The need of communicating food safety in Indonesia

PURWIYATNO HARIYADI AND RATIH DEWANTI-HARIYADI

Department of Food Technology and Human Nutrition
Faculty of Agricultural Technology
Agricultural University
Bogor, Indonesia

Email: Hariyadi@uwalumni.com

Abstract

Food safety is a critical issue in many countries. Food Safety is closely related to health and productivity of the population and directly associated with competitiveness of food and agricultural products in the international trade arena. Many reported food safety problems in Indonesia are caused by basic errors in preparing foods due to lack of knowledge of basic food safety. Therefore, many food safety problems could have been avoided if those who prepare meals were trained in elementary food safety. Besides developing food safety regulations, government should develop intensive trainings or education for food producers as well as consumers. Communication of food safety to all stakeholders involved – from farm to bale – is essential to ensure that only safe food reaches consumers' tables.

1. Introduction

The International Conference on Nutrition held in Rome in 1992 adopted the World Declaration and the Plan of Action for Nutrition, calling governments and other concerned parties to "adopt" and strengthen comprehensive measures to cover the control of food quality and safety with a view of protecting the health of consumers. However, since obtaining food for a large segment of the population is often still a challenge, the food safety issue is often overlooked.

This condition is also shared by Indonesia. In Indonesia, however, there is a growing recognition of the importance of food safety. This is especially true due to improved education and/or income, increased inflow of information, as well as the development of international trade.

It is realised that assurance of today's consumer demands that his food supply is protected from (i) contamination by pathogenic micro-organisms, chemical residues, and physical hazards; (ii) decomposition; (iii) adulteration; and (iv) deception or fraud in the form of misleading claims and descriptions on labelling or in advertising. Consequently, the national food industry system needs to respond to the consumer demands for food safety. Food industries do not only need to comply with mandatory legislation set by food safety authorities, but also with trade specifications set by trade or industry organisations. To win the

competition in the global market, Indonesian food industries must comply with both; one is their legal responsibility and a prerequisite for market entry, the other is simply commercial reality, survival and development in ever increasingly competitive markets.
Most recently, the challenge is responded by the government of the Republic of Indonesia through the establishment of an independent institution, i.e. The National Drug and Food Agency that reports directly to the president (Formerly a Directorate General of Drug and Food Control existed under the Department of Health). The change is expected to provide better management of food safety, which in turn improves human health. In addition, several other institutions are collaboratively responsible for the supply of safe food, namely the Ministry of Agriculture, the Ministry of Fisheries, the Ministry of Trade and Industry, the Ministry of Interior and the Ministry of State of Research and Technology. Another institution, the Ministry of State of Environment – that issues regulations on environment such as water supplies, treatment of wastewater etc – is also important to support the production of safe agricultural products.

2. Problems of food safety in Indonesia

Many reported food safety problems in Indonesia are caused by basic errors in preparing foods, due to lack of knowledge of basic food safety (Hariyadi and Rimbatmaja, 2003). Although not well documented, available data on food safety problems confirmed this statement. In general, the food safety concerns were associated with lack of knowledge and poor practice, including poor sanitation and hygiene. Especially for processed foods, the problem is magnified by the use of non-food grade additives. The use of illegal colorants such as methanyl yellow and rhomdamine B has been reported in syrup and street food sold in school areas. Chemicals such as boric acid and formaldehyde have been found to be used as food preservative. Furthermore, several food grade additives, such as artificial sweeteners, saccharine and cyclamate, are sometimes used in concentrations exceeding the recommended ones.
Based on epidemiological surveillance data, microbial pathogens are still the leading cause of food borne outbreaks (Kandun, 2000).

Salmonella was most frequently found as causative agent, although serotyping has never been conducted to confirm the outbreak investigation. While data of reported (or recorded) food borne outbreaks showed a low number of cases, (Table 1) it is estimated that the real number is a lot higher because of unreported cases. Among the low number of the outbreaks, it was reported that 33.8% resulted from food catering, 29.2% from home made food, 18.5% was caused by street food, 4.6 % came from processed (fabricated) food while 13.9% was not known (Suklan, 2000).

Table 1. Reported food borne outbreaks in Indonesia 1995-2000

Year	No. of outbreak	No. of cases	No. of death
1995	58	1,919	24
1996	42	3,123	35
1997	31	3,671	6
1998	13	1,078	8
1999	19	1,267	1
2000	2	1,051	0

Source: Suklan, 2000

When the epidemiological data were compared to studies conducted on several agricultural products, primarily horticulture and marine products, it was shown that there was a correlation. *Salmonella* was frequently isolated from both fresh and processed food. Isolation of *Salmonella* or *S. paratyphi* has been reported from local vegetables such as bean sprout and cabbage (Isyanti, 2000), ocean and pond shrimp obtained from Java (Dewanti-Hariyadi *et al.*, 2000), ocean and freshwater fish (Wiryohadi, 1988), and even processed food (Apriyanthy, 2000; Dewanti-Hariyadi and Hapsari, 2000).

A limited number of studies on emerging pathogens in food has also been conducted. Isolation of enterohemorrhagic *E. coli* O157:H7 from local ground beef has been reported (Dewanti-Hariyadi, 2000). However, none of this serotype was found in street (processed) food, and ten clinical isolates of *E. coli* of patients with diarrhea or bloody diarrhea were confirmed as non O157 (Dewanti Hariyadi and Nurairilyasti, 1999). Another emerging pathogen, *Listeria monocytogenes*, was absent in ocean and pond shrimps collected in four

catching places in East and Middle Java. Up to present, isolation *of L. monocytogenes* from food has not been reported.

Another microbial contaminant of concern is mould, particularly its mycotoxin production. A review by Dharmaputra (2000) suggested that aflatoxin was frequently found in large amounts (> 30 ppb). Most maize samples collected from different places in Indonesia contained aflatoxin, with aflatoxin concentrations ranging from ten to several thousands ppb (Tabel 2). Aflatoxin was also frequently found in peanuts, especially during the rainy season. Eighty percent of the peanuts collected in West Java contained more than 30 ppb aflatoxin. Storage and slow drying processes of the grain were thought to be the main cause of the problem However, Dharmaputra also reported that generally the aflatoxin content of soybean was low and fell within the acceptable range.

Table 2. Aflatoxin content of maize collected from different places in Indonesia

Location	No. of samples	Aflatoxin content (ppb)				
		B1	B2	G1	G2	Total
Lampung	15	22-3308	84-3021	528	144	22-6171
Central Java	8	52-4074	49-1015	-	-	52-4873
East Java	11	101-3710	11-1858	101	-	101-5336

Chemical contaminants are also of concern in agricultural product safety. In the 1970s when intensive farming was introduced, the use of pesticides also increased. Studies in the early 1980s on several street foods suggested that there was an alarming amount of pesticide residues in several street food products. Despite the fact that recent data were not available, in general, it can be concluded that pesticide problems are associated with lack of, or low, food safety awareness among farmers and food handlers.

3. Food safety problems of exported foods

To assure fair international trade in the global market, the Codex Alimentarius Commission is working to establish an international consensus on food standards, including food safety standards. The rationale behind the Codex is that the consumers will benefit from international standards because food meeting these standards is safe, wholesome and properly labelled—whether produced domestically or imported. The importance of food safety in international trade is particularly shown by the fact that food safety is appearing frequently on the agendas of international leaders, and it has become central to negotiations with respect to trade over the last decade.

Government, farmers, food handlers and other stakeholders in the Indonesian food industry system need to realise the growing importance of food safety, especially in the international trade arena. Food safety problems have a negative impact on the Indonesian economy, due to the fact that many Indonesian exported foods are detained and/or refused entry by importing countries. Data from FDA's Import Refusal Report (IRR) indicate that during the year 2002 alone, more than 200 cases of imported food from Indonesia were refused to enter into the USA due to food safety reasons (Table 3).

Table 3 indicates that more than 80% of the reasons for refusals for exported food are due to being filthy. "Filthy" has been defined as the condition in which the article appears to consist as a whole or in part of any filthy, putrid, or decomposed substance. As compared to other exporting countries, 80% of the reasons for refusals for exported food due to being filthy is relatively high. During the year 1999 (Table 4) world-wide detention due to the reasons of being filthy was only 24%. This data indicated that (1) the food safety awareness and practices of food handlers in Indonesia are relatively poor as compared to that of other countries, and (2) the food safety problem in Indonesia is mainly attributed to the poor understanding of basic principles of food handling and lack of good practices, especially with respect to sanitation and personal hygiene.

Table 3. Refusal of Indonesian exported foods to entry to United State by US-FDA , 2002 (http://www.fda.gov/ora/oasis)

Month of 2002	Total Cases of trade Refusals	Total Cases of Food Trade Refusals*)	Total Cases of trade Refusals due to filth
January	50	45	40
February	23	18	17
March	27	21	20
April	8	7	3
May	24	22	20
June	12	12	10
July	48	47	43
August	8	8	5
September	21	21	12
October	17	15	11
TOTAL	238	216	181

*) Beside food products, other products rejected are health related products, drugs, antibiotics, etc

Table 4. USFDA World-wide Detentions (Jan. - Jun. 1999)

No	Reasons of Rejection	Frequency (%)
1	Filth	24
2	Microbial contamination	16
3	Food additives	10
4	Pesticide residue	11
5	Labelling	11
6	Low acid canned food	16
7	Others	9
8	Heavy metal	2
9	Mould	1

4. The Need of Communicating Food Safety

Many of the reported food safety problems in Indonesia are due to mishandling of food, during the course food continuum "from farm to table". Especially food handlers have a very significant role in managing food safety. As poor sanitation and hygienic practices contribute to unsafe food, it is important to raise producers' (industries, farmers, etc)

awareness on food safety. This can be done by regular education or training. For small to medium scale food processing industries, the training should also include knowledge of illegal additives.

It is also necessary to enforce all available regulation, by communicating food safety, including (i) disseminating information on the legislation to producer and consumer, and (ii) by penalising those who did not comply with the regulation. Communicating food safety matters to consumer is also important to improve consumers' knowledge, so that consumers will be more informed about hazards associated with food.

The need of communicating food safety is apparent, especially focusing on training programs that include, but are not limited to the following:

- The importance of good hygiene
- The impact of poor personal cleanliness and unsanitary personal practices on food safety.
- The importance of hand washing – after each absence from the workstation, after using the bathroom, before and after eating, and before commencing work – on food safety
- The technique of proper hand washing techniques, that include: hand washing with warm water (if available); proper use of soap; and thorough scrubbing (including cleaning under finger nails and between fingers), rinsing, and drying of the hands.
- The importance of using sanitation facilities. All employees should be encouraged to use on-site latrines and to avoid eliminating wastes outside of these facilities. The use of well maintained sanitation facilities for waste elimination helps to reduce the potential for cross-contaminating fields, produce, other workers, and water supplies, and increases the likelihood that employees will wash their hands after using such facilities.
- The important role of people (employees) in achieving sanitation and hygienic standards. This should be emphasised, since employees are not machines but more important than machines. Respect their individuality and build on their strengths. In a competitive business environment, well informed employees are the most important assets. If you take care of them, they will take care of your business interests.

5. Conclusions

Effective communication of food safety needs to be strategically designed to increase the awareness of all stakeholders involved in managing food safety. Adopting the “from farm to table” food safety approach and involvement of all parties; starting from farmers, growers, handlers, and consumers, are critical to food safety. The role of food industry and the government sector is also critical.

The importance of food safety in health and economic development of the nation needs to be realised fully not only by industry and consumers, but also by the government. Considering the ”from farm to table” approach, many government agencies need to be actively involved in food safety programs, especially in providing a framework for maintenance of food safety across the food continuum "from farm to table". This includes development and/or enforcement of food safety laws, regulations, directives, standards, policies and procedures form a foundation for food control systems. Due to the limited resources of the government, technical and financial assistance from international agencies (such as FAO, WHO and WTO) are needed to develop such systems.

Selected References

Apriyanthy, N. (2000). Microbiological quality of functional drinks. Research Report (Skripsi). Department of Food Technology and Human Nutrition, Faculty of Agricultural Technology, Institut Pertanian Bogor (in Bahasa Indonesia)

Dewanti-Hariyadi, R. (2000). Isolation of *Escherichia coli* O157:H7 from local ground beef. Presented at the National Seminar on Current Issues on Food Safety and Risk Assessment, ILSI SEA, Bogor Agricultural University, Ministry of Health, Jakarta Nov 27-28, 2000.

Dewanti-Hariyadi, R. and Nurairilyasti, (1999). Screening of *Escherichia coli* O157:H7 using agglutination test. Seminar Proceeding of Indonesian Association of Food Technologist Annual Meeting, Jakarta, October 11-12, 1999 (in Bahasa Indonesia)

Dewanti-Hariyadi, R. Suliantari and Fardiaz, S. (2000). Contamination profiles of human pathogens in shrimps obtained from ocean and ponds of Java. Presented in Research Coordination Meeting on Determination of Profiles of Human Bacterial Pathogens in Foods for Export by Introduction of Quality Assured Microbiological Assays. International Atomic Energy Agency and Center for Assessment of Traditional Food, IPB. Bogor, October 16-20, 2000.

Dharmaputra, O.S. (2000). Mycotoxins in Indonesian foods and feeds. Presented at the National Seminar on Current Issues on Food Safety and Risk Assessment, ILSI SEA, Bogor Agricultural University, Ministry of Health, Jakarta Nov 27-28, 2000.

Hapsari, D. and Dewanti-Hariyadi. (2000). Identification and microbiological safety analysis of commercial ginger drinks distributed in Bogor area. Seminar Proceeding of Indonesian Association of Food Technologist Annual Meeting, Surabaya October 10-11, 2000 *(*in Bahasa Indonesia)

Hariyadi, P and Rimbatmaja, R. (2003). Development Of Food Safety Communication Strategy. National Consultant Report to the Directorate Food Safety Surveillance and Education, National Drug and Food Agency, Republic of Indonesia

Isyanti, M. 2001. Microbiological quality of vegetables from wet market of Bogor area. Research Report (Skripsi). Department of Food Technology and Human Nutrition, Faculty of Agricultural Technology, Institut Pertanian Bogor (in Bahasa Indonesia)

Kandun, I.N. (2000). Foodborne disease in Indonesia: epidemiologic surveillance and its control. Presented at the National Seminar on Current Issues on Food Safety and Risk Assessment, ILSI SEA, Bogor Agricultural University, Ministry of Health, Jakarta Nov 27-28, 2000.

Suklan, H. (2000). Foodborne Outbreaks in Indonesia. Directorate General of PPM&PL, Ministry of Health, Republic of Indonesia.

Wiryohadi. (1985). Microbiological and chemical quality of various fish in Bogor area. Research Report (Skripsi). Department of Food Technology and Human Nutrition, Faculty of Agricultural Technology, Institut Pertanian Bogor (in Bahasa Indonesia*)*

Trade Barriers to Products of Biotechnology: An American Perspective

RON GASKILL

Director of regulatory relations
American Farm Bureau Federation, Washington D.C., USA

Abstract

Biotechnology, the process of copying the DNA of a preferred trait and inserting it into the DNA of a host plant so the preferred trait is replicated in subsequent generations of the host plant, holds great promise to improve the production of food, industrial products and pharmaceuticals. Innovative biotechnology will not only allow us to produce more and better food for a hungry world, it will also allow us to produce consumer and industrial products from renewable ingredients with greater care to the environment.

Background

Like people everywhere, Americans are concerned that the food they eat is not harmful to them and that it is produced in environmentally friendly ways. Through vast experience, Americans generally have developed a confidence in local, state and national regulatory authorities to provide reasonable assurance that the products used and consumed in the United States, particularly those products made here, are free of unhealthy substances and if not, that appropriate messages are provided to inform them of possible concerns. Confidence in the regulatory and oversight system allows Americans to embrace new ideas and new technologies quite easily, for they are comfortable that unhealthy impacts of products will likely be discovered before products are given permission to be commercialised.

And once products are commercialised, the level of review by manufacturers, government agencies and other public and private institutions (such as research colleges and universities) is significant. America's product liability laws alone are so generous to persons who are harmed by faulty products that it is many times less costly for manufacturers to undertake thorough and honest pre- and post-commercialisation testing to discover problems and invoke remedies before they are discovered by others.

America's confidence in the process of scientific review is the basis for its view on trade and trade barriers to products of genetic modification.

Americans accept that there are extremely few absolute certainties, and that life itself is subject to inherent risks. We believe that all we can do is to minimise risks to reasonable levels, but that elimination of any or all risk is inherently impossible.

Confidence in scientific discovery is embodied in World Trade Organisation agreements. This is because agreements, to the extent possible, should be fair and unbiased to all who have agreed. As members of the WTO, the European Union, the United States and all other members have agreed on a system for allowing the results of scientific discovery to determine the appropriate levels of protections that each is allowed to establish without unreasonably impacting the trade of other members, and the manner in which such protections are to be installed. For the most part, these agreements have served WTO members well since the end of World War II.

Biotechnology and the EU trade barrier

The United States strongly believes that competent scientific review and discovery in many different countries have concluded repeatedly that products of biotechnology are not substantially different from their traditionally produced counterparts. U.S. government agencies have reviewed products of biotechnology and concluded that there is no health-related reason to withhold such products from the commercial marketplace or to require that product manufacturers include messages on their products that caution product users about potentially unhealthy effects. The U.S. Environmental Protection Agency likewise reviewed test data and, to date, has not seen evidence to require the withdrawal of biotech products from the commercial market due to negative environmental impacts. The body of scientific evidence overwhelmingly favours biotechnology.

Prior to 1998, the United States and the EU enjoyed strong trade relations for many products, including U.S. corn. The United States sold more than U.S.$300 million annually of corn to the EU, some of it biotech. Suddenly, however, in 1998 the EU halted the import of all biotech corn from the United States. The effect was to halt shipments of

all corn, because biotech and traditional corn cannot be separated in the large-volume grain storage and handling systems that are prevalent in the United States and other major corn exporting countries.

Imposition of the moratorium was the EU's sudden response to unsubstantiated hysteria that was created by EU consumers and environmental groups, and which gained traction with the general public. Without using the results of available scientific risk assessment on products of biotechnology, which the WTO Agreement on Sanitary and Phytosanitary Measures requires as the basis for the establishment of protective measures, the EU in essence took a knee-jerk, political reaction to the matter and summarily cut off trade.

Since 1998, the United States and the EU have consulted on ways in which the moratorium could be lifted. But after five years of repeated, unkept promises by the EU to lift the moratorium, with U.S. agriculture remembering another recent trade dispute with the EU in which the EU was found to be non-compliant by the WTO but from which the EU did not change its import policy on U.S. beef products, and with several EU member countries talking vigorously about new rules on environmental liability before the moratorium would be lifted, the United States finally lost patience and elected to use the WTO dispute settlement process as the means with which to adjudicate the controversy.

During the five years of the moratorium, competent new scientific discovery in the EU and elsewhere has continued to support the safety of biotechnology. With no scientific justification, the moratorium is increasingly inconsistent with the WTO. Further, the United States is closely monitoring the EU's enactment of labelling and traceability rules for consistency with the WTO agreement. The United States will not accept labelling and traceability rules as a solution to the moratorium when such rules, as currently proposed, are themselves even more inconsistent with the WTO agreement than the moratorium.

The United States truly wants trade peace with the EU. But as long as the EU uses political motivation rather than scientific discovery as the basis for creating new rules that have the effect of impeding trade, the United States and many others in the international community will push

back. The example for all countries from this biotech case, is how *not* to establish rules for protection when the threat of danger or harm is not real. Several other countries established their rules for products of biotechnology, and the United States didn't file a single WTO complaint against any of them because they followed the international rules of trade and health protection, even if the United States did not agree with their rules.

With careful consideration, all countries will embrace biotechnology as a tool for advancing the human experience. We hope that time is not too far in the distance.