



**Asia-Pacific  
Economic Cooperation**

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## **Building Capacities in Food Safety Risk Analysis Approaches for Regulators and SMEs**

Submitted by: International Life Sciences Institute (ILSI)



**Workshop on Educating SMEs on Food  
Safety Standards  
Surabaya, Indonesia  
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## Building Capacities in Food Safety Risk Analysis

*Approaches for Regulators and SME's*

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APEC Food Safety Seminar  
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The International Life Sciences Institute (ILSI) is a nonprofit, worldwide organization whose mission is to provide science that improves public health and well-being.

Food Safety

Risk Assessment

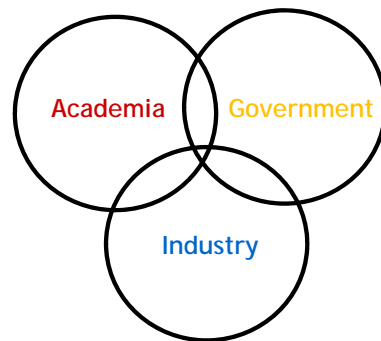
Nutrition

Environment



## Established 1978 ...

ILSI provides a neutral and strategic platform for stakeholders' dialogues, scientific updates, and consensus forged through **tripartite collaboration**



Network of over 3,000 scientists from all stakeholder sectors to collaborate and facilitate programs



## ILSI's Global Network

- ILSI Argentina
- ILSI Brasil
- ILSI Europe
- ILSI ILSI Focal Point China
- ILSI India
- ILSI Japan
- ILSI Korea
- ILSI Mexico
- ILSI North Africa and Gulf Region
- ILSI North America
- ILSI North Andean
- ILSI South Africa
- ILSI South Andean
- **ILSI Southeast Asia Region**
- ILSI Health & Environmental Sciences Institute

### ILSI Research Foundation

- Center for Risk Science Innovation & Application (*RSI*)
- Center for Environmental Risk Assessment of GM Crops (*CERA*)
- Center for Integrated Modeling of Sustainable Agriculture & Nutrition Security (*SIMSAN*)
  - Center for Health Promotion (*CHP*)
  - ILSI International Food Biotechnology Committee (*IFBiC*)



## ILSI ... A Global Network



Regional Office – Singapore

5 Country Committees

- Australasia, Indonesia, Malaysia, Philippines and Thailand

- New CC : Vietnam (under discussion)



## Contribution of SMEs in ASEAN

### SMEs form the backbone of the ASEAN economy<sup>1</sup>

- Comprise **90%** of all types of enterprises within individual ASEAN countries
- Provide **75-95%** of employment opportunities
- Contribute to significant share of national exports, for eg. Indonesia (11%) Malaysia (15%), Singapore (16%), Thailand (10-26%), Vietnam (20%)

- F&B manufacturing sector are a significant proportion of the total SMEs in many ASEAN countries
  - Malaysia<sup>2</sup>: **15%**; Thailand<sup>3</sup>: **28%**; Vietnam<sup>4</sup>: **4%**
- Largest proportion of the food and beverage manufacturing sector in many ASEAN countries
  - Malaysia<sup>2</sup>: **90%**; Philippines<sup>5</sup>: **34%**; Thailand<sup>3</sup>: **78%**



1. Tambunan, 2008; 2. Saleh & Ndubisi, 2006; 3. Chittithaworn et al, 2011; 4. Tran, Le & Nguyen, 2007; 5. Aldaba 2008;

## Challenges Faced by SMEs in ASEAN

### Overall Challenges Faced by Most SMEs in ASEAN<sup>1</sup>:

- Limited capital and access to credit
- Lack of modern technologies and human resources
- Difficulty in procurement of raw materials  
(price, supply, and quality)
- Lack of access to information (market, price, etc.)
- Lack of infrastructures, especially in rural areas
- Difficulty in complying with regulations



1. Tambunan, 2009

## Challenges Faced by SMEs in ASEAN

How do these challenges impact SMEs in the food sector to ensure food safety and comply with food safety requirements ?



1. Tambunan, 2009

## Food Safety Challenges for SMEs in ASEAN

- Limited capital and access to credit
- Lack of modern technologies and human resources
- Difficulty in procurement of raw materials (price, supply and quality)



## Food Safety Challenges for SMEs in ASEAN

- **Limited capital and access to credit**
  - SMEs are resource constrained and investment in food safety systems can be a significant cost for many of them
- **Lack of modern technologies and human resources**
  - SMEs do not always have dedicated staff working on food safety nor Access to latest technological innovation to latest technological innovations that can improve food safety or more advance analytical testing equipment



## Food Safety Challenges for SMEs in ASEAN

- **Difficulty in procurement of raw materials (price, supply and quality)**
  - SMEs may be forced to use lower quality or substandard raw ingredients if stable supply of affordable, quality ingredients are unavailable



## Food Safety Challenges for SMEs in ASEAN

- **Lack of access to information (market, price, etc.)**
- **Lack of infrastructures, especially in rural areas**
- **Difficulty in complying with regulations**



## Food Safety Challenges for SMEs in ASEAN

- **Lack of access to information (market, price, etc etc.)**
  - Lack of information about the importance of food safety may influence the decision whether to invest in food safety systems
  - Lack of information about standards and regulations may limit expansion (especially to other markets) and reduce compliance within countries



## Food Safety Challenges for SMEs in ASEAN

- **Lack of infrastructures, especially in rural areas**
  - Premises and equipment for food production (e.g. hygienic design) and transportation of food to retail premises (e.g. maintaining cold chain) may not always be ideal
- **Difficulty in complying with regulations**
  - Food standards that are too restrictive
  - Too many standards and regulations for food safety may reduce compliance as cost can get too high





## Food Safety Challenges for SMEs in ASEAN

How Do We Address these Challenges?



## Food Safety Challenges for SMEs in ASEAN

Utilization of Risk Analysis/  
Risk Assessment as Science-based  
Tool to Build Food Safety Capacity



## What is Risk Analysis?

- A systematic, transparent, evidence-based approach to food safety control
- Aims to *maximize* public health protection while *minimizing* impact on food supply, food trade and ultimately *food security*
- The framework helps to prioritize and address food safety *RISKS* rather than *HAZARDS*
- Food control measures are to be primarily based on the outcomes of *scientific risk assessment* whenever possible



## Risks vs Hazards?



Hazard



Risk

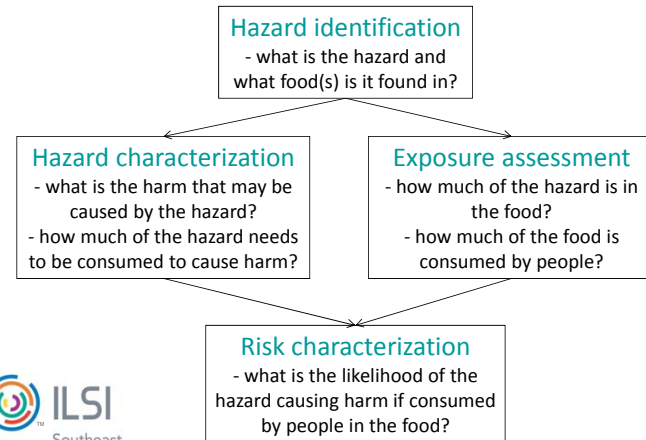


## Components of Risk Analysis



Source: FAO/WHO  
(<http://www.who.int/foodsafety/micro/riskanalysis/en/>)

## Risk Assessment



## Risk Management

### Actions that are taken by the different responsible stakeholders to manage food safety risks

- **Government Authorities**
  - Determine, in consultation with other stakeholders, the appropriate level of protection (ALOP) or acceptable level of risk to a society
  - Implement specific policies and measures to achieve the ALOP
- **Food Producers**
  - Implement necessary food safety procedures and systems (eg. GAP, GMP, HACCP, etc.), which ultimately helps to achieve the ALOP



## Risk Communication

Interactive exchange of information about food safety risks between risk assessors, risk managers, and all other interested stakeholders

- **Risk communication strategies determined by**
  - who is the target audience for the communication?
  - what kind of information are needed by the target audience?
  - when should such communication be done? (crisis vs 'peace time')



## Why is Risk Analysis Relevant to Food Safety for SMEs?

Food safety standards set based on risk analysis are more likely to be achievable by SMEs because:

- Standards are only set if they help address real food safety **RISKS** and not based on general perceptions and concerns about **HAZARDS**, reducing overall cost of compliance for SMEs
- Transparent process and interactive communication allows for SMEs to understand the food safety problems and also provide their feedback to find feasible solutions in view of resource and technology limitations



## Why is Risk Analysis Relevant to Food Safety for SMEs?

Other benefits to SMEs for food safety controls based on risk analysis

- Resources freed up could be used by SMEs to invest in food safety system and for improving technology and infrastructure
- Food safety policy makers can target capacity building efforts to specific SMEs affected by identified food safety risks
- Well managed food chain also increases supply of good quality raw materials for food production at lower cost



## Challenges for Implementing Risk Analysis in ASEAN?

Although food safety controls based on risk analysis would be an ideal situation, many challenges still exist for ASEAN

- Lack of **legal frameworks** in some countries that incorporate risk analysis principles to guide development of food control systems
- Lack of **awareness** among higher level policymakers or political leaders on the importance of risk analysis for food safety
- Lack of **technical human resources** to implement food safety based on risk analysis principles, e.g. expertise in risk assessment
- lack of **access to scientific data** to undertake risk assessments, where either data needs to be developed or already exists but not shared



\* Risk analysis can still be implemented with existing food laws but it would help if legal mandate is provided to facilitate implementation

## Building Risk Analysis Capacities in ASEAN

ILSI SE Asia Region has been supporting infrastructure and capacity building for implementing risk analysis in ASEAN countries, including

- ASEAN Food Safety Standards Harmonization Working Group  
( yearly workshop for 10 ASEAN food safety authorities since 2001 )
- ASEAN Food Safety Standards Database
- Project on Strengthening ASEAN Risk Assessment Capacity  
Food Consumption Data/ Exposure Assessment
- Project on ASEAN Risk Profiles for Contaminants in Food
- Asian Conference Series on Food and Nutrition Safety (ACFNS)  
(every 4 year in an Asian country since 1990, jointly with host country's food safety authorities. Scienti updates, Identify gaps, emerging and priority issues, and share best practice. 6<sup>th</sup> ACFNS Nov 2012 in S'pore )



## ASEAN Food Safety Standards Database

- Collation of **ASEAN Food Safety Standards** for **food additives** in a single repository in same language (English) that can be accessed for information (may reduce SME information gap for market access and compliance)
- Primary purpose is however for ASEAN food safety authorities to use for identification of food additive standards that can be **harmonized** in the region **based on risk analysis approach** (and with **International Standards** eg. Codex GSFA)
- Officially adopted by ASEAN Consultative Committee on Standards and Quality (ACCSQ) Prepared Foodstuff Product Working Group (PPFWG) at the 15<sup>th</sup> PFPWG Meeting in Yogyakarta, Indonesia

A screenshot of the ASEAN Food Safety Standards Database website. The page features a navigation menu with 'Home', 'About ILSI', and 'Contact Us'. The main content area is titled 'About the ASEAN Food Safety Standards Database' and includes a map of Southeast Asia. A sidebar on the left contains links for 'Members', 'Administrators', and 'Members Login'. A red arrow points to a 'Disclaimer' link at the bottom left of the page. The footer contains contact information for ILSI Southeast Asia Region and a list of participating countries: Brunei Darussalam, Indonesia, Malaysia, Philippines, Thailand, Cambodia, Laos, Myanmar, Singapore, and Vietnam.

Disclaimer

Participating Countries

|                   |           |
|-------------------|-----------|
| Brunei Darussalam | Cambodia  |
| Indonesia         | Laos      |
| Malaysia          | Myanmar   |
| Philippines       | Singapore |
| Thailand          | Vietnam   |

Home About ILSI Contact Us

**ILSI** ASEAN Food Safety Standards Database  
International Life Sciences Institute  
Southeast Asia Region

Members  
Database Search  
Profiles  
Members Login  
Hi demo, Log out

**Search**  
[PLACEHOLDER TEXT]: Describe the search function here

**Additives** (Optional: Select one)

**Food Categories** (Optional: Select one)

**Countries** (Optional: More (CTRL) to select multiple)

Select All | Unselect All

Search

*Organized according to functional classes*

*Select food category*

*Select food additive*

*Select country*

Home About ILSI Contact Us

**ILSI** ASEAN Food Safety Standards Database  
International Life Sciences Institute  
Southeast Asia Region

Members  
Database Search  
Profiles  
Members Login  
Hi demo, Log out

**Search**  
**Search Criteria**  
Food Categories: ALL  
Additive/Substance: Preservative/Benzoates  
Countries: ALL

**Legend**  
GCSFA value: Dark blue (GCSFA), Dark blue with GSF (GCSFA + GSF), Dark red (Not GCSFA), Green (Harmonized with GCSFA), Orange (Harmonized with GCSFA and ASEAN/other), White (Not harmonized)

**Results**  
Food No./Description

| Food No./Description  | GCSFA (ppm) | Brunei           | Cambodia        | Indonesia       | Laos             | Malaysia        | Myanmar         | Philippines     | Singapore | Thailand        | Vietnam         |
|---|-------------|------------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|-----------|-----------------|-----------------|
| 01.0.0.0 DAIRY PRODUCTS AND ANALOGUES, EXCLUDING MILK AND DAIRY-BASED DRINKS                          | 100 ppm     | 200 ppm (+10ppm) | 80 ppm (+10ppm) | 80 ppm (+10ppm) | 200 ppm (+10ppm) | 60 ppm (+10ppm) | NP              | NP              | NP        | NP              | NP              |
| 01.1.0.0 MILK AND BUTTERMILK (PLAIN)  | 50 ppm      | 60 ppm (+10ppm)  | 60 ppm (+10ppm) | 60 ppm (+10ppm) | 60 ppm (+10ppm)  | 60 ppm (+10ppm) | 60 ppm (+10ppm) | 60 ppm (+10ppm) | NP        | 60 ppm (+10ppm) | 60 ppm (+10ppm) |
| 01.1.1.0 MILK (PLAIN)   | NP          | 80 ppm           | 80 ppm          | 80 ppm          | 80 ppm           | 80 ppm          | 80 ppm          | 80 ppm          | NP        | 80 ppm          | 80 ppm          |
| 01.1.1.1 Milk (plain)   | NP          | NP               | NP              | NP              | NP               | 80 ppm          | NP              | NP              | NP        | NP              | NP              |
| 01.1.1.2 Buttermilk (plain)   | NP          | NP               | NP              | NP              | NP               | 80 ppm          | NP              | NP              | NP        | NP              | NP              |
| 01.2.0.0 DAIRY-BASED DRINKS, FLAVOURED AND/OR FERMENTED MILKS (PLAIN)                                 | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.2.0.0 DAIRY-BASED DRINKS, FLAVOURED AND/OR FERMENTED MILKS (PLAIN), EXCEPT FERMENTED MILKS (PLAIN) | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.2.1.0 FERMENTED MILKS (PLAIN)  | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.2.1.1 Fermented milk (plain), not heat-treated after fermentation                                  | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.2.1.2 Fermented milk (plain), heat-treated after fermentation                                      | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.2.2.0 RENNED MILK (PLAIN)  | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.3.0.0 Condensed milk and analogues (plain)   | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.3.1.0 CONDENSED MILK (PLAIN)   | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.3.2.0 BEVERAGE WHITENERS   | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.4.0.0 Cream (plain) and the like   | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.4.1.0 PASTEURIZED CREAM (PLAIN)  | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |
| 01.4.2.0 STERILIZED AND UHT CREAMS, WHIPPED CREAMS, AND OTHER DAIRY PRODUCTS                          | NP          | NP               | NP              | NP              | NP               | NP              | NP              | NP              | NP        | NP              | NP              |

*Indicates specific notes/conditions of use (roll over to reveal)*

*Arrows indicate whether lower or higher than GCSFA value*

*Red indicates all countries not harmonized with GCSFA*

*Blue indicates some (not all) countries harmonized with GCSFA*

*Green indicates all countries harmonized with GCSFA*



ILSI ASEAN Food Safety Standards Database  
International Life Sciences Institute  
Southeast Asia Region

Members  
Database Search

Search  
Search Criteria  
Food Categories: DAIRY PRODUCTS AND ANALOGUES, EXCLUDING PRODUCTS OF FOOD CATEGORY 02.0  
Countries: ALL

Legend  
 ■ GSFA Value ■ Same with GSFA ■ Differs from GSFA ■ Harmonised with GSFA ■ Harmonised across searched countries ■ No data

Results  
 Additives: Brunei Cambodia Indonesia Laos Malaysia Myanmar Philippines Singapore Thailand Vietnam

01.0.0.0 DAIRY PRODUCTS AND ANALOGUES, EXCLUDING PRODUCTS OF FOOD CATEGORY 02.0

| Additive  | Brunei  | Cambodia         | Indonesia       | Laos            | Malaysia         | Myanmar         | Philippines | Singapore | Thailand | Vietnam |
|---|---------|------------------|-----------------|-----------------|------------------|-----------------|-------------|-----------|----------|---------|
| Acidity regulator/Acetic acid, glacial                                  | GMP     | NP               | NP              | NP              | NP               | NP              | NP          | NP        | NP       | NP      |
| Acidity regulator/Ascorbic acid, L-                                     | GMP     | NP               | NP              | NP              | NP               | NP              | NP          | NP        | NP       | NP      |
| Antioxidant/Tocopherols concentrated, mixed                             | 100 ppm | NP               | NP              | NP              | NP               | NP              | NP          | NP        | NP       | NP      |
| Emulsifier/Acetic and fatty acid esters of glycerol                     | GMP     | NP               | NP              | NP              | NP               | NP              | NP          | NP        | NP       | NP      |
| Flour treatment agent/alpha-Amylase from <i>Aspergillus oryzae</i> var. | GMP     | NP               | NP              | NP              | NP               | NP              | NP          | NP        | NP       | NP      |
| Preservative/Benzoates  | 100 ppm | 200 ppm (-10ppm) | 60 ppm (-40ppm) | 80 ppm (-10ppm) | 200 ppm (-10ppm) | 60 ppm (-40ppm) | NP          | NP        | NP       | NP      |

Orange indicates harmonized across ASEAN countries

Display all additives allowed for the food category

## ASEAN Food Consumption Data

- Food consumption data is a key component required for calculating **dietary exposure** to chemicals and microorganisms in food
- National food consumption data already exists in “most” ASEAN countries but are not always available or used for **food safety risk assessment purposes**
- ILSI Southeast Asia Region collaborated with ASEAN Expert Group on Food Safety (AEGFS), Malaysian Ministry of Health (lead country), FAO and WHO to help gather food consumption data in ASEAN countries to be used for risk assessment purposes



## ASEAN Food Consumption Data

Workshop on Food Consumption Data and Exposure Assessment organized in 2011 in Kuala Lumpur, Malaysia, which gathered experts and ASEAN authorities' personnel in food consumption data and food safety to identify common areas of need, resulted outcome in

- Development of draft food category system for a common ASEAN Food Consumption Database
- Formation of an electronic working group to continue developing the ASEAN Food Consumption Database
- 2<sup>nd</sup> workshop to be held last quarter 2013 to initiate the guidance document development



## ASEAN Risk Profiles for Contaminants

Objectives of the documents are to serve as a guide for

- 1) Further prioritization of contaminants of concern in ASEAN region
  - 2) Identification of scientific knowledge gaps;
  - 3) Identification of need for a more comprehensive risk assessments
  - 4) Harmonization of existing food safety standards
  - 5) Establishment of new standards as and when appropriate
- To be developed jointly by regional academic scientists with specific expertise in either risk assessment methodologies or on particular expertise
  - Initial documents to focus on mycotoxins and microbiological pathogen hazards



## ASEAN Risk Profiles for Contaminants

To gather available existing scientific and relevant information on hazard/food contaminants of concern identified by ASEAN food safety authorities, as a preliminary risk assessment activity

Develop case studies reviewing food descriptions used in national food contaminant standards in ASEAN



## Conclusions

- Food safety control systems based on risk analysis principles help to create a conducive environment for the operation of food and beverage SMEs to produce safe foods
- Lower production costs for safe food by SMEs combined with continuous technical improvements will allow for sustained growth and expansion to other markets (including within the ASEAN Economic Community)
- Capacity to implement risk analysis for food safety among ASEAN countries still needs to be developed further





Thank you

[www.ilsa.org/SEA\\_Region](http://www.ilsa.org/SEA_Region)



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