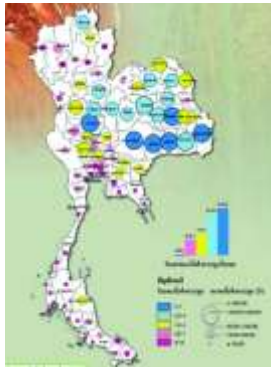


## Pesticide Risk and Management for health in Agriculture of Thailand

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- Thailand has been known as an agricultural country for a longtime.
- Thailand has been ranked in the number four of 15 Asian countries in annual pesticide consumption.
- There are 157 exporters, 72 manufacturers, 543 wholesalers, and 8075 retailers.

**Pesticide** is "any substance or mixture of substances intended for preventing, destroying or controlling any pest."

**Pest** are vectors of human or animal disease, unwanted species of plants or animals causing harm during the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs.

## Thailand is located in the southeast Asia

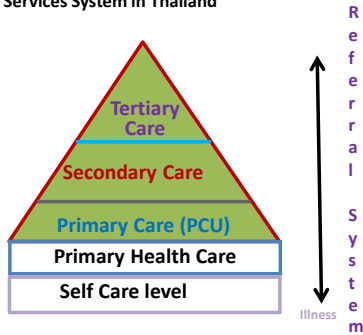


**Occupational Safety, Health and Environment Act B.E 2554 ( A.D. 2011 )**, regulated by the **Ministry of Labour ( MOL)**, states that **employers have the responsibility to take care of and protect the health and safety of their employees through provision of occupational safety and health ( OSH ) services in their establishments.**

## **Community Promoting Health Hospital(CPH) or Primary Care Unit( PCU )**

Is a public health service unit that works with communities, families, and individuals to identify health needs and assists, and supports individual and community action to prevent illness, protect and promote health, and achieve well being.

**Occupation Health Services in Thai Context**  
 • Health Services System in Thailand



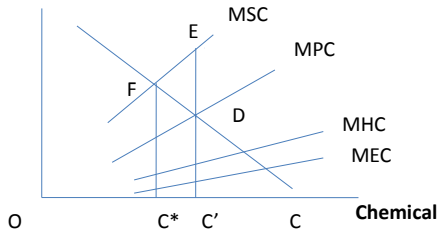
**Health and Safety risks in agriculture work may pose threats to their health**

for many reasons, including:

- Its physical nature
- Exposure to the weather, noise or vibration
- Contact with animals
- Exposure to hazardous chemicals or other substances

**Impact from the failure of agriculture goods market**

**Cost and Benefit**



Source: The Economic of agricultural chemical policy, Environment and Natural Resources Journal Vol.5,NO.2,Dec2007

**OSH Situation in Thailand Labor Force (2010)**

Population	: 67.4	Millions
Labor force	: 39.5	Millions
Agriculture sector	: 16.95	Millions
Industry	: 22.24	Millions
- Wholesale and retail trade	5.9	Millions
- Manufacturing	5.1	Millions
- Hotel and restaurants	2.69	Millions
- Government services	1.4	Millions
- Others	4.85	Millions

**Number of public health services units under Rural Health Administration**

Type	Number ( PLACES)
REGIONAL AND GENERAL HOSPITALS	90
DISTRICT HOSPITALS AND ITS EXTENDED OUTPATIENT	721
LOCAL HEALTH CENTERS	9,791
PRIMARY CARE UNITS	364

SOURCE: Bureau of Health Service System Development, Ministry of Public Health

**OSH Policy and Plan**

Labour status is one of the major keys for economic and social development, in order to protect all workers and to ensure safety and security of worker's life,

National OSH&E Committee and the DLPW urged the government to approve in principle and the government hereby declares

**National agenda**

*"decent safety and health for workers"*

on December 11th, 2007 with the time frame until the year A.D.2016

## Objectives of this study

- To explore the risks level of agricultural workers in pesticide exposure.
- The association of the readiness of community health promoting hospital( CPH ) in providing the occupational health services

## Methodology:

- A self – reported questionnaire survey was conducted among 2400 CPHs stratified random sampling from over the country.
- The contents of the questionnaire including pesticide risk assessment by using a reactive paper as a tool to identify the readiness of CPH to provide a basic occupational health service.
- The associations between the pesticide risk and other variables were analyzed by multiple logistic model, and 95%confidence interval(CI)were indicated.

## Data analysis

- Data entry: Epidata 3.1
- Statistical software: R version 2.6.0
- Univariate: Chi-Squared test, Fisher's exact test, Wilcoxon rank sum test and Pearson correlation coefficient
- Multivariate: Multiple linear regression
- LISREL Program

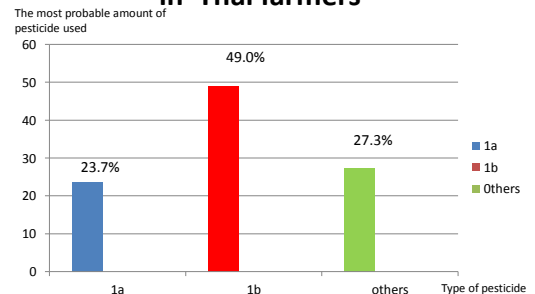
## Results

- The subjects comprised of 1,849 respondents or CPH from overall the country.(~ 77 % )
- The classified respondents :
  - male 839 (45.4%)
  - female 1010 (54.6%)
  - age  $\bar{x}$  39.9 yr. for male SD. : 11.7
  - $\bar{x}$  44.9 yr. for female SD. : 12.2

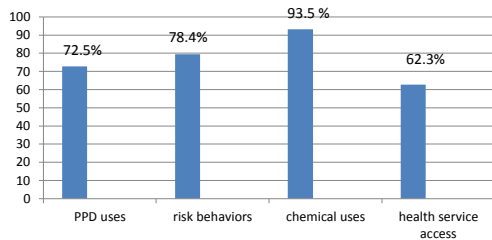
- 18% of 575,573 farmers entered into the pesticide exposure screening by reactive paper ( in the year 2010 – 2011 ) is a high risk group screened by reactive paper.

- The provision of OSH services in all CPHs depends on its readiness such as responsible person, local problem, authority concerns, and people awareness. 50.22 % Of respondents answered there are ready to provide basic OSH to agricultural workers.

## Type of pesticide used in Thai farmers



## Risks of agricultural workers



The most common OSH activities carried out by CPH to Agricultural Workers where the respondents worked

## Multiple linear regression model of log 2

Variable	$\beta$	MF	95%CI of MF	P-value	% $R^2 = 22.5$ % contributions
Log2 of pesticide risk	0.33	1.26	1.09, 1.44	<0.001	10.2
Sex - Female (ref) - Male	0 1.11	1 2.16	1.16, 4.00	0.017	5.9
Age group (year) <20 20-59 >=60 (ref)	1.21 0.16 0	2.31 1.12 1	1.00, 5.31 0.58, 2.16	0.084	6.4

The  $\beta$  have been transformed ( $2^\beta$ ) and expressed as multiplication factors (MF).

## Percentage of Activities Related to OSH Services Classified by Sector

Occupational health service activities	Sector		
	Industrial	Agricultural	Unregistered /informal
Occupational health education	85%	100%	89%
First aid and emergency treatment	71%	75%	68%
Working environmental survey in farms or industries	61%	57%	43%
Environmental measurement using equipment to measure	37%	24%	17%
Screening	37%	75%	43%
General health exam	42%	12%	6%

## Association between CPH's services

	Policy Support	Farmers responsibility	Farmers awarness
Occupational health education	0.059	0.967	0.880
Screening	0.864	0.984	0.170
Health/disease surveillance	0.301	0.087	0.435

	Policy Support	Farmers responsibility	Farmers awarness
First aid and emergency treatment	0.267	0.350	1.433
Campaign	0.984	1.307	<b>0.695</b>
Working environmental survey in farms	0.728	0.624	<b>0.402</b>
Environmental measurement using equipment to measure	0.872	0.285	0.427
General health exam	0.077	0.086	0.046

**Conclusion:**

- The problem of chemical uses and their hazard still remains in the agricultural sector.
- OSH services need to be strengthened in term of policy support from the high lever.
- Agricultural workers responsibility should be addressed to the public

**Discussion:**

- Pesticide risks are not only farmers but their family also especially children.
- The awareness of CPH on pesticide exposure of agriculture.
- Local authorities concern and responsibility taking.

Thank you