Food Safety and Quality

Key Activities at FAO

Source: EIO (Engaging Intergovernmental Organizations) 2013
FAO Mandate

• “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food” [FAO World Food Summit, 1996]

FAO Headquarters
Rome, Italy
Food security and food safety

• **Food security**: the four pillars of food security are availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security [FAO World Food Summit, 2009]

• **Food safety** has positive impacts on food security:
  
  – improved food safety along the food chain reduce food losses resulting in increased food availability, utilization and stability
  
  – access to safe food reduces food-borne illnesses with their associated serious social and economic consequences
  
  – improved safety and quality of food also results in improved nutrition
Food safety hazards

- **Chemicals**: Pesticide residues, Veterinary drug residues, food additives, mycotoxins, dioxins, biotoxins
- **Biological**: Pathogenic microorganisms (E coli, S. Aureus, Salmonella, Camplyobacter, Listeria, etc.) Viruses, parasites.
- **Physical**: Glass, metal, stones etc.
- **Others**: New technologies, such as nanotechnologies
Food safety impact/importance

• 4 billion cases of diarrhoea annually
• A large proportion of these diseases originate from contaminated food and drinking water
• Developing countries - food and water-borne diarrhoeal diseases kill an estimated 2.2 million every year (mainly children < 5 years (WHO)
• Developed countries - up to one third of the population may be affected by food-borne diseases
• Everyone is at risk from food-borne illness
High cost of food safety incidents

- Melamine contamination of dairy products (2008)
  - 6 deaths, 300,000 illnesses and 115 types of contaminated food products
- Salmonellosis in peanuts in US (2009)
  - 9 deaths, 22,500 illnesses
- Dioxin contamination of pork from Ireland (2008)
  - Culling of 100,000 pigs, destruction of 125 million euro worth of food, and total economic losses in excess of US$1 billion
  - 317 cases and 125 deaths

IMPACTS/COSTS: public health, loss of life, food companies, farmers, consumer confidence, economic loss affecting industry and government, food trade disruption, food recalls.
Achieving food safety: a challenge

- Food safety outcomes rely on food safety policies and programmes at the national level and food safety systems in many countries are still not fully developed.
- Food safety management involves actors across the food supply chain from farm to retailer to consumer – coordinated management can be a challenge.
- In many cases there is limited high-level commitment for developing national food safety capacity leading to limited budgetary allocations and poor food safety outcomes.
- Developing nations have limited capacity to participate effectively in the international food safety fora.
FAO and food safety

• 4 initiatives
  – Codex Alimentarius Commission Secretariat
    • provides technical and operational secretariat assistance to the commission (international risk management) – joint FAO/WHO food standards programme
  – Provision of Scientific Advice
    • provides a neutral, international forum for formulating supportive policy and regulatory frameworks (international risk assessment) – mostly done in collaboration with WHO
  – Capacity Development
    • supports Member Countries in strengthening their food control programmes and activities
  – Emergency Prevention (EMPRES Food Safety)
    • Provides technical and operational assistance to prevent, control and respond to food safety emergencies
Provision of scientific advice

Member Countries

- Data, expertise
- Needs, feasibility, inputs, etc.

- International risk manager CODEX
  - Scientific advice
  - Requests for advice, risk assessment
  - Standards, guidelines, related texts

International risk assessment
JECFA, JMPR, JEMRA, ad hoc expert consultations

WTO Agreements

International trade agreements

Benchmark standards

Requests for advice, risk assessment
Traditional areas of risk assessment

• Chemical
  – Food additives
  – Flavouring agents
  – Residues of veterinary drugs
  – Pesticide residues
  – Contaminants
  – Naturally occurring toxicants

• Microbiological
  – Well known pathogens
  – Salmonella
  – Listeria monocytogenes
  – Campylobacter
  – Vibrio
New areas of risk assessment

- **Chemical**
  - Acrylamide
  - Dioxins
  - Micronutrients
- **Others**
  - Biotoxins
  - Lactoperoxidase system
  - Nanotechnology
  - Chlorine etc...
- **Microbiological**
  - Less well known or emerging pathogens
  - Parasites
  - Viruses
  - Antimicrobial resistant microorganisms
Challenges

• Viruses
  – clearly public health problem
  – methodology for data collection relatively recent
  – one country estimates 2 years away from being able to do risk assessment

• Possible application of RA
  – prioritising areas where data needed to enable action to be taken sooner

• Chlorine
  – assess risk associated with residues and reaction compounds of active chlorine
  – assess risk of increased exposure to microbiological hazards if chlorine is not used

• Possible application of RA
  – risk - cost - benefit assessment - area where new tools need to be applied
Capacity development

• Ensuring sustainable and effective food safety capacity development
  – Tailor activities to country priorities, needs and conditions
  – Build on existing strengths and resources
  – Integrate science and risk analysis at all levels
  – Involve all relevant stakeholders from farm-to-table
  – Encourage technical cooperation between developing countries
How is it delivered?

• Support/guidance on food safety through a range of projects and tools that respond to member requirements through:

  – in-situ through missions, workshops, seminars, training courses
  – documents/tools that address and provide broad or specific advice
  – systems, forums and networks that enable international linkages of information, expertise and partnerships
What is delivered?

• Projects and activities to provide training, advice and support on:

  • Official food control programmes
    – Farm to fork approach
    – Risk analysis and risk based approach for food control
    – Strengthening of technical food control services – labs, inspection
    – Partnership between government and food industry [reorientation of roles]

• Assistance in various food safety issues (e.g. safety in meat, seafood, fresh fruits and vegetables)
  – Preventive measures throughout the food chain (GAPs, GMPs, GHPs,)
  – Development of capacity for generation and use of food safety data for evaluating food safety problems and risk
Some examples
Ex 1: Mycotoxin

- Monitoring, Prevention and Control of Aflatoxin Contamination in Iranian Pistachio Nuts

**In the field**
- Agricultural Practices
- Climate (humidity / temperature / rainfall)
- Crop variety
- Treatments (insects and fungi)

**At harvesting**
- Maturity at harvesting
- Moisture
- Disease State

**During storage**
- Temperature
- Moisture

**During transformation & process**
- Cleaning
- Temperature
- Process

*Need to understand and assess risks at each step!!!*
Ex 2: Risk Analysis Training

- Used in Risk Assessment Training in Latin America (28 countries); resulted in ongoing networks and partnerships that share data, learnings, discuss problems and successes. Has enhanced the sustainable application of RA in food control in several countries.
- RA training in West African countries driven by regional harmonization of food control. Training using a phased approach: training of regulatory authorities on preliminary risk management (focus on risk profiling and risk ranking) to initiate data collection and strengthen and institutionalize a risk based approach.
New challenges

- Food Safety scenario is changing rapidly
- Actual changes in the nature of the hazard
- Changing dietary patterns
- Globalisation of trade and internationalisation of tastes
- Changing lifestyles
- International travel/tourism

- New technologies in food production and processing
- Consequences of climate change
- Susceptibility of population
- Aging of the population
- Poor nutritional status of some sub-populations
- Other health conditions
Emergency Prevention System for Food Safety (EMPRES Food Safety)

- Food safety emergencies can quickly spread nationally and globally due to high and rapid food trade volumes.

- In response to member requests for assistance in dealing with food safety emergencies, FAO established the Emergency Prevention System for Food Safety (EMPRES Food Safety).

- Focuses on early warning (horizon scanning and information sharing), emergency prevention (guidance and training on priority events), and rapid response (direct technical assistance in emergencies) — complement other food safety emergency activities (INFOSAN, RASFF and others).

The way forward

• Raise awareness among policy makers and decision-makers
• Provide an enabling legal and regulatory framework
• Strengthen the institutional basis and ensure effective coordination
• Develop scientific and technical resources
• Upgrade the scientific, technical and managerial competencies - skilled and capable technicians and managers
• Ensure there is an effective dialogue and information exchange with key stakeholders – industry and consumers
• Develop the level of knowledge and capacity in all sectors of the private sector and among consumers as key drivers for change
For more information


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