Food Safety in Southeast Asia: Challenges Facing the Region

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ABSTRACT

The paper tackles the issue of food safety, which is generally defined as the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. Echoing the recognition by the Food and Agriculture Organization (FAO) in 1996 that food safety is an element of food security, the paper discusses the importance of the food trade in the economies of many countries, as reflected in the health, economic and political consequences that arise when the food safety system of a country fails. It focuses on the Southeast Asian experience—their food marketing system, the current food safety situation, as well as the complexities brought about by the concern for food safety. Highlighted are the challenges in establishing and strengthening the key components of a food control system to ensure safety along the whole food chain continuum, the relationship between Codex standards and related texts, as well as the enormous responsibility faced by Southeast Asian countries in meeting the obligations of the World Trade Organization. Finally, several recommendations are outlined, stressing the importance of carrying out a needs assessment, participating more actively in Codex work, and taking advantage of the existing collaborative initiatives undertaken, including those in ASEAN, and the various technical assistance available for capacity-building in food safety.

INTRODUCTION

Food safety is the assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use. Ensuring safe and healthy food is an important precondition of food security. It is essential for human life in both developed and developing countries. The World Food Summit organized by the Food and Agriculture Organization (FAO) in 1996 recognized that access to safe food is in itself an element of food security. Food safety can no longer be the luxury of the rich since all people should have the right to an adequate supply of safe and nutritious food. Current practices aimed at improving food safety may also reduce food losses, thereby increasing food availability.

Implications to Health and the Food Trade

Food-borne diseases result in suffering, and at times, even in the loss of lives. It is estimated that one in three people worldwide suffers annually from a food-borne disease and 1.8 million die from severe food and water-borne diarrhea. Food-borne diseases impose a heavy social and economic burden on communities, especially affecting their health care systems, and economic productivity. In the context of international food trade, the imposition of bans in consideration of food safety has resulted in economic losses for exporting countries. For example, the estimated direct cost of the mycotoxin contamination of corn and peanut in Southeast Asia amounts to several hundred million US dollars annually.

In recent years, there has been a significant increase in both the quantity and variety of food moving in international trade. The value of global food trade in 2001 was estimated to be US$436 billion (Buzby 2003). The contributing factors include the expanding world economy, the liberalization in food trade, the growing consumer demand, as well as developments in the food

science, technology, transport, and communication sectors. There has been a dramatic increase in the number of countries (especially less-developed ones) involved in the production of food for export. More than 50% of fruits and vegetables, sugar, non-alcoholic beverages, fish and fishery products are exports from developing countries. However, the access by developing countries to the food export market in general, and to the developed world in particular, will depend on their capacity to meet the regulatory requirements of importing countries. It must be noted that the requirements of the most lucrative markets are the most sophisticated and demanding ones. To improve market access and maintain their products' competitive edge, the exporting countries must aim for the long-term solution of building the trust and confidence of importing countries in the safety and quality of exported food or run the risk of having these goods rejected, thereby resulting in considerable financial loss, and damage to the commercial reputation of both parties.

THE STATUS OF FOOD SAFETY IN SOUTHEAST ASIA

The food production, processing, and marketing system in Southeast Asia ranges from small-scale to large-scale, with products passing through multiple tiers of handlers and middlemen in the market chain. Facilities and infrastructure are still inadequate, and there is lack of knowledge and expertise on new or modern technologies and practices. Moreover, there remains little appreciation for good hygienic practices (GHP), good agricultural practices (GAP), and good manufacturing practices (GMP), especially among smaller-scale food processors. Street food items, which readily provide low-cost nutrition at easily accessible locations, are commonly found in Southeast Asia. This sector of the food industry that feeds millions of people everyday and employs millions of semi-skilled and unskilled people generates income running into billions. However, it presents unique challenges in food safety, especially problems related to hygiene and sanitation.

National food safety programs in Southeast Asia generally lack the following critical elements, namely: an appreciation of the nature and extent of national food safety problems, an awareness of the consequences of contaminated food on the nation's health status and economic development, and a sense of urgency for the need to investigate and do research. There is a shortage of sound, cost-effective methods for identifying specific food safety problems. The responsibility for ensuring food safety is based on a multi-agency approach due to historical or political reasons, and there is lack of coordination among agencies. In addition, specific food safety policies are either nonexistent, inadequate or of low priority in most of these countries. This situation is further compounded by the presence of other areas of concern which compete for the limited resources.

GLOBAL CHALLENGES

Health hazards can arise along any part of the food chain, such as from using contaminated raw materials, or from handling during the processing, transportation, storage, sale, and consumption of food. Therefore, reducing food safety risks can be achieved most effectively by preventing contamination throughout the food production, processing, storage, and distribution chain, i.e., from the farm to the table. There is a need to have a comprehensive and integrated multidisciplinary approach to food safety that addresses problems at the source. Food safety strategies should be risk-based, targeting food that contribute significantly to the exposure of the consumers along the entire food chain.

Advances in food science and technology have stimulated the growth of the food industry but in some cases, can also introduce new health concerns. For example, the benefits and safety of foods derived from biotechnology need to be assessed.

Changes in animal husbandry practices, and the adoption of modern intensive agriculture, if not properly monitored and assessed, may have serious implications for food safety. For example, the use of antibiotics in animal feed to increase growth rates has raised concern about the transfer of antibiotic resistance to human pathogens. Other new challenges have also emerged from innovations in food science such as novel food products, food irradiation, and organic food, as well as from emerging and reemerging diseases such as

E. coli 0157:H7 and viruses, Bovine Spongiform Encephalitis (BSE), bird flu, and foot-and-mouth disease.

Public attention to food safety has grown over the years and today's government must be able to respond quickly to food safety crises and emergencies. The globalization of food trade, the rising level of economic interdependence, and the cultural exchanges between the eastern and the western worlds have resulted in gradual changes in tastes and preferences for different foods. The consequent increase in the variety and quantity of food presents a transnational challenge for food safety authorities which control the movement of hazardous food and any associated food-borne diseases, particularly as the longer food chain creates more opportunity for contamination. This can be seen, for instance, in the rapid international spread of feed contaminated with dioxin from a single source in Belgium in 1999 to every continent within weeks.

Governments should develop comprehensive food safety policies and establish effective partnership amongst relevant stakeholders. This requires leadership, political will, and a commitment to food safety, especially in view of the competing priorities in the health agenda. There must be a documented comprehensive national food safety policy and plan of action involving all relevant stakeholders from farm to table, and this food safety policy must be integrated into other areas of government policy such as poverty eradication and agricultural development.

CHALLENGES IN SOUTHEAST ASIA

The components and priorities of a food control system will vary from country to country. Most systems in Southeast Asia will typically face challenges in strengthening the following key components: food legislation; food control management; inspection services; laboratory services; and information, education, communication and training. The following subsections discuss these components.

1. Legislation

Establishing and updating food legislation is a necessary first step in establishing an effective food safety system. In addition, there is a need to identify areas of the food chain not covered by the existing legislation, such as gaps in some countries' laws governing feed, imports and exports, and hygiene. National regulatory standards must be formulated and reviewed based on risk assessment and thus incorporate available scientific evidence. Whenever possible, these standards must be harmonized with international standards, i.e., the Codex standards. These regulatory standards must also be able to keep up with advances in new technology, emerging hazards, and changing consumer demands, among others. In addition, differences in public perception and scientific assessment of food risk remain a challenge. As such, it is imperative to involve all relevant stakeholders, i.e., the government, the industry, the consumer, the academia, and the professional bodies in the standard-setting process.

2. Food Control Management

Reliable scientific information on food safety is one of the pillars to ensure food safety. In this regard, decision-making can be enhanced through a risk-based approach to food safety, i.e., through risk analysis. This approach consists of risk assessment, risk management, and risk communication, and provides a framework for governments to effectively assess, manage, and communicate food safety risks among all relevant stakeholders. As such, the ability to collect and analyze scientific information on food safety through risk assessment throughout the food chain is essential. However, many countries in Southeast Asia are not ready to conduct risk assessment because of the lack of exposure assessment data, the needed laboratory infrastructure, and the required know-how to analyze a wide range of contaminants.

3. Food Inspection

Competent food inspectors who are adequately trained and equipped for food inspection are vital in ensuring consistent, transparent, and effective food inspection. It is equally important that they are supported by well-planned, well-defined, and scientifically based inspection procedures that are preventive rather than reactive. An integrated surveillance system, like other components of a food safety program, should be coordinated well with concerned parties. Owing to the limited resources and the significant increase in the cost of providing services in most Southeast Asian countries, relevant fees may be imposed to recover the cost of implementing food safety controls based on the principle which posits that the beneficiary pays.

The current inspection approach of most Southeast Asia countries emphasizes the visual inspection of food facilities and end-product testing, followed by sanctions on responsible parties when the test results contravene the provisions of the food law. Such approach is reactive and not preventive as it is designed for detecting and correcting problems after they occur, rather than preventing them in the first place.

4. Food Control Laboratory

Adequate laboratory infrastructure is required to support the monitoring, surveillance and enforcement activities. These include adequately equipped food control laboratories, trained analysts, and the implementation of the Quality Assurance System that meets international standards.

In the recent past, due to the advancement in analytical technology, the limit of detection for prohibited substances has progressively been lowered over the years. These requirements have created tremendous challenges on Southeast Asian countries to reorient and upgrade their laboratory facilities at considerable cost.

5. Information, Education, Communication and Training

Sharing information, education, and advice among stakeholders across the farm-to-table continuum is essential to enable food safety programs to reduce the incidence of food-borne disease. To achieve this strategy, an awareness campaign on food safety, and education materials for consumers and the food industry are needed. This requires that information, communication channels, and approaches be tailored to suit different audiences, especially the high-risk consumers. Additionally, officials involved in national food control programs need ongoing training to keep up with the international advances in science and technology, the general trends in the food trade, and the legislative and other developments such as emerging food safety problems.

6. Compliance by the Food Industry

In addition to the challenges in strengthening the above key components, exporters in the food industry need to comply with the importing country's and buyers' requirements. This challenge is significant because different importing countries have different standards and regulatory approaches, even for the same type of food product with the same health concern, packaging, and processes. Furthermore, food regulations are constantly changing, and multiple levels of regulations are often encountered. In addition, many food industries in Southeast Asia lack in-house controls based on the Hazard Analysis and Critical Control Points (HACCP) system, which is science-based, systematic, and identifies specific hazards and control measures to ensure the safety of the food. In short, the commitment to food safety has not been fully integrated into the operating cultures of many food establishments.

7. International and Regional Trade Frameworks

The use of Codex standards and related texts as reference in international food trade in the framework of the World Trade Organization (WTO) has created an increased interest and participation by its members in the development of Codex standards. However, keeping up with the development of international standards and guidelines such as Codex poses an enormous challenge to Southeast Asian countries.

The WTO Agreements of relevance to food protection measures are the Agreements on

the Application of Sanitary and Phytosanitary Measures (SPS) and the Technical Barriers to Trade (TBT). The SPS and the TBT Agreements complement each other. The SPS Agreement covers relevant laws, decrees, and regulations; testing, inspection, certification, and approval procedures; and packaging and labeling requirements directly related to food safety. The TBT Agreement, on the other hand, covers all technical regulations on traditional quality factors, fraudulent practices, packaging, labeling, etc.

The SPS Agreement reaffirms that no WTO member should be prevented from adopting or enforcing measures necessary to protect human, animal or plant life. It requires that these measures be applied only to the extent necessary, be based on scientific principles, and do not constitute arbitrary or unjustifiable discrimination between members where the same conditions prevail, or as a disguised restriction on international trade. The SPS Agreement encourages members to base their sanitary and phytosanitary measures on existing international standards, guidelines, and recommendations.

The SPS Agreement encourages the international harmonization of food standards. Article 3 of the SPS Agreement requires that WTO members harmonize their national regulations with Codex standards. Codex standards are deemed necessary to protect human health. As long as a country employs these standards, its measures are presumed to be consistent with the provisions of the SPS Agreement. Harmonization with Codex will eliminate the necessity of having to provide justifiable scientific reasons as to why the measures applied are necessary to protect human health. Consequently, Codex standards have become the de facto international standards for food moving in international trade and, to a great extent, a benchmark for national food safety legislation. WTO members are also required to fully participate in, and contribute to, the work of the Codex Alimentarius Commission to the extent possible.

Under Article 5 of the SPS Agreement, WTO members retain the right to take sanitary and phytosanitary measures necessary to protect human health. In doing so, countries can determine the appropriate level of protection (ALOP), which may be higher than international standards provided it is based on scientific risk assessment. These measures should be non-discriminatory, not more trade-restrictive than necessary, and are not maintained without sufficient scientific evidence.

Under Article 4 of the SPS Agreement, where more than one measure is equally effective in achieving a given ALOP, WTO members should accept the sanitary measure used by other members as being equivalent, even if they are different from their own requirements. It is the responsibility of the exporting country to demonstrate that its measures will achieve the ALOP laid down by the importing country.

Article 7 of the SPS Agreement requires WTO Members to notify their trade partners regarding the sanitary and phytosanitary measures they intend to enact, and to give other countries the opportunity to comment to ensure transparency. To facilitate this, each WTO Member is required to appoint one enquiry point to address enquiries regarding sanitary and phytosanitary measures.

In line with its obligations with WTO, national governments need to participate actively in Codex work. National regulatory standards should be established without creating double standards, i.e., one for the export market and one for the domestic market, and where possible, should be harmonized with Codex. Sound scientific data must be generated for risk assessment. In order to do this, sampling and testing capability and capacity, as well as food inspection and certification, must be strengthened. Governments may decide to enter into bilateral and multilateral agreements which recognize the equivalence of their respective food safety measures, to facilitate trade. All these efforts require the full commitment of relevant stakeholders at the national level.

ASEAN INITIATIVES IN FOOD SAFETY

At the regional level, several bodies under the Association of Southeast Asian Nations (ASEAN) are involved in food safety. The ASEAN Expert Group on Food Safety (AEGFS) provides the overall oversight, facilitation, and coordination of food safety activities in ASEAN. The ASEAN Food Safety Improvement Plan (AFSIP) consists of the ASEAN Food Safety Policy and Plan of Action.

Ten program areas have been identified for improvement, namely, legislation, laboratory, monitoring and surveillance, implementation

of food safety systems, food inspection and certification, education and training, information-sharing, research and development, international participation, and consumer participation and empowerment. Of these, five program areas have been identified as priority areas, i.e., legislation, laboratory, food inspection and certification, information-sharing, and consumer participation and empowerment. The Philippines has been appointed as the lead country for the program area on legislation; Malaysia, for food inspection and certification, and monitoring and surveillance; Singapore, for laboratory; Indonesia, for consumer participation and empowerment; and Thailand, for information-sharing through the ASEAN Food Safety Network.

Additionally, the EU-ASEAN Economic Cooperation Program on Standards, Quality, and Conformity Assessment (Food Sector) 2003-2005, under the ASEAN Consultative Committee for Standardization and Quality, consists of four components, namely:

- Strengthening food testing laboratories' capacities
- Strengthening inspection capacities
- Strengthening capacities in food standardization and food legislation information
- Promoting the application of HACCP, GMP and GHP in food SMEs (Small and Medium Enterprises).

The following documents have been drafted: ASEAN Common Food Control Systems; ASEAN Common Principles and Requirements for Food Hygiene; and ASEAN Common Principles and Requirements for the Labeling of Prepackaged Foods.

Under this cooperation, the ASEAN Reference Laboratories Network has been set up for microbiology (Vietnam), pesticide residues (Singapore), heavy metals and trace elements (Thailand), mycotoxins (Singapore), veterinary drug residues (Thailand), and genetically modified organisms (GMOs) (Malaysia). ASEAN initiatives in food safety are aimed at providing training, and technical advice and services to ASEAN member-countries by linking resource and information centers to existing information platforms on networks established under ASEAN, and coordinating inter-laboratory comparisons or proficiency testing in the ASEAN region.

CAPACITY-BUILDING AND TECHNICAL ASSISTANCE

Strengthening the food safety system requires considerable capacity-building, including the development and strengthening of infrastructure. However, the different countries in Southeast Asia vary in their levels of development and capacity to build the required infrastructure. Capacity-building in food safety requires not only the continuous strengthening of infrastructure but also the periodic reorientation to keep up with new issues on food safety, advances in science and technology, international trends and developments, volume of food traded, legislation, and food crises. It is recommended that Southeast Asian countries take advantage of various existing collaborative initiatives undertaken, including those in Codex, ASEAN-wide programs, and the technical assistance available for capacity-building in food safety.

1. The Standards and Trade Development Facility

The Standards and Trade Development Facility (STDF) is a global program in capacity- building and technical assistance to assist developing countries in the establishment and implementation of SPS measures. It was established by the FAO, WHO, OIE (World Organization for Animal Health), WTO and World Bank. The strategic aim is to assist developing countries in enhancing their expertise and capacity to analyze and to implement international SPS standards, improving their human, animal and plant health situation, and thus, the ability to gain and maintain market access. (http://www.standardsfacility.org)

The capacity-building and technical assistance needs of developing countries include:

- Basic food control infrastructure
- National food control strategy
- Food legislation and regulatory framework
- Food inspection and certification
- Analytical capability and capacity
- Risk analysis / Risk assessment

- Food-borne surveillance system
- Participation in Codex
- Implementation of food safety assurance systems by the industry

2. Leadership by FAO and WHO

In 1962, the FAO and the WHO established the Codex Alimentarius Commission (CAC), an intergovernmental body that coordinates all food standardization work. Its purpose is to protect the health of consumers and to ensure fair practices in international food trade. The membership of the CAC consists of 171 members, as well as observers from international scientific associations and food and trade sectors, and consumers.

The word Codex in Latin means "food code". It is a collection of internationally adopted food standards presented in a uniform manner. As of 1 July 2005, Codex had developed 202 commodity standards; 38 commodity-related guidelines and codes of practice; 7 general standards and guidelines on food labeling; 5 general codes and guidelines on food hygiene; 5 guidelines on food safety risk assessment; 14 standards, codes, and guidelines on contaminants in foods; 22 standards, guidelines, and other recommendations on sampling, analysis, inspection and certification procedures; 2,579 maximum limits for pesticide residues covering 213 pesticides; 683 food additive provisions covering 222 food additives; and 377 maximum limits for veterinary drugs in foods covering 44 veterinary drugs.

The 28th session of the CAC, which was held in Rome on July 4-9, 2005 adopted, among others, the following:

- the Code of Practice for the Prevention and Reduction of Aflatoxin Contamination in Tree Nuts
- the Code of Practice for the Prevention and Reduction of Tin Contamination in Canned Foods
- the Code of Practice for Fish and Fishery Products (Section on Aquaculture)
- the Guidelines on Vitamins and Mineral Food Supplements
- the Principles for Electronic Certification.

Some of the current issues being addressed by Codex are the:

- Draft Codex Strategic Plan 2008-2013,
- Proposed Draft Principles for the Application of Traceability/Product Tracing in the Context of Food Import and Export Inspection,
- Proposed Draft Working Principles for Risk Analysis for Food Safety,
- Recommendations on Residues of Veterinary Drugs without ADI/MRLs,
- the establishment of an ad hoc Intergovernmental Task Force on Antimicrobial Resistance, and
- Proposed Draft Revised Code of Ethics for International Trade in Foods.

The FAO and WHO provide scientific advice on food safety to Codex through expert meetings or consultations. It also provides guidance to governments through the development of manuals and guidelines such as the:

- FAO/WHO Guidelines for Strengthening National Food Control Systems
- FAO/WHO Training Package on Codex
- FAO/WHO Manual on Risk Analysis (under development)

In addition, the FAO/WHO Project and Fund for Enhanced Participation in Codex was launched on 14 February 2003 with the aim of increasing the participation of developing countries in Codex. The Fund also intends to enhance the capacity of developing countries to establish effective food safety and quality standards and fair trade practices in the food trade, both in the framework of the Codex Alimentarius and in their own countries. The Fund is expected to run for 12 years, and as of 17 June 2005, 135 countries have become eligible.

In the area of information provision, the FAO—with the cooperation of the relevant international agencies, standard-setting bodies, and national authorities—has developed and maintained an internet-based portal called the "International Portal on Food Safety, Animal and Plant Health". This website enables an authoritative search for current standards, regulations, and other relevant official materials on food safety, animal and plant health (Website: www.ipfsaph.org)

In addition, the International Food Safety Authorities Network (INFOSAN)—developed by the WHO in cooperation with the FAO—aims to promote the exchange of food safety information, and to improve the collaboration among food safety authorities at national and international levels. (Website: www.who.int/foodsafety/fs_management/infosan/en/)

Global and regional forums have also been jointly organized by the FAO and WHO to promote the exchange of information and experiences on food safety issues that are of national and transnational importance. The First FAO/WHO Global Forum on Food Safety Regulators was held in Marrakesh, Morocco on January 29-30, 2002, followed by the Second Regional Conference on Food Safety Regulators, held in Bangkok, Thailand on October 12-14 2004.

A conference of interest to the Southeast Asian region is the FAO/WHO Regional Conference on Food Safety for Asia and Pacific, held in Seremban, Malaysia on May 24-27 2004. This Conference formed part of a series of regional meetings that FAO and WHO jointly organized to meet the needs of member-countries for policy guidance and food safety capacity-building. Some recommendations from this conference relevant to the Southeast Asian countries include the following:

- The large majority of countries of the region must urgently give higher priority to capacity-building to respond to the unacceptable burden of illnesses caused by the consumption of unsafe food.
- Countries are urged to adopt a well-coordinated, multi-sectoral approach to food safety risk analysis.
- Governments should make better use of resources available in the region including, for example, specialized reference laboratories, established surveillance systems and training capacities.
- FAO, WHO, and other concerned international agencies and donors are called upon to support initiatives to address food safety challenges.

CONCLUSIONS

From a national perspective, it is imperative that governments initiate the conduct of a needs assessment for food safety capacity-building which can be implemented at the systems, organizational, and individual levels. Generally, the assessment process requires the following steps: (a) review and analyze the current capacity or situation; (b) define the desired future of the food safety systems; (c) identify gaps in abilities or areas for improvement; (d) prioritize those needs; (e) identify options to address the needs, including assistance from external support; and finally, (f) undertake monitoring and evaluation.

Food safety programs must ultimately be able to prevent exposure to unacceptable levels of food-borne hazards along the entire food chain. They should aim to bring scientific objectivity and balance to food safety initiatives. Innovative approaches must be adopted to solve problems and these initiatives must be in place to advocate and assist in the development of a risk-based, sustainable, and integrated food safety system. The program should also enable the government to effectively and promptly assess, communicate, and manage food-borne risks/crises. All these require concerted efforts by all relevant stakeholders.

All food safety systems have their own constraints, but what must be done is to find ways to work effectively within these constraints and move aggressively to remove those constraints that limit a government's ability to protect the public's health. When it comes to food safety, there is not one single solution; instead, there should be a series of sensible approaches formulated to address the different situations in different countries. It is also important that these efforts be undertaken in a concerted manner, to improve the food safety system.

NOTE ABOUT THE AUTHOR

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