

## RISK ANALYSIS FOR FOOD SAFETY IN THAILAND



**Mr. Mongkol Chenchittikul**  
 Director of Bureau of Quality and Safety of Food  
 Department of Medical Sciences, Ministry of Public Health, Thailand  
**Dr. Songsak Srianjata**  
 Senior Advisor, Food Safety  
 Institute of Nutrition, Mahidol University

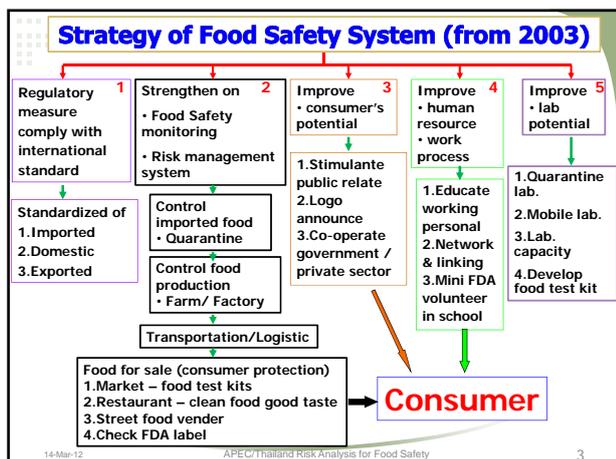
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## FOOD SAFETY IN THAILAND



- ▣ Since 2003, Food Safety Policy and implementation have been campaigned in Thailand
- ▣ Food Safety strategies and road map covering the food chain were developed
- ▣ In 2008, Law to establish National Committee on Food was issued

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### In 2008, Law to establish National Committee on Food has been issued. (National Committee on Food Act 2551)

**To coordinate the activities:**

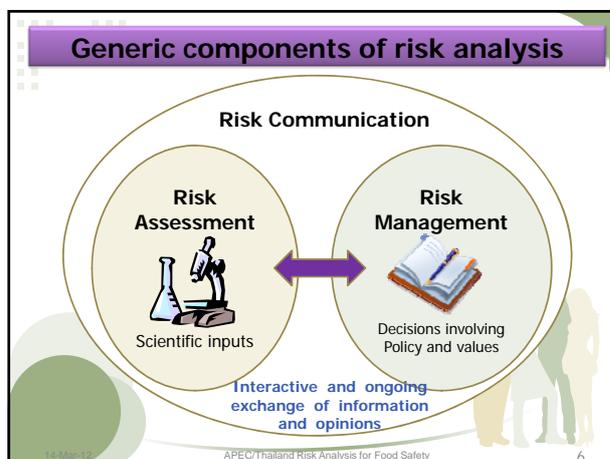
1. Food quality
2. Food safety
3. Food security
4. Food education

**Chair by the prime minister**  
**Food safety based on risk analysis**

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## Risk Analysis Activity

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### Benefits for national governments of using food safety risk analysis

- ☑ Risk Analysis allows likely costs of implementation and compliance to be compared with expected benefits.
- ☑ Supports setting research priorities of food safety problems.
- ☑ Supports food safety regulators for effective decision-making for food safety management

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### Food chemical risk assessment in Thailand

Year	Host	Risk	Hazard	Commodity
2003	ACFS	Chemical risk Assessment	3- MCPD	Seasoning sauce
2003	ACFS	Chemical risk Assessment	sulfure dioxide	Food
2003	ACFS	Chemical risk Assessment	ochratoxin	Food
2003	ACFS	Chemical risk Assessment	cadmium	Food
2007	Thai FDA	Chemical risk Assessment	acrylamide	Food
2011	Thai FDA	exposure Assessment	Sodium benzoate	Ready to eat food packed in plastic bag

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### Food microbiological risk assessment in Thailand

Year	Host	Risk	Hazard	Commodity
2002	ACFS	Exposure Assessment	<i>V. parahaemolyticus</i>	Shrimp
2003	ACFS	Microbiological Risk Assessment	Salmonella	Chicken
		Microbiological Risk Assessment	<i>C. jejuni</i>	Chicken
		Microbiological Risk Assessment	<i>V. parahaemolyticus</i>	Crab meat
2005	ACFS	Exposure Assessment	N/A	Consumption
2006	ACFS	Microbiological Risk Assessment	<i>L. monocytogenes</i>	Chicken
	BIOTEC	Microbiological Risk Assessment	<i>Staph. aureus</i>	Nham Muu
2008	BIOTEC	Microbiological Risk Assessment	<i>V. parahaemolyticus</i>	Shrimp
	BIOTEC	Microbiological Risk Assessment	Salmonella	Vegetable
2009	BIOTEC	Hazard Characterization	Salmonella + <i>V. parahaemolyticus</i>	N/A
2010	Thai FDA	Microbiological Risk Assessment	<i>B. cereus</i>	Milk powder

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### Activity :

- Identification of the responsible organization for risk assessment, risk management, and risk communication
- Draw risk assessment road map and frame work
- Expert list
- Priority areas
- Capacity building

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### Risk Analysis Agencies

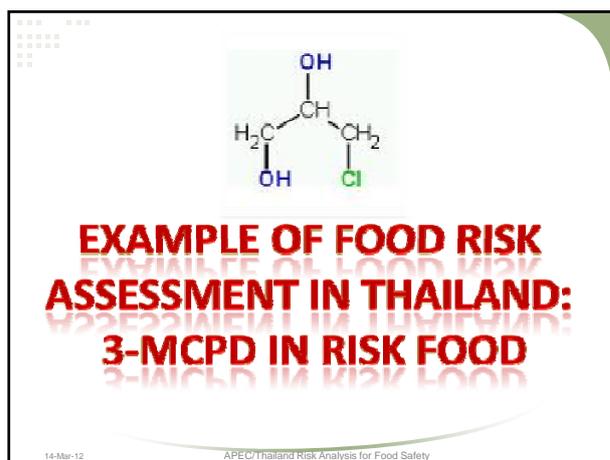
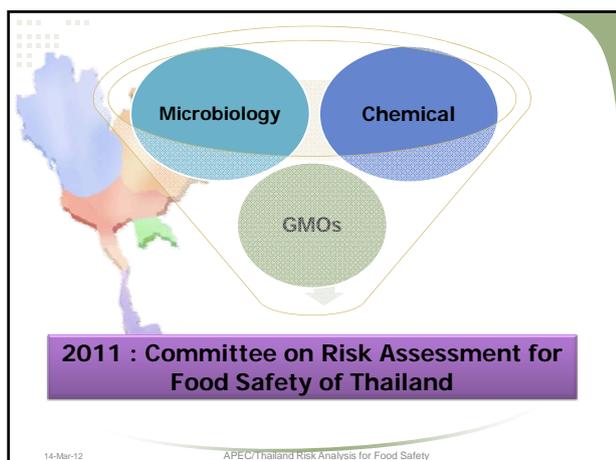
Organization	Role
Thai FDA	Risk manager, Risk communicator
ACFS	Risk manager, Risk communicator
DMSc	Risk assessor, Risk communicator
Institute of Nutrition	Risk assessor, Risk communicator
Knowledge Network Institute of Thailand	Risk assessor, Risk communicator
Some Universities	Risk assessor, Risk communicator
FSOC	Risk communicator

**Abbreviation :** FDA = Food and Drug Administration, ACFS = National Bureau of Agricultural Commodity and Food Standards, DMSc = Department of Medical Sciences, FSOC = Food Safety Operation Center

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### Toxicity of 3-MCPD

- A long-term study indicates that Carcinogenicity of rat's kidney relates to the quantity of exposure to 3-MCPD. However, 3-MCPD is not a genotoxic substance.

### The 3-MCPD regulatory levels

Organizations/Countries	
Scientific Committee on Food (SCF)	< 10 ppb
EU	≤ 20 ppb
Food Advisory Committee (FAC)	< 10 ppb
USA (only acid-HVP)	≤ 1 ppm
Canada	≤ 1 ppm
Australia and New Zealand	≤ 20 ppb
Malaysia	≤ 20 ppb
Codex and Japan	N/A

### Objectives

- To obtain the risk assessment data for CODEX and Thai FDA decision on the maximum level to be set as standard
- To improve and develop the efficiency of analysts in risk assessment on-the-job training)

### Areas of Study

- Hazard Identification
- Dose-response assessment
- Exposure Assessment
- Risk Characterization



### Hazard Identification

- Study the properties of 3-MCPD
- Study its toxicological properties and estimate its abilities to cause toxicity in human



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### Dose-response assessment

- Study relations between quantity of 3-MCPD and its effect on experimental animals and human
- Study the process that cause an effect to experimental animals and human

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### Exposure Assessment

1. Conduct a survey of food consumption data
2. Conduct a survey of contamination of 3-MCPD in food
3. Estimate the amount of 3-MCPD that can be exposed by human



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### Risk Characterization

- Collect the results from exposure assessment and from estimated responding at the different quantities to estimate the risk from toxicity as well as to indicate the uncertainty

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### Exposure assessment result

1. General Information of households ( 512 households, 1,945 persons) in four regions

Areas	City (person)	Countryside (person)	Total	%
Central	270	246	516	26.53
North	270	206	476	24.47
Northeast	239	237	476	24.47
South	245	232	477	24.53
<b>Total</b>	<b>1,024</b>	<b>921</b>	<b>1,945</b>	<b>100.0</b>

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### Food consumption survey

- Household food disappearance method
- Food Frequency questionnaires

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## Result

- **Exposure Assessment**  
Thai people expose to 3-MCPD from food consumed everyday at 0.036  $\mu\text{g}/\text{kg}$  bw/day in average
- **Risk Characterization**  
The exposure amount equals to 1.8% of PMTDI assigned by JECFA (2  $\mu\text{g}/\text{kg}$  bw/day)

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## Conclusion

- ❖ The amount of 3-MCPD that Thai people expose to is in safety level.

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