

# REPORT

## TECHNICAL TRAINING ON RISK ANALYSIS FOR THE SAARC COUNTRIES

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organized by

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*in collaboration with*

**Quality Council of India and with support of Food Safety and Standards Authority of India**



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# TECHNICAL TRAINING ON RISK ANALYSIS FOR THE SAARC COUNTRIES

## 1. Introduction

### *1.1 Background*

Risk Analysis is an internationally accepted structured process that consists of risk assessment, risk management and risk communication. Over the past decade risk analysis has become the main methodology applied across the food chain with the objective of improving the food and feed control systems to achieve safer food, reducing the numbers of food-borne diseases and facilitating both domestic and international trade in food.

Risk assessment is the science-based component of risk analysis. Risk assessment provides the framework for collecting, organizing and interpreting the data and information on the inter-relation between hazards in the food chain, foods and human, plant and animal health. The risks for food and feed along the food chain may be of different natures, including biological and chemical risks. Depending on the identified food and feed hazards in specific countries, governments may undertake microbiological, chemical or other kinds of risk assessment. National governments need to have a good understanding of the relevance of risk analysis and how to apply this in a consistent manner to provide the scientific basis for decision-making (risk management options). They also need to have a better understanding of essential conditions to effectively incorporate the risk analysis framework into the functional food safety system with all main components – food laws and regulations, food control strategy, effective inspection and laboratory services, food monitoring, foodborne disease surveillance, and education and communication.

### *1.2 Objectives of the training*

The overall objective of the training was to strengthen the understanding of the risk analysis principles, increase the application of the risk analysis framework at country level in the support of food safety systems and ensure that risk management decisions are based on science and best available scientific data. The training was expected to build capacity among representatives of the Ministries of Agriculture, Ministries of Health, Food Safety Authorities and scientific institutions involved in risk assessment and risk management activities in their respective countries, in the following areas:

- (i) Review of the risk analysis process, its components, scope of applications for ensuring food safety;
- (ii) Improved knowledge on the use of risk analysis methodology in the development of national and international food standards and application in food safety control.
- (iii) Practical training exercises on the risk analysis application in both routine and emergency situations for chemical and biological hazards in food;
- (iv) Exchange of information among participating countries on the experience and process of application of risk analysis in food safety control systems;

- (v) Setting national and regional priorities on risk analysis and improving collaboration for furthering risk analysis in the region

### **1.3 Training expected outputs**

It was expected that after attending the training, the participants would have raised their understanding of risk analysis as a tool to strengthen food control systems; they would have increased their knowledge on the application of risk analysis based on Codex standards; and have increased capacities for the *practical* application of the risk analysis framework at the country level. In particular they would have:

- strengthened their understanding of the risk analysis process, its components, scope of applications for ensuring food safety;
- improved knowledge and practical application on the use of risk analysis methodology in the development of national and international food standards and application in food safety control including analytical and inspection programmes in the country;
- an understanding of the need for coordination and linkage between scientists (assessors) and decision makers (risk managers);
- a greater understanding of the situation of participating countries' capacity in the process of risk analysis application in food safety control systems; and
- identified national and regional priorities on risk analysis along with methods for improved collaboration for furthering risk analysis in the region.

It was also expected that a training module based on the actual training conducted would be developed/published and made available to countries for their further use.

### **1.4 Participants**

A total of 35 participants from all member countries of the **South Asian Association for Regional Cooperation** (SAARC) namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka attended the training. Participants represented Food Safety Authorities and Veterinary Inspectorates' (Ministries of Agriculture), Food Hygiene Departments (Ministry of Health) and scientific institutes. All participants were involved in some aspect of risk analysis in their respective countries.

Resource persons with appropriate knowledge and background were invited from various countries with most of them involved in their own country's risk analysis. As risk analysis is a very wide subject, the resource persons were selected with different knowledge and experience so that all subjects could be suitably covered. The list of participants, resource persons and support persons is given in Annex 1.

### **1.5 Meeting structure and organization**

The training programme was organized by FAO Regional Office for Asia and the Pacific in collaboration with the Quality Council of India (QCI), India and with the support of Food Safety and Standards Authority of India (FSSAI). The methodology of the workshop was put together by the FAO Regional Office for Asia and the Pacific, Bangkok with support from the resource persons and consisted of lectures and working group sessions followed by a presentations by the participants. Various case studies were also included in the program for

better illustrating the steps and components of risk analysis. These sessions were followed by lively discussions to further clarify the concepts of risk analysis.

The first day was structured to give an overview of the entire risk analysis process including the international updates by Codex/ FAO and WHO. This was followed by country presentations to gain an understanding of the country scenario on risk analysis in each country and through a working group exercise, common problems in the region were identified which formed the basis of discussions over the next few sessions. The second day focused on the preliminary risk management and the risk assessment process to cover an overview followed by working group exercises where participants gained a hands-on experience in carrying out risk assessments through web search and using the problems identified on the first day. The next two days focused on risk management, risk communication and risk analysis in food safety emergencies which generally followed the pattern of an overview on the subject followed by case studies to show how the issues were actually implemented in practice and practical group exercises to give participants practical experience. The last day was devoted to country and regional activities in which participants identified areas of importance at country and regional level. The ASEAN examples of collaboration were presented to give participants some ideas on how to move forward towards strengthened regional collaboration.

The training programme agenda is given in Annex 2.

## **2. Main proceedings**

### **2.1 *Session 1 Opening session***

During the opening session, B. Venkataram, Secretary General, QCI welcomed the participants from various countries and the resource persons. In his address Mr. Venkataram welcomed all the participants and faculty on behalf of QCI. He emphasized that risk assessment is very much part of anyone's daily life where we make decisions based on risks and the concept is even more important in the food sector. He further stated that understanding of the concept of risk analysis is all the more important for the SAARC countries as most of the SAARC countries are food producers and exporters and world market is relying on them for safe food. He also mentioned some of the inherent practices followed in India and the neighboring countries for ensuring safe food.

He expressed his gratitude to FAO for associating QCI as a partner in organizing this Workshop in India so that SAARC countries could get benefited.

He also expressed his gratitude to Mr. Chandramouli Chairperson, FSSAI, for their support and his presence during the inaugural session.

Ms. Shashi Sareen, Senior Food Safety and Nutrition Officer, FAO Regional Office for Asia and the Pacific, Bangkok, in her opening remarks introduced the subject of risk analysis as a systematic disciplined approach for making food safety decisions. She explained that the Codex Alimentarius Commission defines it as a process composed of three components: risk assessment, risk management and risk communication. Risk analysis is a powerful tool for carrying out science-based analysis and reaching sound consistent solutions for food safety problems. A risk analysis framework provides a structured way of examining and

incorporating the wide variety of factors that impact the decision-making process, and enables regulators to identify, assess, manage and communicate food-related health risks throughout the food chain continuum. She further expressed the need for SAARC countries to work towards risk analysis and the benefits of sharing data with each other. She emphasised on the need for SAARC countries to build capacity jointly as there are many similarities in hazards and food habits in the regions along with sharing similar climate. She highlighted the importance of food safety in the region and stressed the need for the proper risk analysis and capacity building activities in the region. She thanked both QCI for their collaboration and FSSAI for their support. She also thanked the governments of all SAARC nations for selecting and sending appropriate candidates for participating in the training who would on return to their countries contribute to activities in relation to risk analysis in their countries. The full text of her opening remark is given in **Annex 3**.

The inaugural address was given by Mr. K. Chandramouli, Chairperson, FSSAI, India. Mr. Chandramouli in his address mentioned that food safety has been recognized by India as a priority area in view of its health and economic significance. He explained that The Food Safety and Standards Authority of India (FSSAI) has been established under Food Safety and Standards (FSS) Act, 2006 which consolidates various Acts & Orders which were handled by various departments and ministries in India. FSSAI has been created for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption. He informed that under the new Food Act in India, there is a provision for laying down procedures and guidelines for risk analysis and hence this program would be very useful for us.

Referring to the structure and objectives of FSSAI and the importance of standards in enhancing trade in the globalized era, he brought out the role of Codex and related agreements in harmonizing standards and the need for strengthening capacities of countries to contribute to the standards setting process with enhanced regional collaboration and cooperation. He briefly mentioned FSSAI's activities on food safety in the region with special reference to Codex.

He further informed that FSSAI has been mandated by the FSS Act, 2006 for performing the following functions:

- Framing of Regulations to lay down the standards and guidelines in relation to articles of food and specifying appropriate system of enforcing various standards thus notified.
- Laying down mechanisms and guidelines for accreditation of certification bodies engaged in certification of food safety management systems for food businesses.
- Laying down procedure and guidelines for accreditation of laboratories and notification of the accredited laboratories.
- To provide scientific advice and technical support to Central and State Governments in the matters of framing the policy and rules in areas which have a direct or indirect bearing of food safety and nutrition.
- Collect and collate data regarding food consumption, incidence and prevalence of biological risk, contaminants in food, residues of various contaminants in foods products, identification of emerging risks and introduction of rapid alert system.

- Creating an information network across the country so that the public, consumers, Panchayats, etc receive rapid, reliable and objective information about food safety and issues of concern.
- Provide training programmes for persons who are involved or intend to get involved in food businesses.
- Contribute to the development of international technical standards for food, sanitary and phyto-sanitary standards.
- Promote general awareness about food safety and food standards.

He expressed his gratitude to FAO for organizing this useful and comprehensive program and selecting India as the host country and welcomed the participants from SAARC countries and hoped they would enjoy their stay in the country and also learn from the various presentations as well as each others' experiences. He said due to similar climatic conditions and practices in the SAARC countries, there were similar issues in food safety and the countries should work together to overcome them. He also mentioned that FSSAI is working closely with QCI for better implementation for new Act.

Mr Anil Jauhri, CEO, NABCB, on behalf of QCI, India, thanked the various dignitaries who participated in the inaugural function, the resource persons, FSSAI for their support and the participants for attending the training. He also thanked FAO for organizing this workshop and selecting QCI and FSSAI for collaboration and support.

After the opening session, participants were requested to introduce themselves giving briefly their name, background, department and experience with various components of risk analysis in their respective countries. Thereafter, Ms Sareen gave the detailed background, objective of the training both overall and specific as mentioned above, expected outputs, an outline of the entire five days program and a brief introduction of the resource persons. This was followed by a tea break while arrangements for the photographic sessions were made. The tea was followed by a photographic session following which the dignitaries thanked everyone once again and dispersed.

## **Technical sessions**

### **2.2 Session 1 Overview of Risk Analysis process**

After the opening session, Ms. Shashi Sareen gave an overview of the risk analysis process. Starting with various recent food safety incidents in recent times like melamine contamination in infant formulae; *E. coli* O104:H4 in sprouts from fenugreek seeds in northern Germany; dioxin contamination in Irish pork etc. and the factors driving increase in food safety incidents she brought out the importance of foodborne illnesses and risks. The concept of 'hazard' verses 'risk' was clearly defined. 'Hazard' being the agent in or condition of food with the potential to cause an adverse health effect where as 'risk' was explained as the function of the probability of an adverse health effect and the severity of that effect because of the hazard being present in food. Clarifying these key concepts was essential to the whole concept of risk analysis. This was followed by examples of both chemical (metals, marine toxins, mycotoxins and process contaminants) and microbiological hazards (namely *Campylobacter*, *Enterohemorrhagic E coli*, *Listeria monocytogenes*, *Salmonella* and norovirus) of concern in the region and the definition of risk analysis which is defined as a systemic approach to examine and assess the public health and safety risks associated with

food and to identify & implement appropriate measures to manage the risk and communicate with stakeholders on the risk as well as risk mitigating measures. She explained risk analysis, in simple terms, as a key discipline to reduce food borne illnesses and strengthen food safety systems. This was followed by the importance of scientific principles and risk analysis as referenced in the SPS agreement and the importance and role of Codex standards and the principles and components of scientific data and risk analysis as given in Codex. Further based on the Codex documents on 'Working Principles for Risk Analysis for Food Safety for Application by Government, the Procedural Manual (21<sup>st</sup> edition) and FAO publication 'Food Safety Risk Analysis – FAO/WHO Guide for National Authorities' components of risk analysis were explained giving examples of international risk assessment bodies and the general governmental structure to deal with risk analysis in many developing countries. She concluded by explaining some features and benefits of risk analysis.

This was followed by a presentation by Ms. Awilo Ochieng Pernet, Vice Chairperson, Codex Alimentarius Commission, on related updates from Codex/FAO and WHO. The session went on to explain the Codex Alimentarius Commission (CAC), its 50 years achievements and trends and challenges especially in the area of risk analysis. Some of the challenges listed by her included addressing emerging issues in a timely manner in spite of the increasing demands; lack of funds to carry out risk assessments; availability of experts; data generation in developing countries etc. She also briefed on the WHO International Program of Chemical Safety (IPCS), and listed the 10 major chemical or group of chemicals of major public health concern, namely air pollutants, arsenic, asbestos, benzene, cadmium, dioxin and dioxin like substances, inadequate or excess fluoride, lead, mercury and highly hazardous pesticides. The scientific evidence and risk management recommendations of IPCS were also covered in the session.

### **2.3 Session 2 - Country Scenario on Risk Analysis**

In Session 2, representatives of participating SAARC country made their country presentations describing the current status of risk analysis under the food control systems in their country. The status in brief in each country as presented is as follows:

#### **Afghanistan**

The presentation was made by Dr. Kamela Sultani, Head Quality Control Laboratory. She emphasised that the Afghan government has enhanced the construction of administrative, legal and safety control of farm products. She went on to explain the most recent bacteriological and chemical hazards in drinking water giving details of the arsenic and fluoride levels found in the same.

#### **Bangladesh**

The presentation was made by Dr. Bidhan Chandra Das, Principal Scientific Officer, Central Disease Investigation Laboratory, Department of Livestock Services. He shared the risk analysis experience of Bangladesh. He started with the current complex food control structure in Bangladesh going on to the department-wise role in the three components of risk analysis namely, risk assessment, risk management and risk communication. Thereafter he listed the product-wise consumption, food safety

concerns (microbiological and chemical) in the country and the management options for the same. The maximum consumption was of fruits and vegetables (211gms/cap/day) and the microbiological and chemical concerns of the same are *Shigella*, *Salmonella*, *E coli*, pesticide residues and ripening agents.

### **Bhutan**

The presentation was made by Ms Dechen Choki, Regulatory and Quarantine Officer, Bhutan Agriculture & Food Regulatory Authority (BAFRA). She started by explaining the national food control system and the roles of BAFRA, Department of Livestock and Plant/Animal Quarantine. She further went on to explain the status of risk assessment within the country and for imports; with the proposed risk management and risk communication activities in their country. She mentioned that the country has no Food Safety Emergency Response plan in place as yet; however due to the recent avian flu they did adopt the OIE Code of practice for the National Influenza Pandemic Preparedness Plan (NIPPP). She concluded her presentation listing the food safety concerns in various food products in their country to include veterinary drug residues, pesticide residues, *Salmonella* spp, *E. coli*, and *Camphylobacter* spp. in meat, poultry & their products; pesticide residues and heavy metals in dry fish; pesticide & other chemical residues in fresh fruits & vegetables; microbiological hazard in street foods; and chemical hazard due to leaching and *Clostridium* spp in pre-packaged/processed foods.

### **India**

The presentation was made by Dr. Sandhya Kabra from FSSAI. She introduced the current scenario on risk analysis framework in India, giving the details of each organizations role in the national food control system. She further listed the nine scientific panels and scientific committees constituted for Risk Assessment and mentioned that 72 laboratories are supporting 'FSSAI with testing to carry out the task of risk assessment. She further elaborated on the risk management options and risk communication activities in India. She further informed that there are plans to set up a National Food Science and Risk Assessment Centre which would be the repository of all food standards and will carry out all risk assessment related work and analyse food surveillance data received. The data generated would be utilized to analyse trends and also proactively develop strategies to handle various situations. She concluded her presentation by listing a few Risk Assessments performed in emergency situations in India.

### **Maldives**

The presentation was made by Ms. Sajidha Mohamed, Senior Scientific Officer, Maldives Food and Drug Authority / Ministry of Health. She highlighted the food control system in the country as consisting of Ministry of Health – Maldives Food and Drug Authority and Health Protection Agency and Ministry of Fisheries and Agriculture. She explained the role of each stakeholder including the government in Risk Analysis. She further went on to elaborate on the risk management, risk assessment and the risk communication activities in the country and explained the current status of their food safety emergency response plan.

## **Nepal**

Mr. Madhu Shudan Thapa, Senior Food Research Officer, Department of Food Technology and Quality Control (DFTQC) started the presentation giving the national framework related to food safety and informed that Department of Food Technology and Quality Control has been established as the national food safety authority of Nepal. He further explained the structure of the department and the geographical location of its regional and district level offices including the check posts along the border. He also listed various food safety regulations and their implementing agencies and informed that their food safety control system is based on Codex recommendations. The presentation concluded by listing the challenges Nepal faces in Risk Analysis namely legal regulations not having reference to risk based approach for food safety, new emerging hazards, lack of coordination between line agencies, lack of funding and insufficient trained manpower.

## **Pakistan**

Dr Saleem Raza, National Animal and Plant Health Inspection Services, Ministry of National Food Security and Research, Islamabad made the presentation on behalf of Pakistan. He explained the organization of food control system in Pakistan listing the acts from the Pure Food Ordinance, 1960 to the Pakistan Standards and Quality Control Authority Act, 1996. He further explained the provisions under each act and food laws implemented in Pakistan. As explained by him, the Food Safety Emergency Response System exists at industry level but does not exist at governmental level in Pakistan. The presentation also included the food safety concerns, food product-wise, including their consumption in the country along with the management options. He presented a compilation of the export rejects with reasons for the same. Mycotoxins were clearly the largest reason for rejects. The presentation continued with a proposed plan of action for management of food safety concerns in Pakistan – starting with forming food safety legislation/enforcement and policy, conducting risk assessment, capacity building, exchange of information & communication, involvement of stakeholders and developing a foodborne surveillance system. The presentation concluded with a proposed 3-phase plan for development of the proposed biosecurity authority of Pakistan.

## **Sri Lanka**

Mr S W R A S A Bandara, Veterinary Surgeon, Ministry of Livestock and Rural Community Development presented the Sri Lanka country status. He started with the objectives of the National Food Control System in Sri Lanka, and went on to explain the food control system and the departments involved in implementing the Food Act. Further, he listed the product-wise food safety concerns and the current management options in Sri Lanka. The presentation concluded with the problems faced in the food control system and factors to be considered to improve it.

The presentations were followed by a working group exercise (WG EX1) on identifying the common problems in the region. Four groups were formed with two countries in each group. The objective of the working group, in addition to understanding the common problems faced in the region, was to identify chemical and microbiological hazards common to the region in

order to work on their risk assessment in the following exercises. The group activity encouraged discussion among the group and was followed by presentations by each group, which further lead to discussions and understanding each country's food safety concern and problems. The grouping was as follows – Nepal and Bhutan; Afghanistan and Pakistan; Sri Lanka and Maldives; and India and Bangladesh. The grouping was such that the problems could be comparable. The groups were to identify common chemical and microbiological hazards in the region along with the food products that they are associated with along with the consumption data of the food products. In addition, a list of food products were given to the groups to rank in order of consumption.

Each group made presentations and it was seen that each group identified similar problems. In the chemical hazards, most identified hazards were the pesticide residues, drug residues, and heavy metals whereas in microbiological area, the identified hazards were commonly *Salmonella*, *Shigella* and *E. coli*. The food products in each country were ranked independently with some commonalities seen.

A Summary of discussion and conclusion of day 1 was made by Dr. Namrata P Wakhaloo, International Food Safety Expert in which she highlighted proceedings of the day including the technical presentations made during the day.

#### **2.4 Session 3 Preliminary Risk Management Activities**

Day 2 started with session 3 namely, 'Preliminary Risk Management Activities' by Ms. Awilo Ochieng Pernet. She started the session with an overview of Risk Management defining the term first and stating its positioning in Risk Analysis as one of the components. This was followed by the introduction to risk management stating it needs to be in a context, and requires a formal process which is systematic, consistent and understood framework. She further went on to explain that the risk manager should have a clear objective to protect health of consumer. She defined the risk management process stating the importance of transparency, consistency and full documentation. Many countries admitted the need for transparency in their respective countries. Thereafter, she went on to describe the generic framework for risk management based on the FAO/WHO publication 'Food Safety Risk Analysis'. Then followed the stepwise description (8 steps) of the preliminary risk management activities giving a case study from Switzerland where recently a preliminary risk management was done for *Campylobacter*. She concluded the session by highlighting the importance of risk communication in the preliminary risk management activities.

This was followed by Working Group Exercise (WG EX 2) on Risk Profiling. The exercise started with a short session on information needed for risk profile by Prof Dedi Fardiaz, Department of Food Science and Technology, Bogor Agricultural University, Kampus, Darmaga, Indonesia. For the exercise, the groups had to browse the internet to get the information needed, which gave them an insight on how to look for such information and at the same time exposed them to various sites with all this information. Group 1 did a risk profile for 'pesticide residues' namely 'Chlorpyrifos' in fruits, vegetables and cereals/pulses; group 2 for veterinary drug residues namely 'Amoxicillin' in milk, eggs, meat and meat products; group 3 for *E. coli* in meat/poultry and processed foods and group 4 for *Salmonella* in chicken.

## **2.5 Session 4 Risk Assessment**

The session began with a presentation on Risk Assessment Process – an overview by Prof Dedi Fardiaz. The overview started with food safety issues in the food chain – farm to fork. Thereafter it restated the definition of hazard and the risk, going on to explain the Maximum Residue Levels (MRLs), Maximum Levels (ML), Acceptable Daily Intake (ADI), Tolerable Daily Intake (TDI) for chemical hazards and infective dose for microbiological hazards and who sets them in the Codex. After this, Prof Dedi went on to explain in detail the four components of risk assessment – a component of risk analysis. He also explained the link between the components. Hazard identification is required to do the next two components ie hazard characterization and exposure assessment, which are both required to conclude risk characterization. Prof Dedi went on to explain the general characteristics of food safety risk assessments and defined various terms involved in risk analysis giving examples of various sources for obtaining scientific data needed in risk assessment. He conducted an exercise to further explain the concept by explaining how to calculate the Theoretical Maximum Daily Intakes (TMDI) for chemical hazards and microbial exposure assessment for microbiological hazards.

To further explain the four components of risk assessment, working group exercises were conducted on hazard identification, hazard characterization, exposure assessment and risk characterization WG Ex 3, 4, 5 and 6. Participants were given templates for each exercise so as to help keep them focused and understand what needs to be done and from where data and information could be sought. Working groups maintained the already assigned hazards of WG Ex 2. One resource person joined each group to facilitate the exercise and make sure the groups were moving in the right directions. Each group managed to do a fair job at getting scientific data and using it for the four components of risk assessment. The discussions held during the group presentations were further helpful to understand the concepts related to both microbiological and chemical hazards by the entire group of participants. The working group exercise was designed in such a way that it carried over to day 3, as a result of which the participants had the entire evening for collecting the scientific data and using it. The participants appreciated this exercise as it was illustrated by the data presented by each group for each component. The discussions also identified an important aspect namely that each of the SAARC countries would need to generate country data for many of the components like the current levels of hazards in their countries.

## **26 Session 5 Risk Management**

The session on Risk Management started with an overview on risk management given by Ms Awilo Ochieng Pernet. Ms. Awilo started with the definition of risk management and introduced the subject clarifying the responsibilities of the risk managers in initiating the risk assessment and risk communication. The role of the national governments in risk management was also discussed. The importance of a structured and systematic approach in risk management along with importance of ensuring that the risk management process was transparent, consistent and fully documented was then discussed. Again as earlier, participants of certain countries, emphasized on the importance of transparency of risk management at the governmental level. She went on to explain the generic framework and

the four phases of risk management namely preliminary risk management activities, identification and selection of options, implementation of risk management decisions and monitoring and review. She reiterated the example of the recent case study on *Campylobacter* in Switzerland.

This was followed by a case study on Benzo[a]pyrene in cooking oils in Hong Kong which was presented by Dr. CHOW Chor-yiu, Head, Risk Assessment Section (RAS), Centre for Food Safety, Food and Environmental Hygiene Department, Hong Kong. The case study was used to illustrate the important components in the risk analysis. He went through the risk assessment conducted for the hazard thereby reinstating its components. The proper risk management starting from “immediate actions taken” to tracing the source and distribution of substandard cooking oil as well as reviewing the food surveillance program and regulations on the hazard in different countries/region and even setting local action levels to facilitate the enforcement action were elaborated. He also highlighted the experience gained in the above work processes, which would help country participants in forming their own risk analysis procedures in future.

He explained that in mid-December 2012, there was a report in a Hong Kong newspaper alleging that a suspected unlicensed food processing establishment had been supplying cooking oil of substandard quality to 13 restaurants. According to the report, the content of B[a]P, a human carcinogen, in the cooking oil concerned exceeded the limit set by the European Union (EU). The Centre for Food Safety (CFS) conducted risk analysis immediately, involving inputs from Risk Assessment Section, Risk Management Section and Risk Communication Section.

Dr. Chow stated that at that time, the Hong Kong legislation did not stipulate a statutory limit on B[a]P in food. However, their regulation provided that ‘if any person sells to the prejudice of a purchaser any food (including cooking oil) which is not of the nature, or not of the substance, or not of the quality, of the food demanded by the purchaser, he shall be guilty of an offence’.

Risk Management Section of the institute made a decision to immediately follow-up by inspecting the suspected unlicensed food processing establishment, the alleged supplier of the cooking oil and restaurants concerned. In addition, a total of 39 cooking oil samples were collected and tested for B[a]P.

At the same time, CFS had conducted risk assessment on B[a]P in cooking oil through hazard identification, hazard characterization, exposure assessment and risk characterization to determine whether there is any potential health risk. According to the margin of exposure (MOE) approach, estimating B[a]P exposure using the level of vegetable oil consumed by Hong Kong people per capita, and the content of B[a]P in cooking oil samples etc, Risk Assessment Section considered that the health risk concern for consuming the concerned vegetable oil with the highest B[a]P level at 17 µg/kg should not be high. Nevertheless, based on the “as low as reasonably practicable” (ALARP) principle, efforts should be made to minimise exposure to B[a]P.

Arising from health concerns over B[a]P in cooking oil, Risk Management Section reviewed regulations on B[a]P in oil in different countries/region. CFS proposed and the Expert

Committee on Food Safety endorsed an action level of 10 µg/kg for B[a]P in edible vegetable oil, with reference to the standards of different countries / jurisdictions and taking into account the results of risk assessment using the MOE approach.

The Risk Communication Section was responsible for facilitation of interactive communication with stakeholders through various channels. Risk Communication Section issued press releases, met with representatives of the trade to brief them on the testing results and remind them to use a cooking oil satisfying safety and quality requirements and sourced food from reliable suppliers etc. This session also provided more details on risk assessment and how the work of risk assessment can facilitate the risk management / risk communication actions as well as the experience gained in this case.

This was followed by working group exercise 7, on risk management for the risk assessment already conducted by the groups. An open discussion on risk management was facilitated in which following 3 aspects were discussed for two hazards identified – one microbiological (salmonella) and the other chemical (pesticide residues):

- i) Identification of possible risk management options
- ii) Evaluation of the options identified
- iii) Selection of the preferred option at the level of various stakeholders namely government, primary producers, processors, retailers and consumers

The participants came out with numerous options at each level. The importance of prioritizing risk management options and also considering cost benefit of options was highlighted.

The next presentation in the session was another case study, on Aflatoxins in peanuts made by Ms. Virachnee Lohachoompol, Standards Officer, National Bureau of Agricultural Commodity and Food Standards, Ministry of Agriculture and Cooperatives, Bangkok.

Ms. Virachnee explained food safety is on the agenda of several governments in Thailand. In Thailand, the most advanced project related to food risk analysis is in chemical side especially for pesticide residues. However, for contaminants like aflatoxin, it is at its initial step towards more detailed study in the future for different chemicals and commodities. Ms. Virachnee introduced the risk assessment policy and then presented the specific questions asked by the risk managers to the risk assessors. Ms. Virachnee explained the entire risk analysis process conducted for the given hazard in detail thus giving a practical application to demonstrate the concepts of risk analysis.

The initial questions from the risk manager were as follows:

- Is there any significant risk from aflatoxin in peanut and other agricultural commodities?
- Will it help reduce the risk if we reduce the maximum level of aflatoxin peanut from 20 ppb to 15 ppb as Codex's recommendation?
- Is there any other method apart from specifying the limit to reduce the risk from aflatoxin?

To respond to the questions from the risk manager, the academics, as a risk assessor, were brought in to conduct surveys and analyses. Information from Joint FAO/WHO Expert Committee on Food Additives (JECFA), Codex's risk assessor, clarified that aflatoxin

especially aflatoxin B1 is a human carcinogen. And, the associated risk with the commodity tree nuts and groundnuts is obvious. Codex Alimentarius Commission through the Codex Committee on Contaminant in Foods has issued the maximum limits (ML) for total aflatoxin in various types of nuts including peanuts.

For all Thais, peanut is a common ingredient and snack. Another ingredient that is commonly used in Thai households is dried chilli. So, the risk manager would also like to know how much aflatoxin is associated with dried chilli. The survey shows that the level of aflatoxin found in peanuts is greater than that in dried chilli. Together with the consumption data, which became available in 2006, they were able to do an exposure assessment and finally risk characterization. It is found that estimated potency of liver cancer in 2011 for the Thai population of 65 million people is 103 cases/year.

The risk manager hoped to reduce the number of cases by using different risk management tools by taking into account the impact on all stakeholders. Apart from risk assessment on aflatoxin, the risk manager also funded the academics to conduct a study such as cost and benefit analysis in order to see the whole picture of the impact on primary producer, sheller, manufacturer, and authority. The risk manager decided to implement a mandatory standard with emphasis on the collector, sheller and kernel trader. The mandatory standard specifies the maximum limit of aflatoxin allowed in peanuts for import, export and trading domestically. The extra requirement in the standard is that the collector, sheller and kernel trader have to sort the kernel and check for the level of aflatoxin in every lot. It was a very interesting presentation and the participants were able to relate to it, this being a prominent hazard in their respective countries as well. This would further help countries to practically understand and thereby help in conducting risk analysis in their respective countries.

Professor Dedi Fardiaz, handled the next presentation on 'risk categorization as a management option'. He started with the FAO Food and Nutrition Paper 76 Guidelines for Structuring National Food Control Systems - 'Assuring food safety and quality'. Prof Dedi emphasized on the elements of national food control system and strengthening them. He started with a very important and relevant question of how to develop an effective and efficient food control system in a country. Prof Dedi went on to explain the role of risk-based inspection in the food control mechanism and explained the 'Guideline for risk categorization of food and food establishments application to ASEAN countries' (RAP Publication 2011/22) and the 'Decision Tree' used in this guidelines. Copies of both the documents were shared with the participants. The session helped participants to understand how a country could develop a risk categorization model and use it as a management option. The session encouraged numerous questions.

The last activity in the session was a working group exercise on risk categorization WG Ex 8 facilitated by Prof Dedi. The groups used the decision tree on the hazard identified by their group to do risk categorization. The group presentation on day-four on use of decision tree for risk categorization led to discussions which highlighted and summarized that the SAARC countries need to develop their own decision tree like the ASEAN countries for use in the conduct of risk categorization. The session ended by concluding and summarizing risk assessment and risk management.

## **27. Session 6 Risk Communication**

Ms Awilo started the session with “principles of risk communication’ defining the term and its importance during the entire process of risk analysis. Effective two-way risk communication, that is timely, relevant and which provides accurate information, is an inseparable element of risk management framework with risk managers, assessors and interested stakeholders exchanging information and opinions concerning the risk, risk-related factors and risk perception. Successful risk communication is a prerequisite for both effective risk management and assessment. It contributes to transparency of the process and promotes wider understanding and acceptance of risk management decisions. Ms Awilo explained that everyone involved in the risk analysis process is a “risk communicator” at some point and some food safety authorities have communication specialists. Risk managers also need to ensure they identify all the potential stakeholders to invite them to participate at appropriate points of risk management and have effective, timely and accurate communication with them throughout the process. Ms Awilo went on to explain the criteria for identifying the potential stakeholders, examples of potential stakeholders and strategies for effective communication during risk analysis. To make risk communication effective it needs to be planned and there are various elements to effective risk communication categorised as nature of benefits, uncertainties in risk assessment and risk management options. With this background and stating the objectives of risk communication, Ms Awilo further explained the eight principles of risk communication and the mechanism for communicating with stakeholders including the pitfalls to avoid.

The next presentation in the session was ‘Communicating uncertainty – Illustrated by the new approach for risk assessment (Margin of Exposure)’ by Dr. LUM Hon-kei, Scientific Officer (Veterinary Drug), Centre for Food Safety, Food and Environmental Hygiene Department, Hong Kong. The presentation explained the uncertainty involved at various stages of risk assessment. The first thing explained was the dose-response assessment, which aims at finding the dose or amount of hazard that would lead to adverse health effect. The uncertainty in this arises from idiosyncrasy of each human being depending on their genotype, gender, weight, environment and health status. Uncertainty also arises from the fact that extrapolation is done from animals to average humans and to potentially sensitive populations. Traditionally, risk assessment of different chemical hazards in food is conducted based on deterministic endpoints, i.e., use of the no observed adverse effect level (NOAEL) derived health-based guidance values. Risk of the chemical hazard could be determined by comparing the exposure of the chemicals with the health-based guidance values. Exposure of chemicals below the health-based guidance value indicates that there is no appreciable health risk from the chemicals in food.

However, for chemicals for which health-based guidance values could not be established (e.g. genotoxic carcinogen), an alternative risk assessment approach by using the margin of exposure (MOE) was proposed. The MOE approach compares the margin between a dose and an exposure causing cancer in animals or humans with the estimated human exposure to that substance. It uses a reference point (e.g. BMDL<sub>10</sub>), usually taken from an animal cancer bioassay in which the substance has been administered for most of the animal’s life span. This reference point is then divided by the estimate of human dietary exposure to the substance to give a dimensionless ratio - that is the MOE. The MOE approach is both a

prioritization tool and a risk assessment tool, which gives a relative indication of the level of health concern without actually quantifying the risk.

In this presentation, the use of MOE approach for risk assessment was illustrated with the “Risk Assessment Study on Acrylamide in Food in Hong Kong”. Acrylamide is an industrial chemical that has been used since the mid 1950s in the production of polyacrylamide. Acrylamide is also a food processing contaminant, mainly formed in high levels during frying or baking of food. The presence of acrylamide in food is of great concern because of its toxicity to the nervous system of both animals and human, as well as its reproductive and developmental effects in animals. JECFA (2005) concluded that acrylamide is a genotoxic carcinogen and IARC (1994) classified acrylamide as probably carcinogenic to humans (Group 2A). As with other genotoxic carcinogen, health-based guidance values could not be established for acrylamide. A risk assessment study was conducted on acrylamide in food in Hong Kong using the MOE approach. Result indicated that dietary exposure to acrylamide in the local adults was comparable or on the low side when compared with dietary exposure of acrylamide in some developed countries. The MOE analysis suggested that there were possible concerns from the dietary acrylamide exposure, especially for the high consumers based on the currently available exposure data. Efforts in reducing acrylamide levels in local foods should continue.

Additional consideration on the risk communication between the risk assessors, risk managers and consumers, on using the MOE for risk assessment was also discussed in the session.

The next presentation in the session was by Mr. Gyanendra Gongal, Scientist (VPH), Disease Surveillance and epidemiology, WHO Regional Office for South East Asia, New Delhi. He spoke on International Food Safety Authorities Network (INFOSAN), a global network of national food safety authorities. He started by explaining how globalization was responsible for movement of food leading to food borne disease outbreaks and went on to the food safety challenges. Mr. Gyanendra then went on to explain the history and development of International Health Regulations (IHR) and the key features of the latest IHR 2005 and the core capacities required. He further explained how INFOSAN worked giving a case study on *E.coli* O157:H7. He informed that there are 177 nations member of INFOSAN and explained the role and responsibilities of the emergency contact points, focal points and collaborative partners. Further, list of examples of INFOSAN emergency alerts was shown of which alert on Thyrotoxicosis from excess iodine in soy milk product was further explained till its distribution. The presentation appropriately concluded with a take home message for country participants to go back and assist in building national INFOSAN network ensuring farm to table representation and enhance communication between the contact points in the country and INFOSAN.

Ms. Awilo Ochieng Pernet made the last presentation in the session on EU Rapid Alert System on Food Safety (EU RASFF) starting with its introduction in 1979 and its membership. In practice RASFF members need to immediately notify the European Commission using RASFF in a notification template giving details of the incident. The European Commission then verifies the information and compiles it and sends it to all RASFF members. RASFF Members need to check if they are concerned, and should this be the case, they need to ensure a follow-up to the notification and report back their findings

and measures taken to the RASFF. The participants were informed that the criteria for notification are provided in article 50 of the EC regulation No 178/2002 where 4 types of notifications – alert; border rejection; information and RASFF news are explained. Details of these four were also explained. Some examples of the RASFF news were also illustrated.

## **2.8 Session 7 Risk analysis in emergency situations**

Ms. Shashi Sareen started the session with a presentation on Food Safety Emergency Response Planning explaining the Codex definition of food safety emergency followed by how various other countries defined it. It was seen that the definition differed along national contexts and the basic common factors are that an event or emergency ranges from minor incident to a major crisis, situation evolves over time, severity varies, international and trade implications vary. However, a Plan assures a coordinated response to a potential or confirmed risk to public health through food. Next giving the characteristic of emergencies Ms. Shashi Sareen showed various publications from FAO/WHO on Food Safety Emergencies namely “Framework for developing national food safety emergency response plans; “Guide for application of risk analysis principles to food safety emergencies”; “Food safety risk analysis: a guide for national food safety authorities”; and Guide for developing and improving National Food Recall Systems.

She also explained why planning and preparedness was required and the framework for developing the FSER plan. The eight-step developments of FSER plan are categorized as the 3 preliminary steps namely Obtain high-level support (& mandate); Identify key partners; Establish a planning group; and the 5 key elements Essential background information; Multi-Agency Coordination Group (MACG); Incident identification & management; Post-incident review and evaluation; and Communication. These eight steps were explained in detail highlighting key considerations in general and country specific. To explain the establishment of a National Multi Agency Coordination Group (MACG) example of Thailand and Bangladesh was given with each agencies role and responsibility and structure, respectively.

This was followed by a session on Risk analysis in emergency situations wherein a presentation based on the FAO/WHO document was made to cover preliminary risk management, risk assessment, risk management and risk communication in the case of emergencies and how the same differ from routine areas. Some important differences highlighted include factors effecting decision making such as time pressure, increased uncertainty, and others are apparent due to which it is important to have more preparatory work such as use of formats and templates, rapid screening of incoming/ other available data and information. Increased need for multi-agency coordination, strong demand for timely communication is a must. Time constraints may not support full risk assessment so peer review of risk assessments may be carried out especially where data is limited. Use of existing tools can help (such as national and international consumption data sets, expert networks, international reference values, advice from international counterparts). Initial information may be qualitative or semi-quantitative due to time and information constraints and the risk assessment may need to be modified or revised as more information is available. It is also important to document and explain limitations and uncertainties due to data gaps.

For selecting risk management options, capacity issues such as for implementation, laboratory capacity are important and ability to obtain assistance from elsewhere should be considered. Uncertainty about the nature of the risks as well as public expectations and perceptions are important. There is also a strong need to look at International considerations, for example actions taken by other countries and trade implications.

Some important aspects of risk communication include demands for frequent updates from different stakeholders and urgent demand for up-to-date reports, communicating complexity and uncertainty, messages developed in very short timeframes, messages change as situation unfolds, public, media or political scrutiny & pressure for action.

Preparedness is however the key for emergencies which leads to the importance of the Food Safety Emergency Response Plan, the multi-agency coordination group and team, and having in place readily available data, information and tools to be able to handle risk analysis.

A case study on Melamine to illustrate Risk Analysis in Emergency Situations and Response to Emergency Situations was presented by Prof Dedi Fardiaz. The incident first came to attention of international organizations in September 2008 and at that time 12900 children were still hospitalized. Both FAO and WHO have used INFOSAN to inform and update national food safety authorities on this safety crisis. Prof Dedi went on to explain the current situation; possible extent of the exposure; actions taken by the Government of China; actions taken by INFOSAN and actions taken by member states. There was a detailed chart to give details of the product wise level of melamine, manufacturer name and country in which the product with high levels of melamine were found including links for details. From the WHO and FAO report on 'Toxicological and Health Aspects of Melamine and Cyanuric Acid', hazard identification details were discussed. It was shown that 1gm of melamine per kg of milk increases its protein content from 2.7 to 3.1% and the two namely melamine and cyanuric acid are able to form self assembling a high molecular weight complexes. The explanation included details on analysis methods, both rapid screening and selective quantitative and considerations for choice of analytical method. While defining the source levels both the baseline, which is from accepted uses and adulteration levels were defined. Exposure levels included contents from baseline and adulterated product. Using this the risk characterization was explained taking into consideration possible uncertainty. After the risk assessment, the risk management options considered and taken by countries were defined.

For managing any kind of food safety incident or event, having a national food recall system is essential. It is an important risk management option. This was highlighted in next topic in the session taken by Ms. Shashi Sareen on 'FAO/WHO Guide for developing and improving national food recall systems'. The session started with the background and importance of food recall and the salient features of the WHO/FAO Guide for developing and improving national food recall systems. The presentation started with illustrating some important food safety recalls in the recent past going on the year wise increase in food safety recalls in the US. A good representation of the product category wise food recall percentage was also shown highlighting both the number and % of total recall that occurred in 2009. This showed that the maximum recall (21%) were in fruit and vegetables, followed by pet food (19%), prepared food (12%) and bakery products (11%). Also showed that recall due to salmonella had increased by 800% and the recent 2013 recall due to salmonella and listeria in US.

Leading from these recall examples, the WHO/FAO Guide for developing and improving national food recall systems was discussed. Food recall systems have been evolving during the past few years. The guide explains the purpose, target audience and scope of the system and then deals with the terminologies used in the recall systems – all of which was discussed. Terminologies like ‘food recall’ and ‘withdrawal’ and the purpose and common cause of food recall were discussed. Thereafter Ms. Shashi Sareen discussed the four preliminary steps for developing and/or improving the national food recall systems; the system - its elements, traceability & data collection; how to set up and operate a national food recall system and its management. She concluded the session by highlighting the main points to be remembered in establishing and improving national recall system and giving useful websites for additional information..

## **2.9 Session 8 Regional and Country Activities on Risk Analysis**

Day 5 began with Working Group Exercise 9 on ‘country priorities and national road map on introducing/strengthening risk analysis in each country’. 12 areas were identified to guide participants to consider those of concern to their country. These included Provision in regulation for risk based approach to food safety, Interministerial coordination, Develop food safety policy and Emergency Response Plan, Develop coordination committee, Improve infrastructure – laboratories adequate facility and number, Develop Food borne disease surveillance programs, Strengthen/develop government surveillance and monitoring plan including residue monitoring, Strengthen standards on food to include food safety aspects, Set up rapid alert systems – within country and within region, Develop a national traceability and recall system, Capacity building for conducting RA, Developing risk categorization model.

The detailed action plans developed by countries to cover priority areas, reasons for including the same, time frames for implementation and stakeholders/ departments involved is given country wise in **Annex 4**.

To give an outline on how risk analysis was being handled in the ASEAN region, Prof Dedi presented on ‘ASEAN Process and Activities Related to Application of Risk Analysis in Food Safety and Standards Harmonization’. He highlighted that the countries forming the ASEAN Community consisted of a mixture of more developed and less developed nations. A vision of development of ASEAN Community by 2015 was given to include political-security community, the economic community and the socio-cultural community. He further highlighted the ASEAN Common Food Control System Requirement, which includes Common Principles on Food Control Systems, Common Principles and Requirements for the Labeling of Prepackaged Food and Common Principles and Requirements for Food Hygiene. For proper food control, infrastructure and regulatory framework all need to be in place to ensure effectiveness and they include the food legislation, food control management, inspection activities, laboratories services and information, education, communication and training. Codex standards, guidelines and commodity standard format would be the basis for developing these. He went on to explain the standardization harmonization process was started in 2002 and the group has ever since been meeting almost annually with a definite objective to facilitate the exchange of information, improve standards to harmonize with Codex and identify gaps for exposure data development and risk assessment capacity building. A good comparison on the current harmonization on food standards for colouring as

an example was shown. The harmonization is based on the Codex General Standards for Food Additives (GSFA) and an online database had been developed to facilitate the harmonization efforts. A quick glimpse into how the database works was also given for one of the food additives. The presentation was concluded with a summary of the efforts made to harmonize food safety and standards in the ASEAN countries.

For the ASEAN countries work on Risk Analysis, Ms. Virachnee Lohachoompol made a presentation on 'ASEAN Activities on Risk Analysis'. Ms. Virachnee explained that the Association of Southeast Asian Nations (ASEAN), established on 8 August 1967, as a geopolitical and economic organization located in Southeast Asia, consists totally of ten member countries at present, namely Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. Its aims include the acceleration of economic growth, social progress, cultural development among its members, and the promotion of regional peace. ASEAN has emphasized regional cooperation in the "three pillars" of political-security, socio-cultural and economic integration. The regional grouping has made the most progress in economic integration, aiming to create an ASEAN Economic Community (AEC) by 2015. The AEC would have a combined population of over 566 million and a GDP exceeding USD 1.173 trillion.

She explained that the foundation of the AEC is the ASEAN Free Trade Area (AFTA), a common external preferential tariff scheme to promote the free flow of goods within ASEAN. The ASEAN Free Trade Area (AFTA) is an agreement by the member nations of ASEAN concerning local manufacturing in all ASEAN countries. Several meetings and committees for harmonizing food safety and quality standard in ASEAN have been established in order to fulfill the objective of AEC in promoting free flow of goods and reduce trade barriers such as customs duties, customs procedures, technical regulations and standards, etc.

In order to harmonize the standard, they have tried to use Codex's principle of risk analysis as much as possible. In doing so, various working groups are created under ASEAN Ministers Meeting on Agriculture and Forestry (AMAF).

- Meeting on the ASEAN Standards for Horticultural Produce and other Food Crops (MASHP) is established to develop ASEAN harmonized standards for identified horticultural commodities.
- Expert Working Group on the Harmonization of MRL of Pesticide among ASEAN Members is established to obtain regional residue data for harmonising MRLs by pooling of technical and regional resources to overcome the common problems from pesticide residues. The work of the Working Group is based on the principle of risk analysis.
- ASEAN Good Agricultural Practices (ASEAN-GAP) is established to harmonize the regulations on GAP.

The other working group under ASEAN Economic Ministers Meeting (AEM) is ASEAN Consultative Committee for Standards and Quality (ACCSQ), which is established to harmonize the technical requirements such as Principles and Requirements for Food Hygiene, Principles and Requirements for the Labelling of Pre-packaged Food, and Requirements for Food Control System.

She spoke on food safety in ASEAN countries, ASEAN ministers meeting on agriculture and forestry, ASEAN economic ministers meeting and the ASEAN taskforce on Codex. Most of the ASEAN countries standards are in line the Codex Standards for food safety limits (MRL for pesticides and veterinary drug residues; ML for contaminants & food additives and microbiological criteria for pathogens), code of hygienic practices and other guidelines like on labeling, methods of analysis & sampling etc to comply to the SPS agreement. ASEAN ministers meeting now have sectoral working groups on crop, livestock and fisheries. They have developed standards for 33 fruits and vegetables. Priority is given to those traded more within the ASEAN countries. Ms. Virachnee also gave a summary of activities on developing ASEAN standard for organic agriculture for which a comparative summary was also shown. The principles for harmonizing MRLs where Codex MRLs were available and not available were discussed and where not available could include member countries to propose MRLs and this could be considered by the Expert-working group on MRLs and by 2012 they have a total of 841 MRLs established by EWG-MRLs of which 803 are referred to Codex MRLs. Importance and understanding of supervised residue trials was also discussed.

Ms. Virachnee also discussed in detail how to establish effectively the ASEAN MRLs, which includes support from ASEAN ministers meeting on agriculture and forestry, developing a mechanism for monitoring, extending the ASEAN MRLs to the boarder, building capacity and having a linked database (sharing and transparency). Implementing ASEAN-GAP would also be one of the ways to assist effective MRLs being developed. She gave the four modules involved in ASEAN-GAP namely the food safety module; produce quality module; environment management module and the worker health, safety & welfare module. A comparison of the same was also done with The Thai Agricultural Standard on Good Agricultural Practices for Food Crops (TAS 9001). There were only a few aspects that were not aligned. The status of ASEAN countries on GAP was discussed and ranged from some adapting the entire program, to some doing first the food safety and produce quality module to some having adopted the ASEAN-GAP itself. Each country is at various levels with regard to implementation of GAP.

ASEAN Economic Ministers meeting was also discussed highlighting the standards and conformance framework to harmonized regulatory regime at technical regulation level (including food control requirements, import-export certification and registration procedure and the HACCP and GMP requirements and inspection and certification system), conformity assessment system level and the national metrology system level and the need to recognize it amongst member states. The initiated food testing reference laboratory scheme was also discussed which is being established under the EU project. Activities of the ASEAN taskforce on Codex were also discussed in details referring to the report of the 12<sup>th</sup> meeting.

This was followed by Working Group Exercise 10 on 'Identification of regional priorities to strengthen risk analysis within the SAARC countries'. Some of the issues and priorities of common interest included developing a regional alert/early warning/ traceability system for food and feed, developing common risk-based food safety indicators, having an integrated food-borne disease surveillance system for SAARC, setting up a technical expert group (e-group/ forums) to also include countries other than from SAARC region, establishment of SAARC research centre for the purpose of risk assessment, establishing a transparent information sharing system amongst the SAARC member states, developing a risk categorization module, setting up specific contaminant-wise task forces. Certain countries

namely Afghanistan, Nepal, Maldives, Pakistan and Sri Lanka were interested in having a review of risk analysis situation carried out for their country. A complete list of priority areas of common interest as identified are given in Annex 5.

### **2.10 Session 9 - Closing and Valedictory session**

The training course evaluation based on questionnaire responses by participants was summarized and presented by Dr. Namrata P Wakhloo. The Annex 6 of this report consolidates the evaluation of the course based on feedback of participants.

Participants from countries as well as resource persons gave their impressions and feedback on the training course in the final closing session. Some highlights of comments from participants are as below:

- Requested for the same delegate participation for regional activities in area of risk analysis.
- Requested FAO to visit countries to evaluate the actual status in terms of risk analysis.
- Requested for more training on the subject and invitation to FAO to conduct the same training in each country to ensure more participation from all relevant departments in the country.

Details of feedback from delegates are summarized in **Annex 6**.

Some comments made by resource persons are as below:

Dr. CHOW highlighted the importance of such trainings with experience sharing elements. He mentioned that there were many text books and literature available on risk analysis but they may not include the practical aspects of conducting the same or the difficulties faced during implementing the same. The practical difficulties faced by countries in establishing new legislations, standards etc. are mostly not covered in text books however, in training workshops like this where case studies from various countries as discussed exchange of such information is very useful. He also emphasized on the interdepartmental participation in such activities in a country. He highlighted the fact in each of the SAARC member states, many departments are involved with food safety and one may not be fully aware of the implications and role of the other, therefore making full participation by each department essential.

Prof. Dedi emphasized on the conducive environment, full and active participation of all participants during the session presentation and discussions as responsible for the success of the training.

Ms. Virachnee highlighted the unique participation in the sessions unlike in her country where mostly participants are silent and shy. She especially appreciated the working group exercises, which promoted participation of each person.

This was followed by presentation of certificates to participants as well as the entire set of presentations, working group exercise and documents used in the training in soft copy for use by them for conducting similar trainings in their countries. Concluding remarks were given by Mr. Anil Jauhri, CEO, NABCB on behalf of QCI and Ms Shashi Sareen on behalf of

FAO. Mr Anil Jauhri thanked FAO for selecting QCI as a partner for the program and FSSAI for supporting the training. He mentioned that it was encouraging to note that there was full participation by all SAARC member countries except Sri Lanka from where two participants came instead of the three invited. He also appreciated the feedback regarding organization of the workshop and expressed that they would take the points raised into consideration for future trainings. He concluded by wishing the delegates a safe journey back home.

Ms. Shashi Sareen thanked QCI for providing excellent support in organizing the training course. She also expressed gratitude to all the resource persons for their excellent contribution in developing the training modules and delivering them effectively as also supporting the working group sessions. Ms. Sareen thanked all country delegates for their very active and interactive participation and expressed appreciation to the SAARC country-governments for nominating appropriate participants and encouraging regional participation. She appreciated the feedback of the participants and their contribution towards developing the action plan for regional activities.

## TECHNICAL TRAINING ON RISK ANALYSIS FOR SAARC COUNTRIES

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**Annex 2**

**TECHNICAL TRAINING ON RISK ANALYSIS FOR SAARC COUNTRIES**

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**PROGRAMME**

<b>Day 1: 17 June, 2013)</b>	
<b>Time</b>	<b>Programme</b>
08:30 – 09:00	Registration
<b>Opening Session</b>	
09:00 – 09:45	<p><b>Opening session</b></p> <ul style="list-style-type: none"> <li>• <b>Welcome</b> by B. Venkatram, Secretary General, QCI</li> <li>• <b>Opening Remarks</b> by Ms Shashi Sareen, Senior Food Safety and Nutrition Officer, FAO Regional Office for Asia and the Pacific, Bangkok</li> <li>• <b>Inaugural address</b> by Mr K . Chandramouli, Chairperson, FSSAI, India</li> </ul>
09:45 – 10:00	Round of introductions ( <i>All</i> )
10:00 – 10:15	Meeting objectives and review of programme
10:15 – 10:45	Group photo and tea break
10:45 – 11:30	Overview of the risk analysis process, including questions and answers ( <i>Shashi and DediFardiaz</i> )
11:30 – 12:00	Related updates from Codex / FAO & WHO ( <i>Awilo</i> )
12:00 – 13:00	Lunch
<b>Session 2 – Country Scenario on Risk Analysis</b>	
13:00 – 15:00	Presentation by countries on current scenario (15 minutes each) ( <i>Facilitation: CHOW Chor-yiu</i> )
15:00 – 15:30	Tea break
15:30 – 16:30	<i>Working Group Exercise 1</i> - Identification of Common Problems in the Region; Parallel WGs – chemical and microbiological
16:30 – 17:15	Presentation by groups and agreement on common problems
17:15 – 17:30	Conclusion of Day 1

<b>Day 2: 18 June 2013</b>	
<b>Session 3 – Preliminary Risk management activities (Awilo)</b>	
08:30 – 09:15	Preliminary Risk management activities ( <i>covering when is risk assessment needed, risk profiling, interaction between risk managers &amp; risk assessors</i> )
09:15 – 10:00	<i>WG Exercise 2 – (Framing questions for the risk assessors or identification of problems for which RA is needed based on the problems identified, risk profiling)</i>
10:00 – 10:45	Presentations by groups
10:45 – 11:15	Tea break
<b>Session 4 – Risk Assessment</b>	
11:15 – 12:15	The Risk Assessment Process – an Overview ( <i>principles, concepts, methodologies</i> )( <i>DediFardiaz</i> )
12:15 – 13:15	Lunch
13:15 – 14:45	Hazard identification and practical <i>WG exercise 3 (DediFardiaz and CHOW Chor-yiu)</i>
14:45 – 15:15	Tea break
15:15 – 16:45	Hazard characterization and practical <i>WG exercise 4 (DediFardiaz and CHOW Chor-yiu)</i>
16:45 – 18:00	Dietary Exposure assessments & practical <i>WG exercise 5 (DediFardiaz and CHOW Chor-yiu)</i>
<b>Day 3: 19 June 2013</b>	
<b>Session 4 Risk Assessment contd.</b>	
08:30 – 10:00	Risk characterization and practical <i>WG exercise 6 (DediFardiaz and CHOW Chor-yiu)</i>
10:00 – 10:30	Presentation by working groups
10:30 – 11:00	Tea break
<b>Session 5 – Risk management</b>	
11:00 – 11:45	Overview of risk management ( <i>Awilo</i> )
11:45 – 12:45	Risk assessment and risk management in action: case study ( <i>CHOW Chor-yiu</i> )
12:45 – 13:45	Lunch

13:45 – 14:30	<i>Working Group Exercise 7</i> on Risk Management Options based on the risk assessments already conducted ( <i>Awilo and DediFardiaz</i> )
14:30 – 15:00	Presentations by Groups
15:00 – 15:30	Tea break
15:30 – 16:30	Risk assessment and risk management in action: case study “Development of risk-based standard on aflatoxin in peanuts” ( <i>VirachneeLohachoompol</i> )
16:30 – 17:15	Risk Categorization as a RM option ( <i>DediFardiaz</i> )
17:15 – 18:00	Group work on Risk Categorization ( <i>Working Group Exercise 8</i> ) ( <i>DediFardiaz</i> )
<b>Day 4: 20 June 2013</b>	
08:30 – 09:00	Report back from groups
09:00 – 09:30	Conclusions on risk assessment and risk management
<b>Session 6 – Risk Communication</b>	
09:30 – 10:15	Principles of risk communication ( <i>Awilo</i> )
10:15 – 10:45	Break
10:45 – 11:30	Communicating uncertainty: Illustrated by the new approach for hazard characterization (Margin of Exposure) ( <i>John LUM</i> )
11:30– 12:00	International Food Safety Authorities Network (INFOSAN) ( <i>GyanendraGongal</i> )
12:00 – 12:30	EU Rapid alert system for food and feed (EU RASFF system) ( <i>Awilo</i> )
12:30 – 13:30	Lunch
<b>Session 7 – Risk analysis in emergency situations</b>	
13:30 – 14:15	Food safety emergency response planning ( <i>Shashi Sareen</i> )
14:15 – 15:15	Risk Analysis in Emergency Situations and Response to emergency situations: case study (eg Melamine) ( <i>DediFardiaz</i> )
15:15 – 15:45	Break
15:45 – 16:30	Introduction to the FAO/WHO Guide for developing and improving national food recall system ( <i>Shashi Sareen</i> )
16:30 – 17:00	Conclusions on risk analysis in emergency situations
<b>Day 5: 21 June 2013</b>	
<b>Session 8 –Regional and Country Activities on Risk Analysis</b>	
08:30 – 09:30	<i>Working Group Exercise 9</i> : Country Priorities and national roadmap on introducing/ strengthening risk analysis in each country

09:30 – 10:30	Reporting back from working groups
10:30 – 11:00	Tea Break
11:00 – 11:45	ASEAN processes and activities related to application of risk analysis in food safety standards harmonization ( <i>DediFardiaz</i> )
11:45 – 12:30	Presentation by an ASEAN country on Regional Coordination ( <i>VirachneeLohachoompol</i> )
12:30 – 13:30	Lunch
13:30 – 14:30	<i>Working Group Exercise 10</i> - Setting Regional priorities on Risk Analysis and Improving collaboration to further risk analysis in the region/ with other regions
14:30 – 15:00	Reporting back from working groups
15:00 – 15:30	Tea break
<b>Session 9 – Concluding remarks and next steps</b>	
15:30 – 16:00	Summary of conclusions from training ( <i>FAO</i> )
16:00 – 16:30	Closing remarks (Host government & <i>FAO</i> )

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2. Ms Awilo Ochieng Pernet, Federal Office of Public Health, Division of International Affairs, Switzerland
3. Dr CHOW Chor-yiu, Head, Risk Assessment Section (RAS), Centre for Food Safety, Food and Environmental Hygiene Department, Hong Kong
4. Dr LUM Hon-kei, Scientific Officer (Veterinary Drug), Centre for Food Safety, Food and Environmental Hygiene Department, Hong Kong
5. Ms. Virachnee Lohachoompol, Standards Officer, National Bureau of Agricultural Commodity and Food Standards, Ministry of Agriculture and Cooperatives, Bangkok
6. Dr Gyanendra Gongal, Scientist, Disease Surveillance and Epidemiology, WHO Regional office for South East Asia, New Delhi
7. Ms Shashi Sareen, Senior Food Safety & Nutrition Officer, FAO Regional Office for Asia and the Pacific, Bangkok

### OPENING REMARKS

by Ms Shashi Sareen, Senior Food Safety & Nutrition Officer, FAO Regional Office for Asia and the Pacific

*Chairperson FSSAI, Secretary General, QCI, distinguished participants from various countries of SAARC, resource persons, ladies and gentlemen,*

On behalf of the Food and Agriculture Organization (FAO), it gives me great pleasure to welcome you to the Technical Training on Risk Analysis.

I take this opportunity to offer our sincere gratitude to QCI for supporting us in organizing the training and also providing their hospitality to all the participants. I would also like to express my appreciation to chairman FSSAI for sparing his time and all resource persons who have come from different countries.

Food safety is a fundamental public health concern. Food safety has become increasingly important and challenging with globalization due to various factors such as volume and diversity of trade in foods, greater public demand for health protection, changing hazards example resistant microbes, more sophisticated methods for detection of hazards, changes in production and consumption patterns, and many other factors. Achieving a safe food supply poses a major challenge for countries. An array of foodborne hazards both familiar and emerging, pose risks to health as well as obstacles to international food trade. These risks need to be assessed and managed.

Risk analysis is a systematic disciplined approach for making food safety decisions and has been defined by the Codex Alimentarius Commission as a process composed of three components: risk assessment, risk management and risk communication. Risk analysis is a powerful tool for carrying out science-based analysis and reaching sound consistent solutions for food safety problems. A risk analysis framework provides a structured way of examining and incorporating the wide variety of factors that impact the decision-making process, and enables regulators to identify, assess, manage and communicate food-related health risks throughout the food chain continuum.

A risk-based approach to food control ensures that: public health is protected from unsafe food; control measures are proportionate to the risk posed by a food; and resources are directed where they will have the most impact. Risk analysis must be the foundation on which food control policy and consumer protection measures are based. National governments need to have a good understanding of the relevance of Risk Analysis and how to apply this in a consistent manner provide the scientific basis of decision-making (risk management options).

FAO/WHO and the Codex have been focusing for more than a decade and a half to bring out standards and guidance in this area. A number of documents have been produced on various components of risk analysis, but practical implementation of the concepts still requires much more focused attention. There is different extent of knowledge of principles of

the risk analysis framework in the region. In a recently held Regional Food safety Policy Consultation for countries in Asia in December 2012 where 11 countries and around 50 delegates participated, countries identified different aspects of risk analysis, amongst others, for addressing in food safety policies. Countries also requested support in promoting risk-based approaches including:

- developing risk based monitoring/ inspection procedures and tools to undertake risk based inspections
- Undertaking risk assessments of food establishments (farm to retail)
- Developing risk based education/training for inspectors
- Establishing food safety emergency response systems including traceability and recall
- Establishing mechanisms for data collection (Food-borne disease surveillance, contaminant monitoring programmes etc)

*Ladies & gentlemen*

FAO has already organized some workshops and trainings in this area in the Region. There has generally been more focus on ASEAN countries. A 3-day Regional training workshop on “Food recall and traceability - Application in National food safety control” was organized for participants from the ASEAN countries in February. In this WS, one of the specific objectives was to enhance understanding of basic concept of risk analysis, and relationship between risk management and crisis management in food safety. Last week a training was organized in Tokyo on strengthening capacity in data collection and generation for the purpose of risk assessments.

A technical workshop on chemical risk analysis in the food chain was recently carried out in Beijing, China where SAARC countries had also participated. In this workshop the focus was on bringing about an understanding of chemical risk analysis as well as demonstrating collection of data for risk analysis; and developing information-sharing and support systems between countries. Countries of the SAARC region had expressed that they needed a much more detailed training on the concept as well as the process of risk analysis and based on their feedback and requirements, this training has been structured. A similar interest for a detailed training on this subject was also expressed during the CCASIA meeting in November last year.

*Ladies and Gentlemen:*

I do hope you find the training useful. We have organized very experienced resource persons from different countries namely Hong Kong, Indonesia, Thailand, Switzerland and I do hope you will take advantage of their knowledge and experience to understand as well as clarify all doubts on the subject. I also hope you will support implementation of learning's once you are back in your countries.

I hope while in India you all would also get a chance for sightseeing and enjoying the shopping. With these words, I wish you all a successful training and also an enjoyable week ahead.

Thank you.

### WG EX 9: Country Priorities and National Road Map for Introducing and/or Strengthening Risk Analysis in SAARC Countries

#### Afghanistan

	Priority areas for Action	Reason	Time frame	Stake holders/Departments involved
1.	Food law and pesticide residue Law	Food Law and pesticide residue has been drafted To see the risk based approach is covered	1-3 year	MoC, MAIL, MoPH, Municipality, MoJ, Privatesector, FAO, TAFA,
2.	Coordination	To improve communication and coordination on food safety	1-3 YEARS	MoC,MAIL,MoPH,Municipality,Mo J, MoI,NEPA
3.	Develop food safety policy and Emergency Response Plan	To regulate food safety activities	6 months	MoC, MAIL, MoPH, Municipality, MoJ, MoI, NEPA, WHO, FAO, TAFA, WFP
4.	Develop coordination committee	To collect data, Information, and awareness to public about the hazard and risk of food	3 months	MoC, MAIL, MoPH, Municipality, MoI, NEPA,
5.	Improve infrastructure – laboratories adequate facility and number	MoPH and MAIL don't have equipped and accredited labs Need new technology equipment, updated references, reagent, training staff, Reference food standards	2-3 years	MAIL, MoPH
6.	Strengthen/develop government surveillance and monitoring plan including residue monitoring	Need to develop the plan	3 months	MAIL, MoPH,

7.	Capacity building for conducting RA	For assuring that all the food in the market are safe for the consumer	1-3 months	MAIL, MoPH,
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## Bangladesh

SI no	Priority areas for Action	Reason	Time frame	Stake holders/ Departments involved
1.	Updating the laws and regulation for risk based approach to food safety	In order to have smooth running of risk analysis	Two years	Relevant ministries & agencies, and other stakeholders
2.	Capacity building for conducting RA	For effective and timely implementation of RA	Two years	Institutional and human resource of key stakeholders
3.	Interministerial coordination	Effective & timely implementation of risk analysis	Developmental phase: 6 months & later would be continuous	Relevant ministries & agencies
4.	Develop food safety policy and Emergency Response Plan	To ensure food safety and emergency	Draft in final stage, completed within 6 months	Relevant ministries & agencies, and other stakeholders
5.	Develop coordination committee	Effective & timely implementation of risk analysis	Six months	Central level and all tiers of administrative level

6.	Develop Food borne disease surveillance programs	To see the trend of food borne diseases and early notification of outbreaks	Establishment is already initiated, integrated food chain approach to be developed, further improvement is needed and continuous process	Health, livestock, agriculture, fisheries
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SI no	Priority areas for Action	Reason	Time frame	Stake holders/ Departments involved
7.	Improve infrastructure – laboratories adequate facility and number	Inadequate laboratory facilities; needs to be established, strengthen existent lab facilities & develop lab networking (number is need based)	At least two years for establishment and continuous process	Relevant ministries & agencies, and other stakeholders
8.	Strengthen/develop government surveillance and monitoring plan including residue monitoring	To reduce health hazard: food borne disease, enhance food trade	One year and continuous process	Health, livestock, agriculture, fisheries
9.	Strengthen standards on food to include food safety aspects	Inadequate, and not risk based (mostly)	Two years	BSTI in support with other stakeholders
10.	Set up rapid alert systems – within country and within region	To inform the all concerns in emergencies and mitigation, (SAARC Rapid Alert System – is proposed)	Two years	All relevant key stakeholder and international bodies (INFOSAN etc)
11.	Strengthening a national traceability and recall system	For source identification & withdrawal	One year	All relevant key stakeholder, eg. BSTI in case of processed food
12.	Developing risk categorization for food products and businesses	For maximum utilization of inspection resources	Developed	MoH&FW with other key stakeholders

## Bhutan

	Priority areas for Action	Reason	Time frame	Stake holders/Departments involved
1.	Provision in regulation for risk based approach to food safety	-	-	-
2.	Interministerial coordination	<p>Various ministries involved in ensuring food safety is clearly mentioned in the Food Act of Bhutan (NFQSC and NCC).</p> <p>However, there are no specific roles and responsibilities of the each stakeholder which might delay the execution of response actions during emergencies.</p>	2013-2018	Bhutan Agriculture & Food Regulatory Authority (BAFRA), Dept. of Agriculture (DoA), Dept. of Livestock (DoL), Dept of Trade (DoT) under the Ministry of Economic Affairs (MoEA), Dept. of Public Health (DoPH) under the Ministry of Health (MoH), Ministry of Home & Cultural Affairs (MoHCA), Legal Affairs, National Environment Commission (NEC), Bhutan Chamber of Commerce & Industries (BCCI)
3.	Develop food safety policy and Emergency Response Plan	<p>Food Safety policy is being drafted at the moment with support from FAO (update).</p> <p>ERP is found to be highly needed with growing numbers of food industries and trade both within and across the borders.</p> <p>The development of ERP would help in better execution of responses during emergencies.</p> <p>No nodal point identified from the concerned departments.</p>	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI

4.	Develop coordination committee	-	-	-
5.	Improve infrastructure – laboratories adequate facility and number	<p>The whole concept of risk analysis is based on science. Lab test report has been the backbone of any regulatory body to take actions in the field.</p> <p>During an emergency, we can't afford to refer the samples to labs outside the country.</p> <p>Infrastructure development, capacity building, lab networking essential and establishment of regional food labs essential.</p>	2013-2018	NFTL (BAFRA), PHL (MoH), NCA N (DoL), NCAH (DoL), Seed lab (DoA), etc
6.	Develop Food borne disease surveillance programs	<p>The MoH keeps track on the food borne diseases that is being reported but there is no standard surveillance program in place wherein no proper analysis and information sharing of at inter ministerial level takes place.</p> <p>Hence a proper surveillance program which can ease and avail recording, analysis and information sharing within the relevant stakeholders is needed.</p>	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI
7.	Strengthen/develop government surveillance and monitoring plan including residue monitoring	Need to develop government surveillance and monitoring plan including residue monitoring since	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI

		report of suspected food-borne cases has been high. Yet, no surveillance has been carried out to confirm the cases.		
8.	Strengthen standards on food to include food safety aspects	Mechanism for food standard development in place. Standards on 4 broad commodities are in draft stage (natural mineral water, street vended foods, general hygiene on food hygiene, prepackaged foods).  Need of further strengthening of coordination and communication between the food regulatory body and the national standard setting body.	2013-2015	BAFRA, Bhutan Standards Bureau (BSB), DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI
9.	Set up rapid alert systems – within country and within region	Rapid alert in the form of public notification and information posting on the website is in place ( <i>Update</i> ).  However, there is a need to establish a proper coordinated rapid alert system.	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI
10.	Develop a national traceability and recall system	National traceability and recall system broadly mentioned in the Food Act. However, there is no specific SoP on the same and it is therefore, needed.	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI
11.	Capacity building for conducting RA	Very much needed in Bhutan since inspection and monitoring activities are more on Q&R system.	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI

		<p>Officials in the lab need to be adequately trained on the testing of emerging food safety parameters.</p> <p>Officials at the field level need to understand RA taking into account the limited resources and manpower.</p>		
12.	Developing risk categorization model	Needed taking into account the limited resources and manpower.	2013-2018	BAFRA, DoA, DoL, MoEA, MoH, MoHCA, Legal Affairs, NEC, BCCI

## India

	<b>Priority areas for Action</b>	<b>Reason</b>	<b>Time frame</b>	<b>Stake holders/Departments involved</b>
1.	Provision in regulation for risk based approach to food safety	Fundamental	Already exists	Government of India
2.	Interministerial coordination	Effectiveness	Already exists	Government of India
3.	Develop food safety policy and Emergency Response Plan	Clear direction to achieve food safety in the country	1 year	Food Safety and Standards Authority of India will be the coordinator, the apex body Food Research and Standardization Laboratory Indian Council of Agriculture Research National Institute of Nutrition under Indian Council of Medical Research Central Food Technological Research Institute under Council for Scientific and Industrial Research National Dairy Development Board National Fisheries Development Board Spices Board Coffee Board Tea Board Cashew and Cocoa Board Coconut Development Board Oilseeds Development Board Export Inspection Council Marine Products Export Development

				<p>Authority</p> <p>Agricultural Products Export Development Committee</p> <p>Department of Marketing and Inspection</p> <p>Bureau of Indian Standards</p> <p>Aquaculture Authority</p> <p>etc.</p>
4.	Develop coordination committee	Presently the expertise is spread over a number of organizations across the country and an umbrella organization, i.e., FSSAI has to develop coordination committee to streamline the efforts	3 months	-as above-
5.	Improve infrastructure – laboratories adequate facility and number	To strengthen the analysis of food samples	Within 3 years	FSSAI through PPP model
6.	Develop Food borne disease surveillance programs	To link the data to the incidences.	1 year	Integrated Disease Surveillance Programme under Ministry of Health has been formulated for this purpose.
7.	Strengthen/develop government surveillance and monitoring plan including residue monitoring  (All chemical contaminants)	Data is available with All Indian Coordinated Research Project, Indian Council of Agriculture Research and research institutions.  Mechanism for sharing of data required.	2 years	
8.	Strengthen standards on food to include food safety aspects	Harmonization with Codex standards is under progress.	6 months – 2 years	FSSAI

9.	Set up rapid alert systems – within country and within region	India is part of INFOSAN. Rapid alert system is available in piece meal in export and import.	5 years	FSSAI to coordinate EIC, APEDA, MPEDA etc. to provide export data
10.	Develop a national traceability and recall system	It would go hand in hand with above?????		
11.	Capacity building for conducting RA/labs/etc	For supporting risk based approach in standardization.	5 year	An apex body under FSSAI has been proposed
12.	Developing risk categorization model	--	--	--

## Maldives

Priority areas for Action	Reason	Time frame	Stake holders/Departments involved
Provision in regulation for risk based approach to food safety	At present there is no law on food safety, difficult to regulate food safety issues, in order to bring all the agencies to one table its necessary to be incorporated in the regulatory framework	5 years	MFDA (Maldives food and drug authority) Stake holders; PA ,MoFA,
Interministerial coordination	Different aspects of the food is taken cared by different Ministries Eg: 1.The mandate of public health and food safety is given to MOH 2. primary production of food is being controlled and monitored by MoFA, 3.Trade issues related to food is by MED 4. Any issues of concern in international level, the MOFA has to be involved.	Within 3 months	MOH, MED, MoFA, MOFA.
Develop food safety policy and Emergency Response Plan	No current food safety policy and no proper plan, if there is no policy no commitment from the government	3 years	MFDA/MOH
Develop coordination committee	National codex committee act as food safety coordination committee,		MOH,MFDA,HPA,MoFA,MED,MOFA,chamber of commerce, etc.
Improve infrastructure – laboratories	Need to strengthen the existing National Health Laboratory for	5yrs	MOH

adequate facility and number	Risk analysis,		
Develop Food borne disease surveillance programs	No proper surveillance programs	2yrs	HPA/MOH
Strengthen/develop government surveillance and monitoring plan including residue monitoring			
Strengthen standards on food to include food safety aspects	Regulatory framework very weak. Two regulation on food safety: 1. Food establishment regulation 2. Food advertisement regulation 3. BMS regulation Also need to develop standards regarding food safety	5yrs For the most important aspects	MFDA/HPA
Set up rapid alert systems – within country and within region	Within country. Important for dissemination of the information to concern authorities and public.	7yrs	Line ministries and all the stakeholders
Develop a national traceability and recall system	Need to strengthen the existing system as sometimes we are unable trace back.	3yrs	Line ministries and all the stakeholders
Capacity building for conducting RA	Very few technical people in this area	5yrs	MOH,MFDA,HPA,MoFA

## Nepal

	Priority areas for Action	Reason	Time Frame	Stake holders/Departments involved
1.	Provision in regulation for risk based approach to food safety	RA approach is not included in existing legal provisions	3 Years	DFTQC, DoHS, DVLS, DoA, DoC, MoL, Consumer Organizations.
2.	Interministerial coordination	Coordination level is low among concerned ministries	1 Year	MoAD, MoHP, MoHA, MoCS, MoLD, MoL
3.	Develop food safety policy and Emergency Response Plan	Food Safety Policy is drafted	1 Year	MoAD, MoHP, MoHA, MoCS, MoL, Consumer Organizations
4.	Develop coordination committee			
5.	Improve infrastructure – laboratories adequate facility and number	Limited no. of Laboratories with inadequate facilities	5 Years	DFTQC, DoHS, DVLS, DoA, DoC, NPC, MoF/ EDPs (FAO, WHO,...)
6.	Develop Food borne disease surveillance programs	Not in existence	3 Years	DFTQC, DoHS, DVLS, DoA
7.	Strengthen/develop government surveillance and monitoring plan including residue monitoring	Insufficient Gov. surveillance and monitoring plan including residue monitoring	3 Years	DFTQC, DoHS, DVLS, EDPs
8.	Strengthen standards on food to include food safety aspects	Existing Food standards are mainly quality based	3 Years	DFTQC, DoHS, DVLS, DoA, Consumer Organizations/ EDPs (FAO, WHO,...)
9.	Set up rapid alert systems – within country and within region	Rapid Alert System not exists	1 Year	DFTQC, DoHS, DVLS
10.	Develop a national traceability and recall system	Not in existence	3 Years	DFTQC, DoHS, DVLS, DoC, MoI, Consumer Organizations, Industries

11.	Capacity building for conducting RA	Limited no. of skilled HR	5 Years	DFTQC, DoHS, DVLS, DoA, MoF/ EDPs (FAO, WHO,...)
12.	Developing risk categorization model	Not in existence	1 Year	DFTQC, DoHS, DVLS, DoA, MoF/ EDPs (FAO, WHO,...)

## ABBREVIATIONS

DFTQC: Department of Food Technology and Quality Control

DoA: Department of Agriculture

DoC: Department of Commerce

DoHS: Department of Health Services

DVLS: Department of Veterinary and Livestock Services

EDPs: External Development Partners

MoAD: Ministry of Agriculture Development

MoF: Ministry of Finance

MoHA: Ministry of Home Affairs

MoHP: Ministry of Health and Population

Mol: Ministry of Industries

MoL: Ministry of Law

MoLD: Ministry of Local Development

NPC: National Planning Commission

## Pakistan

	Priority Areas and Actions	Reasons	Time frame	Stake holders/Departments involved
1.	Regulations	Insufficient/ outdated Regulations	12 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public HealthDepts.
2.	Codex Alimentarius, FAO & WHO	Capacity Building, Developing Food Standards & Procedures for implementation	24 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public HealthDepts.
3.	Up-dation and Review of existing system	Insufficientcy of Existing system	12 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public HealthDepts.
4.	Up-dation/ reorganization of existing system	Existing system is insufficient to meet the risk analysis requirements	12 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public HealthDepts.
5.	Capacity building of staff and updation of Labs.	Existing system is insufficient to meet the risk analysis requirements	36 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public HealthDepts.
6.	Reorganizing the existing system with clearly defined areas of action on Emergency Response	Existing system is unorganized and haphazard	12 months	MNFS&R, MoST, MOC, Food, Agric. Livestock & Public Health Depts.
7.	Development of infrastructure/ Policies/ Procedures for Surveillance and Monitoring of Residues and Disease Reporting System	The existing system is insufficient and unorganized	24 months	MNFS&R, MoST, Food, Agric. Livestock & Public Health
8.	Development of National Standards on Food Safety	In-coherent adopted standards which are not science based	24 months	MNFS&R, MoST
9.	Traceability & Recall System	Nonexistence of governmental Recall & Traceability	12 months	MNFS&R
10.	Capacity Building for conducting RA	Insufficient Capacity Building in the field of RA	12 months	MNFS&R, MoST, Food, Agric. Livestock & Public Health

## Sri Lanka

	Priority areas for Action	Reason	Time frame	Stake holders/Departments involved
1.	Develop food safety policy and Emergency Response Plan	There is no developed food safety policy, activities are carried out in ad-hoc manner	1 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority, SLSI
2.	Interministerial coordination	Poor coordination Food control authority is under Ministry of Health	6 months	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority, SLSI
3.	Strengthen/develop government surveillance and monitoring plan including residue monitoring	Weak program due to inadequate man power, less financial allocations	1 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority, SLSI
4.	Improve infrastructure – laboratories adequate facility and number	No adequate facilities for laboratory testing (testing heavy metal, less facilities at regional level laboratories)	Long term	Ministry of Agriculture, Ministry of Health
5.	Develop Food borne disease surveillance programs	No ongoing active program	1 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority,
6.	Develop a national traceability and recall system	Many drawbacks in existing system -data are not stored in electronic forms -activities are not automated -Delayed responses	1 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority,

7.	Set up rapid alert systems – within country	To be enhanced with ICT support	2 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority,
8.	Capacity building for conducting RA	Not adequately exposed for Risk analysis activities, Continuing skill development programs is required	1 year	Ministry of Health, Ministry of Agriculture, Ministry of livestock Development, Department of Customs & Ports Authority,

## WG Ex 10: Regional Priorities to strengthen Risk Analysis within the SAARC Countries

	<b>Priority Areas for action</b>
1.	Regional alert/early warning/ traceability system for food and feed
2.	Harmonization of food standards and developing database system on food standards amongst the SAARC member states
3.	Establishment of reference laboratory network
4.	Risk-based food safety indicators
5.	Food-borne disease surveillance system for SAARC
6.	Technical expert group (e-group/ forums) including countries from beyond SAARC region
7.	Common approach to improve the infrastructure for processing and post harvest storage facilities
8.	Establishment of SAARC Research Centre for the purpose of carrying out/ supporting risk assessment
9.	System for transparent information sharing amongst the SAARC member states
10.	Practical training programs for <ul style="list-style-type: none"> <li>➤ microbiological/chemical risk assessment in SAARC countries</li> <li>➤ Good Agriculture Practice (GAP) to ensure that it meets FSOs</li> <li>➤ Choosing and using mathematical models on how to carry out risk assessment</li> </ul>
11.	Establishment of Central Unit of technical services provided in the area of risk analysis for food safety
12.	Development of SAARC regional food safety policy
13.	SAARC's own scheme (standards and certification system) for GAP, GVP and GMP – all countries
14.	Development of a common Risk categorization module for SAARC
15.	Linking to countries (with and without knowledge/data)
16.	MRAs for conformity assessment
17.	Contaminant-wise regional Committees/ Task Forces
18.	Review of risk analysis situation in specific countries (Afghanistan, Nepal, Maldives, Pakistan, Sri Lanka)
19.	Establishment of Coordinating Committee for SAARC countries
20.	Household food safety and risk analysis

## Training Evaluation Form ‘SUMMARY’

### Regional Training Course: TECHNICAL TRAINING ON RISK ANALYSIS FOR SAARC COUNTRIES

Name: All countries

Country: Consolidation

1. How do you evaluate the quality of the Training Course in general?						
		Excellent	Very Good	Adequate	Poor	Not responded
1.1	Subject coverage	7	19	4		1
1.2	Material and handouts	10	14	6		1
1.3	Organization of the programme	6	16	8		1
1.4	Technical inputs by experts	9	17	3	1	1

#### Summary

1. Majority “excellent” rating (32%) was given to “material and hand-outs” followed closely by “excellent” given to ‘Technical inputs by experts’ (29%). One person also rated it poor.
2. Organization of the program was the least rated but 70% rated it very good and above.
3. 70% or more participants rated each aspect of the program as very good or above.

2. How do you evaluate the quality of each subject in the Training Course?						
		Excellent	Very Good	Adequate	Poor	Not responded
2.1	Overview of Risk Analysis Process	13	16	1		1
2.2	Related updates from Codex/FAO & WHO	11	14	6		
2.3	Country Scenario on Risk Analysis	2	16	13		
2.4	Preliminary Risk Management activities	4	19	5	2	1
2.5	The Risk Assessment Process – an Overview	5	19	7		
2.6	Overview of risk management	3	20	4		4
2.7	Risk assessment and risk management in action: case study – Hong Kong	8	18	4	1	
2.8	Risk assessment and risk	5	18	7		1

	management in action: case study - Thailand					
2.9	Risk Categorization as a Risk Management option	9	18	2	2	
2.10	Principles of risk communication	5	16	8	1	1
2.11	Communicating uncertainty: Illustrated by the new approach for hazard characterization	9	18	2		2
2.12	International Food Safety Authorities Network (INFOSAN)	15	12	3		1
2.13	EU Rapid alert system for food and feed (EU RASFF system)	7	18	2	1	3
2.14	Food safety emergency response planning	14	12	3		2
2.15	Risk Analysis in Emergency Situations	10	12	6	1	2
2.16	Response to emergency situations: case study	9	14	5		3
2.17	Introduction to the FAO/WHO Guide for developing and improving national food recall system	9	17	3		2
2.18	ASEAN processes and activities related to application of risk analysis in food safety standards harmonization	6	15	7		3
2.19	ASEAN country Regional Coordination	4	17	5		5

### Summary

1. Majority "excellent" ratings were given to 'International Food Safety Authorities Network (INFOSAN)' - (50%); 'Food safety emergency response planning' (45%) and 'Overview of Risk Analysis Process' (41%)
2. The least rated sessions were 'Preliminary Risk Management activities' and 'Risk Categorization as a Risk Management option'.
3. The rating very good and above varied from minimum of 56% to maximum of 93% for all sessions.

### 3. How do you evaluate the quality of each working group exercise?

	Excellent	Very Good	Adequate	Poor	Not responded
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3.1	Risk Assessment Process	4	23	2	2
3.2	Risk Management Options	4	20	5	2
3.3	Country priorities and national roadmap on introducing/strengthening risk analysis in each country	5	20	5	1
3.4	Setting regional priorities on Risk Analysis and improving collaboration to further risk analysis in the region/with other regions	3	15	5	8

### Summary

1. Majority “excellent” rating given to ‘Country priorities and national roadmap on introducing/strengthening risk analysis in each country’ followed closely by ‘Risk Assessment Process’ and ‘Risk Management Option’
2. The very good and above rating varied from 58% minimum to 87% maximum.
3. For some reason many did not respond to ‘Setting regional priorities on Risk Analysis and improving collaboration to further risk analysis in the region/with other regions’.

4. Have the following objectives set forth for the training course have been achieved?

- i) Review of the risk analysis process, its components, scope of applications for ensuring food safety;  
**Yes (31) / No**
- ii) Improved knowledge on the use of risk analysis methodology in the development of national and international food standards and application in food safety control. **Yes (30)/ No**
- iii) Practical training exercises on the risk analysis application in both routine and emergency situations for chemical and biological hazards in food;  
**Yes (29)/ No (1)**
- iv) Exchange of information among participating countries on the experience and process of application of risk analysis in food safety control systems  
**Yes (31)/ No**
- v) Setting national and regional priorities on risk analysis and improving collaboration for furthering risk analysis in the region  
**Yes (31)/ No**

### Summary

1. All responded ‘yes’ to all questions except one person who responded ‘No’ to question ii and iii while one did not respond to question iii and one circled both ‘yes’ and ‘no’ to question iii.

5. Based on the conduct of the training course are you in a position to guide the development/ review / conduct of:

- i) data collection/generation for risk assessment including hazard identification, hazard characterization, exposure assessment and risk characterization? **Yes (30) / No (1)**
- ii) risk management options based on conducted risk assessment **Yes (31) / No**

- |  |                          |
|--|--------------------------|
| iii) risk communications                 | <b>Yes (31) / No</b>     |
| iv) risk analysis in emergency situation | <b>Yes (30) / No (1)</b> |

<p><b>Summary</b></p>
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<p>1. All responded 'Yes' to all questions except one each said 'no' to questions i and iv</p>
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6. What are the additional aspects that need to be covered/ your suggestions on improvements?
- Similar training in each country so that more number of people can join the training
  - Increase time allocation for RA in emergency situation,
  - Demonstration of traceability system,
  - Demonstration of traceability system in developed country,
  - Risk communication to be discussed more with more practical examples,
  - FAO/WHO to send a team to evaluate impact of training,
  - Quantitative risk analysis could not be covered;
  - Case study based on more practical aspects like aflatoxins in peanuts,
  - Practical exercise on risk categorization to be increase;
  - General topics to be omitted;
  - Field observation (food industry) during course,
  - Showing video films related to course;
  - More coverage on practical/discussion,
  - More exercise taking cases of some specific food commodities and risk associated with them; more practical exercises;
  - Needs to be a 2 week program,
  - Few more illustrations on RA and management actions across the world,
  - Examples of convergence in some countries where primary level production linked to ALOP/human consumption giving idea from farm to fork would give further insight;
  - More practical examples develop fictitious data for WG exercises;
  - Include how to carry out awareness programs and surveillance program;
  - Wide range of topics needs to be established for WG exercise,
  - Selection of topics to be left to WG,
  - Too large hence consolidate topics;
  - Some session too theoretical exhaustive and not so important, repeat trainings;
  - Training on traceability, some more details on EU RASFF; overview on the existing mathematical model for RA, application of software for RA, designing of Risk categorization decision tree for difficult situation, ex on risk communication;
  - Include risk characterization models with active data; how to deal with risk assessment in detail;
  - FAO needs to help improve strengthen laboratories by giving training on testing methods and instruments like HPLC, GC, AAS etc;
7. Any other suggestions on how the training course needs to be improved.
- Well organized, excellent training,
  - time too short extend training for 10 days,
  - good training but would have better if visited FSSAI, QCI and other institutions in India with RA practical aspect;
  - classic examples of RA from developed countries should be illustrated; overall program management good, shorter sessions;

- sessions too lengthy for one day need to expand the sessions;
- maybe half a day tour to FSSAI/EIC etc with a guide to how relevant agencies role is integral to the food safety system;
- more working group exercises;
- every topic to have case study like peanut/melamine,
- provision of IT enabled system like laptop, mike requires improvement as available system was insufficient;
- training material not readable, print quality poor with some pages missing, quality of stationary (paper, kit, pen etc) poor,
- 
- more training material on the training will be advantageous;
- preferred order maybe theory – case study – working group exercise,
- resource person with good communication skills like Dr LUM and Ms Virachee, Shashi and Gongol to name a few,
- conference gaps could be reduced;
- working group evenly distributed,
- more discussion time;