disease Prevention

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Ms. Shashi Sareen
FAO Regional Office for the Asia & the Pacific
E-mail: shashi.sareen@fao.org
Coverage

- Global Scenario & food safety
- Importance of feed safety & hazards associated with feeds
- Important issues in food/ feed safety
- Codex /FAO work on Animal Feeds
- Code of Practice on Good Animal Feeding
- Suggested areas for capacity building activities in the Region
Global Scenario & Food Safety

• Establishment of WTO - dismantling of barriers for free flow of trade

• Creation of global market with equal access to all countries – leading to increase in trade

• Quality & safety issues acquiring global focus

• Public concern on safety of foods of animal origin has increased – diseases, residues, contaminants, etc

• Food production chain increasingly complex – primary production to consumption

• Safety of animal foods begins with safety of animal feed
  ➢ Direct trade of feed or feed ingredients
  ➢ Impact on products of animal origin
The Food Chain Approach

FAO defines the food chain approach as:

“Recognition that the responsibility for the supply of food that is safe, healthy & nutritious is shared along the entire food chain – by all involved with production, processing, trade & consumption”

Approach covers primary production to final consumption

➢ Stakeholders – farmers, processors, transporters, distributors (wholesale & retail), consumers- government role of enabler
Why is Feed Safety Important

- Hazards associated with feed enter food chain – consequences
  - Risks to human Health
  - Economic impact (product destruction, market losses, etc)

- Examples
  - Dioxin in eggs & chicken (Belgium)
  - Melamine in eggs (China)
  - Pesticide residues in meat
  - Veterinary drug residues in eggs
  - BSE in cattle
  - Aflatoxin in milk
Examples

Melamine contamination of food & feed – Chinese MoH reported in Nov 2008 that 294,000 infants had been affected by melamine contaminated infant formula, > 50,000 infants hospitalized & 6 deaths confirmed

Dioxin contaminated Irish pork in 2008 exposed consumers to dioxin levels of 80-200 times above safety limits. Cause – pig feed from 1 producer tainted with industrial oil (used in 9 farms) – chain effect. Estimated losses > USD 1 billion
Food Hazards associated with Feeds

- **Chemical**
  - Organochloro pesticides
  - Dioxins, dibenzofurans & dioxin like PCBs
  - Veterinary drug residues
  - Heavy metals
  - Mycotoxin (aflatoxin B1)

- **Physical**
  - Stones
  - Glass
  - Metal
  - Bone
  - Wood

- **Biological**
  - salmonella
  - brucellosis
  - endo parasites

- **Hazard**: A biological, chemical or physical agent in, or condition of, food/ feed with the potential to cause adverse health effect.
Source of hazards

- environment
- manufacturing
- use of contaminated raw materials
- storage
- transportation, distribution
Important Issues in Feed Safety

• Increasing relevance of Standards (International standards)

• Increased focus on residues and contaminants - Pesticide & vd residues, environmental chemicals – (heavy metals, dioxins, PCBs, radionuclides), RMP

• Comprehensive integrated food chain approach & role of all stakeholders

• Risk-based preventative approach to control hazards associated with feed safety

• Traceability
Traceability - Important Concepts

- Traceability refers to “one step forward” & “one step backwards” approach to
  - Identify immediate customers & suppliers

Customers

- **Downstream tracing** refers to ability to establish where products went to - important to identify & recall contaminated products & not safe ones — so minimize size of recall

Suppliers

- **Upstream tracing** refers to ability to identify where products came from — need to investigate & rapidly establish the source of problem & rectify the same, prevent further occurrences & resume production
Work of Codex Alimentarius Commission on Feed Safety
SPS Article 3 Harmonization

- Encourage use of international standards
  
  Food safety & Animal health
  Animal health & Plant health

  Codex OIE IPPC

- SPS permits higher standards based on risk assessment
Codex Alimentarius Commission

• An Intergovernmental body

• **Founded** in 1962 to implement the Joint FAO/WHO Food Standards Programme

• **Programme Objectives**
  - protect the health of consumers
  - ensure fair practices in international food trade (incl feed)
  - coordinate all food (& feed) standardization work at the international level

• **Membership** - 180 countries + 1 member org (EC) – representing 99% of world population

• **Observers**: international organizations: scientific, industry, trade, consumers
Codex Documents (Standards/ Guidelines/ Recommendations)

- Food (includes feed) safety & hygiene
- Nutrition
- Labelling
- Import & export inspection & certification
- Quality of foodstuffs (includes feed)
Codex General Subject Committee

- General Principles – France
- Food Hygiene – USA
- Contaminants in food – Netherlands
- Food Additives – China
- Pesticide Residues – China
- Residue of Vet Drugs in Food – USA
- Food Labeling – Canada
- Methods of Analysis & Sampling – Hungary
- Food Import & Export Inspection & Certification Systems – Australia
- Nutrition and Food for Special Dietary Use - Germany
Codex Commodity Committees

• Commodity Committees that meet regularly:
  – Fats & Oils – United Kingdom
  – Fish & Fishery Products - Norway
  – Fresh Fruits & Vegetables - Mexico
  – Milk & Milk Product – New Zealand
  – Processed Fruits & Vegetables - USA

• Commodity Committees that meet through correspondence or are in recess:
  – Cereal, Pulses & Legumes - USA
  – Natural Mineral Water - Switzerland
  – Meat Hygiene
  – Sugars - United Kingdom
  – Cocoa Products & Chocolates - Switzerland
  – Vegetable Proteins - Canada
Important Codex Work on Feed Safety

• Classification of foods & animal feeds (CAC/Misc 4 – 93)
• Codex General standard for contaminants in foods & feeds (Codex stan193-1995)
• MRLs for pesticides (CAC/MRL 1-2009); veterinary drug (2-2009), extraneous MRLs (CAC/MRL 3-2001)
• Code of Practice on reduction of dioxin & dioxin-like PCB contamination in foods & feeds (CAC/RCP 62-2006)
• Code of practice for reduction of aflatoxin B1 in raw material & supplemental feedingstuffs for milk producing animals (CAC/RCP 45-1997)
• Code of practice on good animal feeding (CAC/RCP 54-2004)
**Other Codex Standards - Applicable to Feeds-1**

- **Traceability** - Principles for traceability/ product tracing as a tool within a food inspection & certification system (CAC/GL 60 – 2006)

- **Risk analysis**
  - Working principles for risk analysis for application in framework of Codex Alimentarius;
  - Principles & GL for the conduct of microbiological risk management;
  - GL for conduct of food safety assessments of foods derived from recombinant-DNA animals;
  - Principles for the risk analysis of foods derived from modern biotechnology
Other Codex Standards - applicable to Feeds-2

- **HACCP** - Recommended international Code of Practice – General principles of food hygiene (4 rev 2003) & Annex on HACCP systems & GL for its application


Code of Practice on Good Animal Feeding CAC/RCP 54-2004
Code of Practice on Good Animal Feeding

• Establishes a feed safety system for food producing animals to cover whole food chain, takes account of relevant aspects of both animal health & environment to minimize risks to consumers

• **Objective** – help ensure safety of food for human consumption through adherence of **good animal feeding practices** at farm level & GMPs

• **Covers**
  - General principles & requirements
  - GMPs during procurement, handling, storage, processing, distribution of animal feeds & feed ingredients for food producing animals
  - Good animal feeding practices at farm level
  - Sampling & analysis
General Principles & Requirements

- Meet acceptable **quality standards**
- **GAP, GMP, HACCP** principles followed
- Collaboration b/w **partners** (identify & control hazards)
- **Feed ingredients**
- **Labelling**
- **Traceability & record keeping**
- **Emergency situations** – CA informed, trade
- **Inspection & control procedures**- self regulation & official controls
- **Health hazards** associated with feed identified & controlled – residues, additives, undesirable subs
Production, processing, storage, transport & distribution (GMPs/ HACCP)

- Responsibility of all participants in food chain
- **Premises** (bldg/ eqpt constrn, water, sewage/ waste)
- Receiving, storage & transportation
- Personnel training
- Sanitation & pest control
- **Equipment** performance & maintenance
- **Manufacturing controls** - Avoid cross contamination, Pathogen control procedures
- **Recalls** - records of identification & distribution
On-farm Production & Use of Feed & Ingredients

Guidance on cultivation, m/f, mgmt & use on farms

• GAPs to be applied at all stages of on farm production – pastures, cereal grain & forage crops

• Hazards - Biological (bacteria, fungi, other pathogens), Chemical (residues), Physical (broken needles, m/c)

• Agricultural production of feed – site selection, fertilizers, pesticides

• Manufacture of feed on farm – feed ingredients, mixing, monitoring records

• Good animal feeding practices – water, pasture grazing, feeding

• Stable feeding & lot intensive units
FAO Initiatives
FAO Initiatives

- Provide scientific basis to Codex through independent scientific expert Committees, meetings & consultations
- Development of guidelines & documents
- Scientific reviews & expert consultations/meetings
- Communication & information Exchange mechanisms
- Capacity Building Initiatives
Science-based documents/ decisions

- Provide scientific basis to Codex through independent scientific expert Committees, meetings & consultations

  - Joint FAO/WHO Expert Committee on Food Additives (JECFA)
  - Joint FAO/WHO Meetings on Pesticide Residues (JMPR)
  - Joint FAO/WHO Expert Meetings on Microbiological Risk Assessment (JEMRA)
  - Joint FAO/WHO ad hoc Expert Meetings on Safety Assessment of Food Derived from Biotechnology
  - Joint FAO/WHO Meeting on Pesticide Specifications (JMPS)
  - Joint FAO/WHO Committee on Nutrition (JECN)
Priority Areas for Scientific Advice

• Some priority areas include:
  - **Pathogens**: Viruses, Mycobacterium, *Salmonella*, *Campylobacter*, and Pathogenic *E Coli*
  - **Chemicals, Contaminants and Residues**: Mycotoxins, Metals, Bisphenol A, Pesticide & Veterinary Drug Residues
  - **Animal Production**: Antimicrobial Resistance, feed safety, & recombinant vaccines in food producing animals
  - **New Technologies of Production Systems**: Nanotechnologies
  - **Nutrition**: Fat & Fatty Acids, Protein Quality, Nutrient Composition, Milk & Milk Products, & Vitamin A
  - **Others**: Risk-benefit assessment & emerging issues related to climate change
Guidelines & Documents


• Manual on the application of HACCP systems in mycotoxin prevention & control – FAO F&N Paper 73

• Safety Evaluation of certain mycotoxins in foods - FAO Food & Nutrition Paper 74

• Assessing quality & safety of animal feeds – Animal production & Health Paper 160

• Worldwide regulations for mycotoxins in foods & feeds in 2003 - FAO Food & Nutrition Paper 81
Scientific Reviews & Expert Consultations
Assessing quality & safety of feeds (FAO 2004)

• Scientific reviews of information in 6 areas
  ➢ Modern techniques on analysis
  ➢ Variability in feed composition
  ➢ Nutritional quality
  ➢ Microbiology
  ➢ Contaminants & toxins
  ➢ Antibiotic growth promoters

• Objectives

- Review current state of knowledge on animal feed, its impact on public health & international trade
- Analyze current situation on int standards on animal feed
- Identify areas for standards development for feeds/recommend further actions

Recommendations

• Code promoted (good animal feeding)

• Inexpensive & accurate screening methods developed (dioxins, dibenzofurans & dioxin like PCBs); aflatoxin B1 (semi quantitative)

• Codex emergency code to also cover feed

• Emergency response systems (feed/food) be developed

• Trainings (regulators, inspectors, feed m/f & distribution chain, livestock industry)
Information Exchange Mechanisms

- International Portal on Food Safety, Animal & Plant Health – a joint initiative with IPPC, OIE, Codex & WTO; [www.ipfsaph.org](http://www.ipfsaph.org)

- INFOSAN – International food safety authorities network – for dissemination of important global food safety information

- FishPort – a web based system for dissemination of technical and scientific information on fish safety & quality; [www.fishport.org](http://www.fishport.org)


- Emergency prevention & early warning in the area of food safety (EMPRES Food Safety): [EMPRES-FS@fao.org](mailto:EMPRES-FS@fao.org)
Capacity Building

• Need to respond to existing/emerging food safety & Q issues

• Countries not always well equipped - technical, financial, info on hazards/ risks, effective institutional framework, trained manpower, etc

• FAO assists in capacity building in various areas:
  - Policy advice on specific issues
  - Institution development/ strengthening
  - Development of guidelines & capacity building tools including manuals, guides, training software, case studies, etc
  - Reviewing & updating food legislation
  - Harmonizing food regulations & standards with Codex/ other IS
  - Training – government, producers/ processors, academia, consultants, consumers
  - Studies & applied research

• Capacity building activities based on government requests/ regional or subregional WS if problem common
**Capacity Building Tools - Some examples**

- Strengthening national food control systems: GL to assess capacity building needs - 2006
- Quick guide to assess capacity building needs - 2007
- Enhancing *participation in Codex activities* - 2005
- A training manual in *food hygiene & HACCP* - 1998
- On-farm mycotoxin control in food and feed grains – training manual (2007)
- Good practices for the feed industry – Implementing the Codex Alimentarius code of practice on animal feeding (2010)
- Good practices for *meat industry* (2004)
- Microbiological Risk Assessment
Capacity Building - Funding

- STDF – FAO, WHO, OIE, WTO, WB; both as financing & coordinating mechanism; countries submit proposals for consideration; information on www.standardsfacility.org

- FAO/WHO Trust Fund – support participation of developing countries in Codex

- Funding through TCPs by donors, FAO, country

- Global Initiative for Food Related Scientific Advice (GIFSA) fund
Regional Focus

- 29th FAO Regional Conference for the Asia & the Pacific (March 2009) recognized the need to
  - strengthen national food-control systems
  - improve the coordination of food safety activities from farm-to-table
  - generally raise awareness of importance of food safety
  - adopt a food chain approach
  - Have national food control systems as risk-based & preventive in nature (use of HACCP along with GPs)

- Regional collaboration/cooperation noted as crucial to address existing & emerging food safety issues
Some suggested areas for capacity building activities in Asia

• **Promotion of code** on good animal feeding

• Training programs on use of screening methods for detection of aflatoxin B1

• Trainings to regulators, inspectors, feed manufacturers & distribution chain, livestock industry – **feed safety & good animal feeding**
Recommendations for Governments

• Support **implementation of safety & Q management & assurance** in feed industry (legislation, procedures, impln mechanism)

• Raise **awareness** among farmers, feed producers, food processors, government authorities on feed & food safety & their linkages

• Promote code on good animal feeding

• develop screening methods for detection of contaminants & residues (eg aflatoxin B1)
THANK YOU

E-mail: shashi_sareen@fao.org
Risk Analysis

- **Risk Assessment**
  - Identify the immediate, interim & long term effect on human health
  - Covers hazard identification, hazard characterization, exposure assessment, risk characterization

- **Risk Management**
  - To establish appropriate measures of control to prevent, reduce or minimise the risks

- **Risk Communication**
  - To determine the best way to communicate the information to affected populations
Labelling

Clear & informative on handling, storage & use

Cover

- Category of animal
- Purpose for which feed is intended
- List of feed ingredients
- Contact information of manufacturer
- Registration number
- Lot identification
- Directions for use
- Manufacturing date
- Expiry/ use by date