International
Labour
Office

Integrating Occupational Health Services into Public Health Systems:

A Model Developed with Thailand's Primary Care Units

Dr. Somkiat Siriruttanapruk and team
Ministry of Public Health, Thailand

Informal Economy, Poverty and Employment
Thailand Series | Number 2

Informal Economy, Poverty and Employment

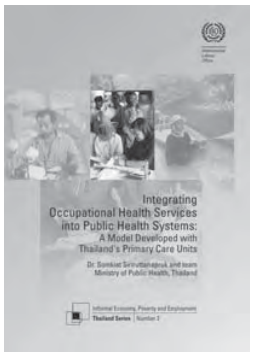
Thailand Series | **Number 2**

Integrating Occupational Health Services into Public Health Systems:

A Model Developed with Thailand's Primary Care Units

Dr. Somkiat Siriruttanapruk and team
Ministry of Public Health, Thailand

International Labour Office



Dr. Somkiat Siriruttanapruk and team
Integrating Occupational Health Services into Public Health Systems: A Model Developed with Thailandís Primary Care Units
Bangkok, International Labour Office, 2006

ISBN 92-2-119284-9 & 978-92-2-119284-8 (print)
ISBN 92-2-119285-7 & 978-92-2-119285-5 (web pdf)

Printed in Thailand

Foreword

The Government of Thailand emphasizes that accessibility to health care is a fundamental human right that must be available to all citizens. Although all Thai citizens are entitled to the State Health Insurance Programme, a number of services critical to the prevention of ailments remain out of reach. Workers, for instance, often suffer from problems associated with bad working conditions and unsafe environments; yet they are not able to receive occupational diagnosis and rehabilitation services from the present health system since the capacities are limited.

Primary care units (PCUs) are in the frontline of Thailand's health establishment and are the most accessible to people working in communities and local clusters. Based in villages, PCUs carry out health promotion, prevention, medical treatment and rehabilitation services. They are less trained, however, in detecting and addressing occupational health problems and are dependent on few experts based in the provincial or regional offices. Where working people spend more than half of their wake time at work, it is expected that many of the ailments and incidences presented to the primary care units are rooted in the workplace.

Following the Ministry of Public Health's (MoPH) initiative to develop PCU capacities on occupational health services, the ILO-sponsored Informal Economy, Poverty, and Employment Project supported a one-year pilot programme in collaboration with the MoPH and 15 local health units in five provinces. This report details this experience and draws lessons for its replication in Thailand and in other countries. In particular, it summarizes findings from risk assessments of agricultural and home workers in the five pilot provinces of Thailand. It describes, based on a survey conducted during this collaboration, capacity and level of awareness of PCU staff on occupational health services. It also draws lessons from training and outreach activities initiated by the PCUs. It also shows how health units are the not the only change agents in communities; rather, local district offices and employers and workers organizations play a critical role in framing real solutions that address root causes of workplace hazards.

This initiative was carried out in line with ILO's priority of addressing decent work deficits based on the four components that define decent work, namely: rights, employment, social protection, organization and representation. The mandate to extend this priority to the informal economy was reaffirmed in the 2002 International Labour Conference. Furthermore, specific ILO conventions

such as Convention 151, Occupational Safety and Health Convention (1981); Convention 181, Occupational Health Services Convention (1985); Convention 187, Promotional Framework for Occupational Safety and Health Convention (2006), mandate governments to promote the right of workers to a safe and healthy working environment and to establish national policies, programmes and services on OSH. Convention 187 in particular calls upon governments to establish, through appropriate laws, agencies and mechanisms, a national system of OSH support that would involve, among others, information and advisory services; OSH training; occupational health services; research, data collection on occupational injuries and diseases; collaboration with insurance systems and, notably, "support mechanisms for a progressive improvement of occupational safety and health conditions in micro-enterprises, in small and medium-sized enterprises and in the informal economy."

The task of extending services to the informal economy where people are found in non-traditional work places can lie beyond the institutional reach of labour ministries. Collaboration with the health and agricultural ministries, in particular through village-based health units and agricultural extension workers, are increasingly viewed as an effective way of augmenting the reach of labour advisory bodies to workplaces found in homes, farms, local markets, streets and micro enterprises. Their effectiveness is helped in part by their image, not as monitoring authorities, but as health promoters and farm advisers. Indeed such an inter-agency collaboration can be part of a national system of OSH promotion that can potentially cover a wider reach.

This documentation is a product of a very extensive collaboration under the leadership of the Ministry of Public Health and involving the dynamic participation of 15 health units throughout the Thailand. Our gratitude goes to the project leader, Dr. Somkiat Siriratanapluek of the Bureau of Occupational and Environmental Disease, Department of Disease Control of the Ministry of Public Health. Apart from spearheading this initiative, animating public health personnel nationwide, and preparing this report, Dr. Somkiat also collaborated with ILO in various knowledge sharing events involving similar projects of the ILO in Asia, Africa, and Latin America.

Thanks also goes to Ms. Juraiwan Siriratana, also of the Bureau of Occupational and Environmental Disease, Department of the Disease Control, Ministry of Public Health, who coordinated the activities under this project and

helped in monitoring the results. Ms. Pensri Anantagulnathee translated all the reports into English, which was critical to the collaboration with ILO, and so that a wider audience could be reached. Various health officers in the pilot PCUs are responsible for the experiences reported in this document. Without their creativity and initiative, we would not possibly have such a collection of experiences as we now have that can form part of a viable national solution.

Many thanks go to Dr. Mei Zegers who collaborated with the Ministry of Public Health in finalizing this report. Mr. Tsuyoshi Kawakami, Senior Specialist on Occupational Safety and Health of the Subregional Office for East Asia in Bangkok, and Mr. William Salter, Director, a.i., of the Conditions of Work and Employment Programme (TRAVAIL) in Geneva, provided valuable advice and comments on the design and implementation of this project.

The partnership between ILO and MOPH, including the preparation of this report, was initiated and overseen by the project team of the Informal Economy, Poverty and Employment in Thailand. It was closely coordinated by Ms. Rakawin Leechanavanichpan, the National Project Coordinator, and backstopped by Ms. Sandra Yu, Chief Technical Advisor. Ms. Ginette Forgues, Senior Specialist on Local Strategies for Decent Work provided valuable technical support in this collaboration and in all of the initiatives of the IE Project. Ms. Paveena Eakthanakit provided efficient administrative support and Mr. Matthew Hengesbaugh provided editing and logistical support towards the preparation of this publication.

We hope that the knowledge and experience gained from this project, as described in this report, can motivate the rest of Thailand as well as other countries in exploring similar partnerships especially where PCUs or similar bodies might be mobilized to extend critical OSH services.

Jiyuan Wang
Officer-in-Charge
ILO Subregional Office for East Asia
Bangkok, Thailand

Table of Contents

List of Researchers

List of researchers from the Bureau of Occupational and Environmental Diseases, Department of Disease Control

1. Dr. Somkiat Siriruttanapruk
2. Ms. Churaiwan Sirirat
3. Ms. Orapan Untimanont
4. Mr. Kowit Boonmeephong
5. Ms. Pensri Anantagulnathi
6. Ms. Siriwan Chancharoen
7. Dr. Pibool Issarapun

List of researchers from Regional Centre for Disease Prevention and Control Zones 2, 4, 6 and 10, Department of Disease Control

1. Ms. Kanchana Kongsaktrakul
   Regional Centre for Disease Prevention and Control Zone 2
2. Ms. Rawinant Nuchsilp
   Regional Centre for Disease Prevention and Control Zone 4
3. Ms. Simaluck Ditheesawasweth
   Regional Centre for Disease Prevention and Control Zone 6
4. Ms. Warapan Pornwisetsirikul
   Regional Centre for Disease Prevention and Control Zone 10

List of researchers from five pilot provinces

Suphanburi Province

Mr. Somporn Sripodoke, Suphanburi Provincial Health Office
Health care staff of PCU Suan-Tang, Muang District
Health care staff of PCU Plub-Pla-Chai, U-Thong District

Nakornpathom Province

Acting Second Lieutenant Sarayuth Simadamrong
Nakornpathom Provincial Health Office
Health care staff of PCU Klong Chinda, Sam-Pran District
Health care staff of PCU Huay Ta-go, Nakornchaisri District

Khon Kaen Province

Mr. Chamnien Mooltep, Khon Kaen Provincial Health Office
Health care staff of PCU Ban-Peu, Muang District
Health care staff of PCU Kao-Ngiew, Phol District

Lamphun Province

Mr. Preecha Kreauthong, Lamphun Provincial Health Office
Health care staff of PCU Pa-Sang Hospital, Pa-Sang District
Health care staff of PCU Muang-Gie, Muang District

Phayao Province

Ms. Chatsiri Pisitkul, Phayao Provincial Health Office
Health care staff of PCU Ban-Tom, Muang District
Health care staff of PCU Yuan, Chieng-Kam District

Editor and contributor:

Dr. Mei Zegers, consultant.

Executive Summary

The development of an occupational and environmental health services model that can be integrated into public health systems is an important step towards improving workers' physical and mental health. The goals of such a model are to provide primary medical treatment and/or referral, support rehabilitation, decrease occupational risk factors, promote good health practices, control occupational diseases and its hazards, and track epidemiological data for further analysis of occupational illnesses and accident rates.

Thailand's Ministry of Public Health (MoPH) developed such a model with support from the ILO. The MoPH referred to key ILO standards such as Convention 161 on occupational health services during the development of the model.

The model discussed in this report was developed, successfully tested, and can serve to inspire other countries to adapt and implement a similar programme.

The MoPH carried out a research and development project to create the model in stages:

1) Analysis of the existing situation of occupational and environmental diseases prevention and control activities of provincial health offices and primary care units (PCUs) in Thailand.
2) Data collection to provide baseline data and inform the development of an occupational and environmental health services training curriculum for capacity building for the PCU staff.
3) Pilot test the provision of occupational safety and health (OSH) services in PCU.
4) Monitor the process throughout implementation of all steps and evaluate effectiveness of the model.

Data was collected on occupational disease prevention and control activities from 75 provincial health offices and from the PCUs in five pilot provinces: Nakornpathom, Suphanburi, Khon Kaen, Lamphun, and Phayao.

The PCU staff in the five pilot provinces OSH services implemented the model with technical support from their provincial health office and the PCU network.

Analysis of the baseline study results indicated that occupational disease prevention and control activities provided at provincial level need to be targeted to underserved populations such as agricultural and informal economy workers.

OSH services were integrated into existing health services provided by the PCUs. Specific activities incorporated into the areas of responsibility of the PCUs included:

- collection of patient work history;
- job characteristics;
- recording of data on illness/accident information into family records folder;
- identification of work hazards by using a risk assessment form and health record for employees aged 15 years old and over;
- implementation of activities promoting occupational health in the community through participation of community and workers;
- collection and analysis of data;
- prioritisation of problems and problem solving;
- monitoring of activities at the regional, provincial, and central level.

The project included the development of a five-day training course on OSH services for the PCU staff in five pilot sites. Participants benefited substantially from the training as indicated by a post-training test.[1] The test results indicated that the trainees were able to correctly identify occupational health hazards, assess and indicate factors in controlling occupational risks, and provide appropriate health services.

The pilot project included activities implemented in the community and through outpatient services provided in PCUs.

Activities implemented in communities included workplace surveys, participatory data analysis, and communication of survey results to workers for joint problem solving. Workplace surveys and evaluation of the working environment included general health examinations and screening for occupational diseases such as pesticide poisoning screening tests for agricultural work groups. Specific strategies to solve problems encountered in agriculture were also implemented.

The implementation of OSH services in the community was carried out with agricultural work groups in seven villages and with community workers in three villages.

Occupational disease prevention and control activities provided at the PCUs included primary medical treatment, finger tip screening test for pesticide poisoning, health education, and surveys. The most common occupational health problems identified were occupational skin diseases caused by chemicals, musculo-skeletal disorders, accidents, and eye-strain.

1 (p-value < 0.000).

In conclusion, results from the pilot model on OSH services from 10 PCUs indicate that the PCU staff now have the capacity to provide OSH services and related health promotion activities to workers. Capacity was strengthened to provide community-based services for workers and outpatients. Provincial health personnel capacity was also strengthened to provide better support to the PCU.

Continued capacity building to increase knowledge and skills for the health care staff will be needed. Advocacy is necessary to create a national policy to integrate the model into the work of remaining PCUs and will need to be supported by sufficient budget and other resources. Once approved, capacity will need to be developed in all PCUs throughout the country. Identification of roles and responsibilities as well as development of implementation networks will be required. Awareness raising among local authorities with respect to occupational health issues is necessary so that they can become a major partner in supporting PCU activities.

Authors' Acknowledgements

We, the researchers, wish to express our gratitude to the International Labour Organization (ILO) and the Bureau of Occupational and Environmental Diseases, Department of Disease Control, Ministry of Public Health, Thailand for supporting this study. The researchers also wish to thank Dr. Surinthorn Kalumplakorn from the Faculty of Public Health, Mahidol University; Dr. Kittipong Panomyong from Nopparatrachathanee Hospital; Dr. Sasithorn Teptagarnporn, Dr. Soisuda Kesornthong, Ms. Rachaneekorn Chomsuan, Ms. Malee Pongsopon, Ms. Suthida U-tapan from the Bureau of Occupational and Environmental Diseases, Department of Disease Control; Chief Medical Officer of Suphanburi, Nakornpathom, Khon Kaen, Lamphun, and the Phayao Provincial Health Office for working as training lecturers, participating in this project, providing recommendations, and for contributing to this project's achievements.

Project researchers

Acronyms

CUP	Contracting Unit for Primary Care
GDP	Gross Domestic Product
HV	health volunteer
MoA	Ministry of Agriculture
MoL	Ministry of Labour
MoPH	Ministry of Public Health
OMS	Occupational Medicine Section
OPD	outpatient departmen
OSH	occupational safety and health
PCU	primary care unit
WHO	World Health Organization
WIND	Work Improvement in Neighbourhood Development
MoPH	Ministry of Public Health

Definitions of Selected Terms

Health education: refers to consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health.[2]

Health promotion is a strategy for improving the health of the population by providing individuals, groups and communities with the tools to make informed decisions about their well-being. Moving beyond the traditional treatment of illness and injury, health promotion efforts are centered primarily on the social, physical, economic and political factors that affect health, and include such activities as the promotion of physical fitness, healthy living and good nutrition. Emphasis is placed on collaborative work with different partners.[3]

Health protection involves the development and implementation of direct regulations and other strategies aimed at protecting the health of the people (of a country) against proven health risks over which they, by themselves, have little or no control.[4]

Health services refers to services provided to the public that meets their health needs and provides solutions to health problems in order to increase quality of life through improved physical and mental health.

Contracting Unit for Primary Care (CUP) is a health service unit that is contracted by the province to be the main deliverer of health care to its registered population.

Primary Care Unit (PCU) is a public health service unit that works with communities, families, and individuals to identify health needs and assets, and supports individual and community action to prevent illness, protect and promote health, and achieve well being.

Prevention is a method of averting health problems (e.g. disease, injury) through interventions. Preventing and reducing the incidence of illness and injury may be accomplished through three mechanisms: activities geared toward reducing factors leading to health problems; activities involving the early detection of, and intervention in, the potential development or occurrence of a health problem; and activities focusing on the treatment of health problems and the prevention of further deterioration and recurrence.[5]

2 WHO, Health Promotion Glossary, WHO/HRP/98.1; Geneva: 1998.
3 Pubic Health Agency of Canada, http://www.phac-aspc.gc.ca/vs-sb/voluntarysector/glossary.html. accessed 14-05-2006.
4 ibid.
5 ibid.

Addressing occupational health and safety of all workers

Health exam in the workplace

Fingertip screening test for cholinesterase level

Demonstrating locally made organic pesticides and fertilizers

Farmers look on as their their organic methods are described to visitors

International exchange participants on site visit to understand the PCU model

1 Introduction

Thailand is one of the most industrialised countries in Southeast Asia and is a middle-income country with a population estimated at 63.5 million in 2006.[6] Thailand estimates a labour force of 35.6 million people in 2006.[7] Almost 12.5 million (36 percent) of the employed work in the agricultural sector.[8] The unemployment rate is 2.5 percent.[9] The informal economy generated value represents 45.6 percent of gross domestic product (GDP).[10]

Thailand is ranked 73rd out of 177 countries in the 2005 Human Development Report according to statistics for 2003.[11] Life expectancy at birth is 70 years and GDP per capita is $ 8,400 at US$ purchasing power parity.[12] The GDP growth estimate for 2005 stands at 4 percent.[13] The literacy rate of adult males is 94.9 percent while for adult females it is 90.5 percent.[14] The net primary school enrolment rate is 92 percent.[15] In Thailand 68 percent of the population lives in urban areas.[16] The number of poor has fallen by two million from 15.6 percent in 2002 to 12 percent in the first half of 2004.[17]

The economic crisis starting in Thailand in 1997 resulted in changes in economic status affecting employment in the country. The number of workers in large scale enterprises decreased, while, the number of workers in small and medium scale enterprises (SMEs), informal workers, and home workers have increased.

The governmental policy of strengthening production of local goods has contributed to an increase of local producer groups located throughout the country.[18] Many local producers work in the informal economy. While informal economy workers and groups help increase family income and contribute to national income, they also encounter risks from occupational health hazards and accidents resulting from poor working conditions. Workers in the informal economy need targeted health care services and surveillance of occupational diseases just as labourers in industrial factories and large service companies do.

The Thailand Labour Act B.E. 2541, 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, i.e. putting in place safety officers, conducting working conditions monitoring activities, improving working environments, etc. The Labour Act also applies to small-scale enterprises. In practice, however, small-scale enterprises are often unable to provide OSH services for their workers due to lack of financial and other resources.

6 United Nations Thailand Website, accessed 31-05 2006.
7 National Statistical Office, Thailand, 2006a.
8 National Statistical Office, Thailand, 2006b.
9 Economic and Social Statistics Bureau, 2005
10 Bundit Thanachaisethavut, 2005
11 Human Development Report, Thailand 2005.
12 Human Development Report, Thailand 2005; Economist Intelligence Unit, Fact Sheet, Oct 13th 2005.
13 Economist Intelligence Unit, Country Forecast, November 10, 2005.
14 World Bank, Thailand Country Data. 2005.
15 World Bank, Thailand Country Data. 2001.
16 Nationmaster.com 2005.
17 World Bank, Thailand Economic Monitor, 2005.
18 This programme, "One Tambon One Product (OTOP)," is a government drive to eradicate poverty. OTOP was created to stimulate the grass-roots economy through product development and market expansion.

Various types of independent occupations or informal working groups such as agricultural work groups, home workers, and workers in the micro-service sector exist.[19] Such worker groups are frequently incapable of accessing OSH services due to socio-economic factors. It is the responsibility of local government agencies to ensure access to and provide health and other services to these workers.

Provision of OSH services was, in the past, only available at the provincial and regional public hospital level and in some community hospitals in districts in dense industrial areas. The staff in such hospitals had received training on provision of OSH services and had some equipment to measure occupational safety risks in workplaces.

The Ministry of Public Health (MoPH) created an Occupational Medicine Section (OMS) that has the specific task of providing OSH services in the regional and general hospital organizational structure. The creation of the OMS provided a good opportunity to extend OSH services to every province in the country. A remaining issue, however, was that OSH services still focused primarily on providing services to their hospital staff and to some large-scale enterprises in the area. OSH services were still unavailable to people working in the informal economy due to resource limitations in terms of health personnel, financing, logistics, and other support. A clear need still existed to extend OSH services to every health care unit under the Ministry of Public Health, especially to primary care units at the sub-district level.

In Thailand, PCUs are local public health offices charged with providing health care services at community level. The services provided by PCUs cover all health aspects including curative services, health protection, health promotion, and rehabilitation. PCU staff includes health professionals that are responsible for addressing the health issues of all the people in the sub-district level including working population.

Health care services provided at PCUs include simple primary care and curative treatment, provision of prevention and health promotion activities through maternal and child care, health education, home visits, health counselling, etc.

In the past PCU involvement in provision of OSH services was focused on pesticide poisoning surveillance in farmer groups by conducting finger-tip screening test for cholinesterase level, provision of health education, and prevention campaigns for pesticide poisoning. PCU staff, however, gained their programme-implementation knowledge from on-the-job training without having holistic knowledge of all the relevant ramifications, prevention, and treatment methods.

The MoPH's Bureau of Occupational and Environmental Diseases, Department of Disease Control, was aware of the necessity to increase the reach and impact of the OSH services. As a result, the Ministry initiated a pilot project with support from the ILO to improve and develop OSH services at the PCU level through holistic development of staff capacity. Training was

19 In Thailand the term "home workers" is used to denote any individual engaged in economic activities based in the home, usually in the informal economy. Activities can be production or service-based and include piece work for enterprises, arts and crafts, agro-industry, and small shops.

needed to strengthen the capacity of health professionals to provide health care services consistent with changes in communities' working traditions and worker health care needs. Following the training, pilot PCUs tested the implementation of special actions on the integration of OSH into their services.

2 Overview of the Health Situation in Thailand

The demographic statistics from the Ministry of Public Health in 2004 indicate a birth rate of 13 per 1,000 population and death rate of 6 per 1,000 population.[20] The latest maternal mortality rate figure from 2001 was 12.9 deaths per 100,000 live births and the infant mortality rate was 6.5 per 1,000 live births. According to the World Health Organization (WHO), the life expectancy at birth of Thai males in 2001 was 65.7 years old and that of females was 72.2 years old.

Data from the Ministry of Public Health shows that the aging trend of the Thai population will progress rapidly while decreases are expected in the age group below 15 years old. Health resources data in Thailand reported by WHO in 2001 indicated that the number of hospital beds per 10,000 population in Thailand was 22.3. One physician is available for 3,341 people on average, while the number of professional nurses per 10,000 population was 16.2.

The Ministry of Public Health is the main national health agency that develops health programmes and works to improve the health status of the Thai people. The health infrastructure of Thailand is well-developed with a strong network of more than 9,000 health care centers offering primary health care services and more than 900 provincial and district hospitals offering curative services.

Public health policy in Thailand has traditionally focused on disease prevention by providing preventive and control measures, such as sanitation, clean water supplies, and vaccinations. The government launched a massive public education exercise in the mid-1990s to raise the public's understanding of the risk of HIV/AIDS and the rate of new infections appears to have stablised.

2.1 Changes in the Thai Society and their Impact on Public Health Services

Thailand has moved rapidly from an almost completely agriculture-based society to an increasingly industrialized society. The shift has contributed to socio-economic and demographic changes as well as changes in the public health status of the country.

The 1997 economic crisis had strong impact on employment in the industrial sector. Unemployed workers returned to their hometowns to work in the agricultural sector. The government subsequently promoted and supported

20 Chanpen Chuprapawan, 2000; Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, 2001; The National Health Association of Thailand, 2005

rural employment in order to increase incomes through rural production, marketing, and distribution of local products. New types of economic activities gradually emerged as a consequence of these stimulus packages.

Industrialised development has greatly increased environmental pollution. The expansion of Thailand' industrial sector occurred without implementing good chemical management practices and environmental pollution control measures. Specific environmental problems have also been caused by chemical use in agricultural and mining activities.

Many injuries are caused by lack of knowledge of safety measures and working methods. Other issues include problems caused by high levels of stress and other mental health problems, inappropriate nutritional habits, inappropriate or lack of exercise, and exposure to work hazards. These problems have contributed to the emergence of non-communicable diseases such as hypertension, asthma, occupational respiratory diseases, pesticide poisoning, and cancer.

Data from the Health Systems Research Institute of Thailand indicates that the health situation in Thailand underwent a series of rapid changes during the past decade. Fast paced and intensive development in the economy, politics, culture, and information technology have all had an impact on the health system. The overall effect is that the health system has been unable to adjust sufficiently to the changing circumstances in the country.

The Thai health system is moving towards a crisis with an impact similar to that of the recent economic crisis that has wreaked havoc on Thai people's life since 1997. The indicators and events in the Thai society which reflect the severity of the national health problems include:[21]

- Traffic accidents cause more than 35,000 deaths annually.
- More than 30,000 people with HIV infection die annually.
- More than 11 million Thais are addicted to tobacco smoking, half of which will die of diseases caused by tobacco smoking.
- Use of narcotic substances is widespread among the general public and youth. The illegal drug business has expanded in scope and yields great profit to producers and dealers.
- People shoulder a heavy burden for treatment expenses. Population demands in the field of health include health financing, improvement in service quality and in professional ethics.
- The health service system is financially inefficient and includes excessive overhead expenditures. The Asian Development Bank estimated that real-term expenditures will increase fivefolds within the next few decades.
- More than 25 million Thais do not have health insurance and will suffer the consequences when they get sick.
- The public has no confidence in the service quality of the health system due to the lack of a standard accreditation system.

Government and health care reforms have been introduced since the recent economic crisis. The Ministry of Public Health is the major agency that

21 Ministry of Public Health, Thailand, Web site, consulted 2006.

is responsible for health care reform by ensuring that health care service is accessible to all. As a key part of Thai governmental policy, universal health care coverage was introduced on 1 October 2001. The centerpiece is the condition that every patient need only pay THB 30 per hospital visit. The scheme covers all Thai people who are not covered by other health insurance schemes, those who are governmental officials who receive free treatment under the Medical Welfare Scheme, and private employees who are covered under the Social Security Scheme.

Projected Public Health Needs Classified by Age Group

Age group	Anticipated Future Health Problems	Major Public Health Service Needs
Infants, Children	Malnutrition, Child development, Intellectual disability	Advice on pregnancy, birthing, child care, simple self-care by the family, near-by health services on health promotion, health prevention, and treatment
Labour force, especially workers that have migrated from rural areas	Accidents, HIV/AIDS, Cancer, Drug addiction, Stress, Occupational diseases	Promotion of good health behaviours, good working environment, and working conditions.
Elderly	Cardiovascular diseases, Paralysis, Cancers, Mental health	Health promotion, health care services for people with chronic diseases and independent elderly.

Source: Proposal for development of Thai Primary Health Care Service System in Thai Health Care, Reform, Bureau of Policy and Strategy, Ministry of Public Health

It is evident that public health needs have changed over the course of the last few decades which has led to the necessity of focusing increasingly on health prevention and promotion. The public needs integrated, continuous, and holistic health care that covers all population groups and provides links between the individual, their family, and community.

2.2 Work-related Illnesses and Injuries

The labour force in Thailand is defined by the Labour Act B.E. 2541 as comprised of individuals between the ages of 15 to 59 years old. The National Statistics Bureau of Thailand estimates a labour force of 35.6 million people 2006. About 34.6 million were employed and 666,200 people were unemployed. Among the employed, almost 12.5 million (36 percent) work in the agricultural sector and 22.2 million (64 percent) are non-agricultural workers. The non-agricultural sector includes those who work in manufacturing industries (5.7 million or 16.5 percent), construction (2.4 million or 7 percent),

trade/business (5.7 million or 16.5 percent), and service sectors (2.3 million or 6.6 percent).[22] The structure of the labour force in Thailand is expected to change with higher proportions in working in the industrial sector. Occupational health and safety issues, especially in industry, will become increasingly important.

Occupational injuries and diseases are among the main causes of illness among the Thai working population. Approximately 3-4 percent of workers who registered with the Workmen's Compensation Fund were diagnosed and reported as having occupational diseases or injuries each year from 1992 to 2001.[23] Occupational injury cases were more prevalent than occupational illnesses. In 2003, 210,673 cases of occupational injuries were registered.[24] Of this number, there were 792 deaths, 17 cases of disabilities, 3,826 cases of partial loss of organs, 52,366 cases of over three days lost from work, and 153,684 cases of less than three days lost from work.

Occupational or work-related illnesses were reported for 8,460 cases. Most of the illnesses were identified as having been caused by lifting and/or moving heavy objects (5,009 cases). There were 930 cases of illness cause by poor working postures, 2,469 cases of occupational skin diseases, 24 cases of noise induced hearing loss, 13 cases of lead levels in the blood, nine cases of occupational respiratory diseases related to dust, and four cases of high levels of zinc and its compounds.

In addition to the Workmen's Compensation Fund, The Bureau of Epidemiology in the Department of Disease Control, MoPH, also implements a national disease surveillance scheme in the country. The data of this scheme comes from health establishments and shows that from 1997-2001 an average 3,000 occupational disease cases were reported each year.[25]

Most of the cases reported to the Bureau of Epidemiology involved pesticide poisoning. In 2003, 2,692 cases of occupational diseases were registered of which 2,342 were cases of pesticide poisoning. The remainder of the cases included 33 with lead poisoning, 130 with pneumoconiosis, 67 with petroleum poisoning, 33 with gas and vapour poisoning, 24 with manganese, mercury, and arsenic poisoning, and 1,910 with occupational diseases caused by physical hazards (involving noise induced hearing loss, decompression sickness, and other unspecified causes).

The figures of occupational disease cases may underrepresent the true occupational health situation in the country. Observations in many surveys conducted by the Bureau of Occupational and Environmental Diseases indicate very high levels of hazardous exposure in places of work and many cases of early abnormalities in workers" health.

Underreporting of cases may be due to lack of taking a work history from patients, unawareness of physicians, and difficulty in making a diagnosis of the illnesses. It is clear that the reasons for underreporting indicate a problem that needs to be addressed.

22 National Statistical Office, Thailand, 2006b.

23 Social Security Office, Ministry of Labour, Annual Report 2002. Nonthaburi, 2002.

24 Thai Workmen's Compensation Fund, 2003.

25 Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Annual Epdimiological Surveillance Report 2001. Bangkok: ETO Press, 2001.

3 Overview of the Health Service System in Thailand

The term "health service" refers to services provided to the public that meets their health needs and provides solutions to health problems in order to increase quality of life through improved physical and mental health. The term "health" has been defined by WHO as a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.[26]

In Thailand, the principal health service provider is the Ministry of Public Health and its agencies. The Ministry is charged with promoting, supporting, monitoring, and coordinating all activities related to public health. Health services in Thailand focus on four main objectives:

1) Ensuring that Thai people reach the state of complete physical, mental health, and social well-being.
2) Ensuring that Thai people achieve absence of diseases or infirmities through health promotion, disease prevention, treatment, and rehabilitation.
3) Helping Thai people prolong their lives and avoid premature death.
4) Ensuring the public's security from accidents and injuries.

About 70 percent of health services in Thailand are handled through the public sector and about 30 percent are covered by the private sector.

The infrastructure of health services in Thailand can be divided into three types.

(1) Health services provided through the **public sector** under the supervision of the Ministry of Public Health for the whole population in both urban and rural areas. The structure can be classified as centrally based with local and rural administration.

(2) Health services provided through the **private sector** that support existing public services under supervision of the Ministry of Public Health.

(3) Health services provided through **other public agencies** for officials and their family members and to provide services to the general public. Examples include hospitals under supervision of Bangkok Metropolitan Administration, Ministry of Defence, the Ministry of University Affairs, etc.

26 WHO, 1948. (Official definition has remained unchanged since that date)

3.1 Levels of Health Care Service

Health services in Thailand can be classified into four levels according to the amount and type of care:

Primary health care is organized by the public through their communities to provide self and family care services. The principal service providers are the Health Volunteers (HV). HV have been trained on primary health care and provision of self and family care services to people in the area. A HV is responsible for 5-10 families.

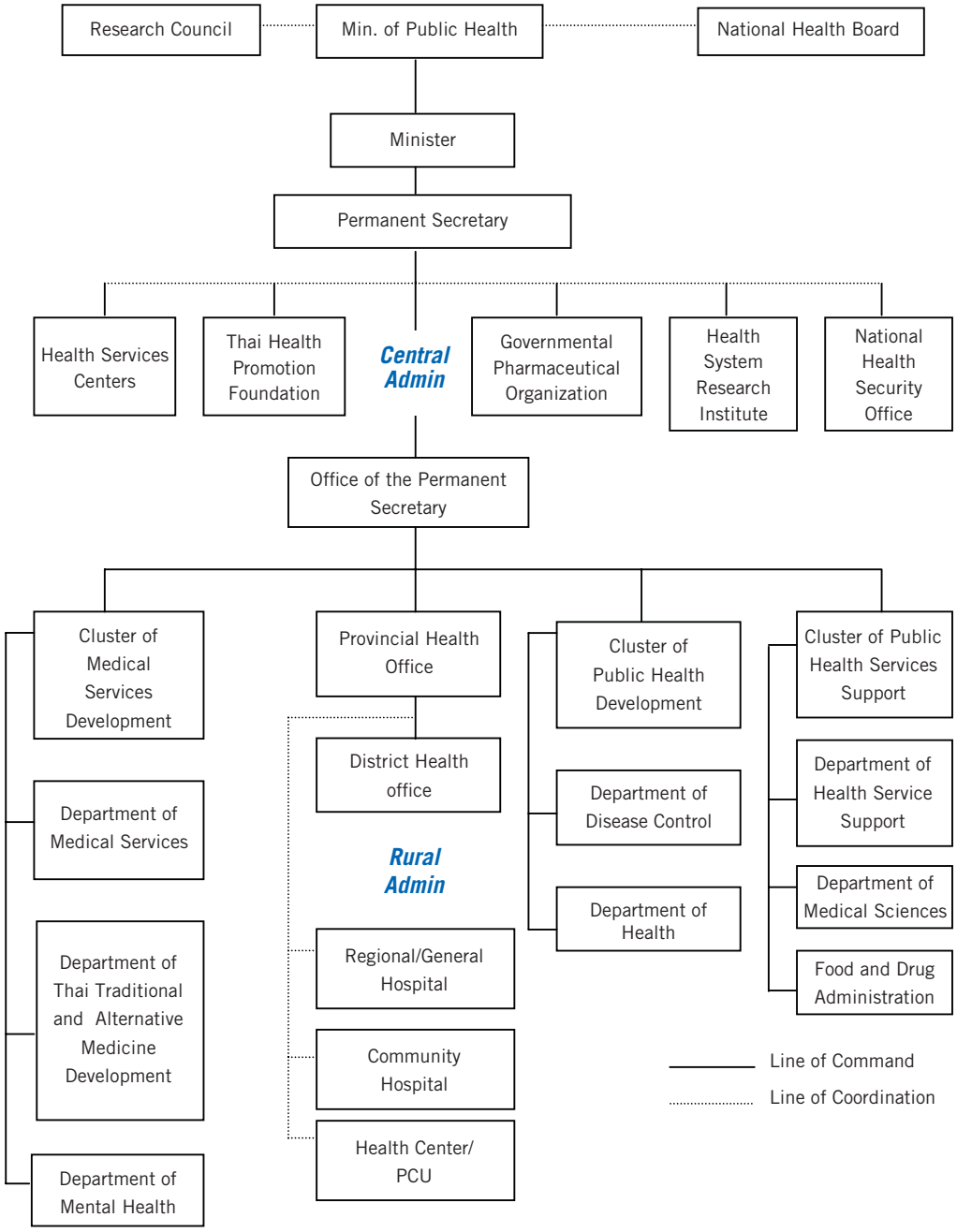
Primary care is integrated, holistic, and continuous health care provided to the public and their community by public health personnel. Health care units at this level are the PCU and local health centres. PCUs have more staff and can provide somewhat more specialised services than the local health centers.

Secondary care health services are specific and somewhat more complicated and provided by medical and health personnel with various degrees of specialisation. Health care units at this level are located in the Community Hospitals.

Tertiary care health services are yet more specific, complicated, and provided by medical and health professionals with specialised expertise. Health care units at this level are the Regional Hospitals, General Hospitals, Specialised Hospitals, University Hospitals, etc.

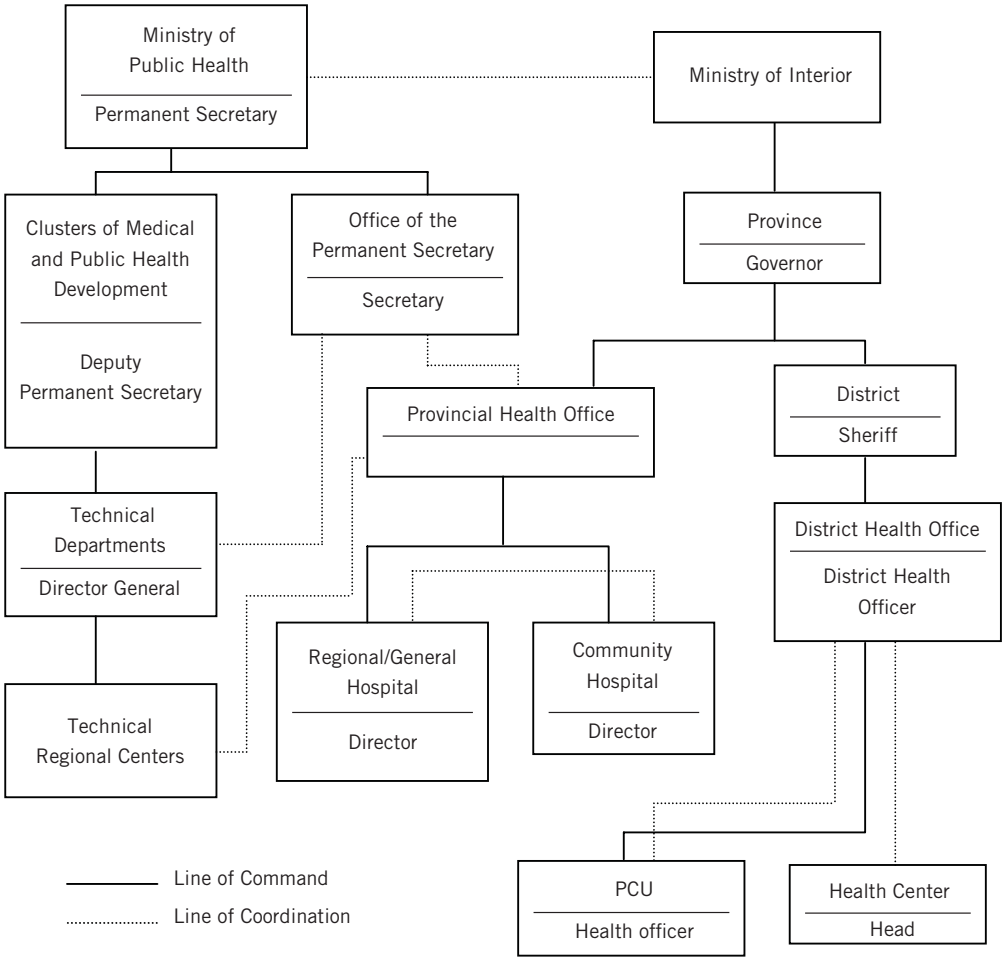
Health care services at each level are interconnected through referral and information systems. Each level has a different capacity in terms of number of staff, size of health care unit at each level, and degree of specialised expertise.

Figure 1 Public Health Services Infrastructure



Source: Bureau of Policy and Strategy, Ministry of Public Health

Figure 2.2 Infrastructure of Rural Health Administration



Source: Bureau of Policy and Strategy, Ministry of Public Health

There are currently about 9,791 local health centers and 364 PCUs providing integrated primary health care. The Ministry is also expediting the establishment of additional PCU.

Table 1 Number of Public Health Services Units under Rural Health Administration

Type	Number (Places)
Regional and general hospitals	90
District hospitals and its extended outpatient department	721
Local Health Centers	9,791
Primary Care Units	364

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

The guiding principles of the Government on primary health care have been implemented through the Ministry of Public Health's structure since 1977. The role of governmental agencies has changed from that of service provider to promoter of quality health services. The public is no longer seen as only a recipient of services but as composed of participants in self-care and personal health improvement.

Developments in recent times have included improved health service systems throughout the country, referral systems, extended outpatient department (OPD), development of Health Services Centers, and establishment of public health coordination committees at district level. Each of the links in the network is interconnected to improve overall coordination.

3.2 Primary Care Units: Structure, Functions, and Activities

PCUs are defined by the Department of Health Service Support as the primary medical care and health care units responsible for provision of integrated, continuous, holistic primary health services that meet public health requirements, are easily accessible to everyone, provide consultations, and have a referral system. The PCU is responsible for health promotion and empowers the public to improve its physical and mental health.

3.2.1 Structural Standards of Primary Care Units

Location and population

- Each PCU should be responsible for a population of 10,000 people or less.
- A PCU should be located in the area where its target group lives; however if it is located outside the area, the population should not have to travel more than 30 minutes by car to reach to the PCU.

Personnel

A PCU that is responsible for a population of 10,000 will have eight health staff or ratio of health personnel per population equal to 1:1,250. The eight health professionals would include:

- One physician who is responsible for 10,000 people. In the future the ratio of physician to population should be 1:3,000.
- Two professional nurses responsible for a population of 10,000 with the ratio of nurse to population equal to 1:5,000. In the future the ratio should be 1:900.
- Other relevant health staff members who can provide continuous health care services including dentist, pharmacist, lab technician, financial staff, providing full or part-time support to a PCU.

Medical doctors working in a PCU receive pre-service training on family medicine with a focus on relevant primary care knowledge, skills, practice, and attitude. The existing staff receives in-service training through short courses and on-the-job training.

The PCU Information System should be integrated, holistic, and track continuous service so that it can contribute to good care of individual, family, and community health.

3.2.2 Procedural Standards

PCU should provide integrated health services including:

- Provision of medical services for general illnesses and chronic diseases integrated with provision of health education on related health issues for health care receivers.
- Provision of pro-active health care services integrated with health promotion and health prevention activities, e.g. home-visits in necessary cases, etc.
- Provision of dental care must include general treatment, prevention, and promotion of dental care.

Health care services provided at PCUs must be integrated, holistic, convenient, and readily available to the public. Each PCU should function for at least 56 hours weekly to provide health services. The services must be provided within one hour with a well-functioning and rapid referral system.

The referral system should be clear and accountable so that patients can be tracked to the responsible health professionals. A complete medical record system needs to be in place to monitor provision of services and collect data. Continuous and complete records are required including a family folder and outpatient data card for health service recipients.

A monitoring, supervision, and training system needs to be integrated into the PCU that includes standard performance indicators. Problem solving should be carried out continuously by health personnel to ensure smooth two-way functioning between the Contracting Unit for Primary Care (CUP) and PCU.

3.2.3 Outcome Standards

Expected outcomes of PCU activities:

- The target population will be covered by health care services according to set standards.
- Complete, timely reports of communicable disease cases in the locality of responsibility.
- Early detection of chronic disease cases.
- Good relationship of population with health personnel.
- A high percentage of the population with illness avails of the health services at their PCU.
- A high percentage of the population in a locality registers to receive health services from their PCU.
- The population will be satisfied with the PCU health staff and treats them as their family's health consultants.

- Good public participation and coordination with health staff in improving health.
- The public is in better health, be relatively free from illness and/or not die from preventable diseases.

3.2.4 Problems in Management of PCUs

Budget Limitations

Budget allocations were allotted depending on the number of people in a particular area. Health administrators and health practitioners concentrated on financial administration of their limited resources rather than on human resources development.

Time Limitations

The duration of staff training was too short. As a result training contents was limited to policy orientation, working standards, and work guidelines.

Insufficient number and unequal distribution of health personnel

There is a high ratio of highly qualified health personnel in urban areas, however, PCUs only have nurses and other public health professionals that have completed a two-year training programme at a public health college.

Limited knowledge and technology of health personnel on health promotion, health prevention, and management systems.

Ineffective monitoring and evaluation system due to confusion of roles in health services system.

3.3 Occupational Health and Safety Service System in Thailand

Occupational health and safety in Thailand is still mainly focused on the medium and large-scale industrial sector. The role of governmental officials is to develop, advise, and provide OSH services to the private sector. The governmental sector, especially government hospitals, are still the main conduit for the provision of OSH services in Thailand.

Three ministries are principally charged with occupational health and safety issues in the country. The Ministry of Public Health is responsible for the provision of OSH services in all sectors through its technical units and health care network systems. The major technical unit that is responsible for occupational health activities is the Bureau of Occupational and Environmental Diseases under the Department of Disease Control. Its main functions include policy development; developing standards and guidelines for OSH services and management; and development of occupational health and safety surveillance system.

The Ministry of Labour is responsible for the enforcement of occupational health and safety standards as well as inspection and promotion of a safe working environment. The three major departments under the Ministry of Labour relevant

to occupational health and safety are the Department of Labour Protection and Welfare, the Social Security office, and the Occupational Safety and Health Committee.

The Ministry of Industry's role is to issue permission for factory construction, oversee enactment and enforcement of the Factory Act, establish machine safety standards, and provide on-site inspection for permission of factory start-up. The major units responsible for occupational health and safety include Department of Industrial Works, Office of the Permanent Secretary, and Industrial Estates Authority of Thailand.

Although the Ministry of Agriculture is not directly responsible for farmers' health, the Department of Technical Development in Agriculture was established to control the importation and use of pesticides and other agricultural chemicals in the country. Regulations issued under the Ministry require all sellers to register the products sold in their shops with their local authority. Consumer concerns and awareness of pesticide contamination in food products has increased through campaigns conducted by both the Ministry of Agriculture and the Ministry of Public Health. The campaigns included focus on stopping or at least reducing the use of pesticide and other chemicals in farms.

3.4 Constraints in the Existing OSH Framework in Thailand

- Lack of occupational health personnel, particularly specialised occupational health physicians.
- Sometimes doctors and other health professionals cannot recognise occupational illnesses.
- Recognition of and supportive attitude of employers and employees towards occupational health and safety issues is limited with resulting negative impact on investment in OSH services.
- Governmental investment plans and policies have strongly focused on improvement in economic status as opposed to also ensuring occupational health and safety.
- Relevant legislation and enforcement of occupational safety and health is limited with resulting impact on effective OSH services.

Another issue of importance is the lack of attention to informal economy workers. One of the problems of workers in the informal economy in Thailand is that they often lack the technical skills needed in formal enterprises. Most of the industrial sector requires skills such as in electronics or use of machinery. The OSH requirements of informal economy workers are at risk of being ignored because, prior to the project, the MoPH did not have any special OSH services for this group.

4 Review of International Occupational Health Service Models

4.1 Definition of Occupational Safety and Health

The ILO/WHO definition of occupational health is "the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations".[27] WHO also stated that "Occupational health is not limited in scope to only preventing and controlling specific occupational disease. Workers' health programmes should deal with the full relationship between work and the total health of man".[28] The definition clearly specifies that occupational health service is concerned with the provision of assistance in different forms to ensure the total health of all people at work. The aims of the service should cover all health service aspects, especially prevention of occupational and work-related diseases and health promotion.

4.2 Objectives of OSH Services

ILO Convention No. 161 and its recommendations concerning OSH services stresses that such services are concentrated on preventive functions and are responsible for advising employers, workers and their representatives on maintaining safe and healthy working conditions, as well as on the adaptation of work to the capacities of workers. The standards are comprehensive and place emphasis on primary prevention and the best use of resources and cooperation rather than relying on possibly inflexible structures.

4.3 Activities of Occupational Health Services

Occupational health service activities include health assessment, monitoring of the working environment, health education, first aid, and putting safety measures in place in the workplace. Occupational health service should cover health promotion, prevention of diseases, early treatment, and rehabilitation activities. According to ILO Convention No. 161 and its recommendations, OSH services should include the following basic activities:

- Risk assessment of working conditions and environment; monitoring of workers' exposure to occupational hazards.
- Health assessment including pre-placement and periodic health examination.
- Provision of health education, health promotion and protection programmes at workplaces.

27 Rantanen, J, & Fedotov, I.A., 1998.

28 World Health Organization, 1985.

- Provision of first aid services, basic treatment and rehabilitation services.
- Assessment of preventive and control measures; collective and personal protective equipment.
- Recording and analysis of health data and sickness absence records with due respect to confidentiality and professional ethics.

The ILO also recommends that provision of occupational health activities be carried out under several important conditions:

- Major tri-party stakeholders, i.e. the governmental sector, employers, and employees should participate in the identification of the direction and policy of the services.
- Employers should be responsible for improvement and control of working conditions for the safety and health of their workers.
- Employers' and employees' representatives should participate in determining the roles of OSH services in the enterprise as well as training for their employees.
- The employees have the right to reject hazardous conditions as well as the right to know about related health and safety information.

4.4 Models for OSH services

Several organizational structure models for OSH services exist that Professor J. Rantanen has described and summarized as follows:[29]

The **large industry model** is used in large scale enterprise OSH services. The services are provided through the enterprise itself. The occupational health team staff are employed by the enterprise. In some countries the provision of this type of service is a legal requirement for large scale enterprises. The advantage of this model is that the services are provided by the enterprise itself and can be quite comprehensive. The solutions to occupational health problems can be found within the enterprise and can be carried out easily through employee participation in cooperation with all representatives of all relevant sections. The disadvantage of this model is that the employers can influence OSH services and there may be lack of cooperation with governmental sectors.

The **group service model** is implemented through a service formed by enterprises that have grouped together to provide OSH services to their employees. Enterprise group members are usually medium and small-scale enterprises. In some countries this is a legal requirement for medium and small-scale enterprises that are unable to provide the services by themselves. The services can be managed by employers' and employeesí representatives from each enterprise. The budget for the services can be allocated from each enterprise in proportion to the number of their employees. The services are provided on a non-profit basis. This model is implemented through a service external to the enterprises. The disadvantage of this model is that there lacks a close relationship of the service to the employees. The advantage is that it can cover all small-scale enterprises and the service team can be easily mobilized to provide the services.

29 Rantanen J., 1994.

The **private model** is implemented in some locations in Eastern European countries. The services are provided by private business enterprises. There is no participation from workplace representatives. Flexibility in provision of services is a chief advantage of this model. This model, however, may be focused strongly on a profit motive with less concern for the quality of services. Participation in management of occupational health solutions in the workplace is also limited.

The **community model** is implemented through governmental agencies. The services offered are essentially the same as other community health activities offered. The advantage of this model is that the OSH services will be conducted through existing, already developed structures and networks. It is easily integrated into the existing structure. The disadvantage of this model is that it can overload health units in highly condensed industrial areas. The health professionals should receive capacity strengthening training on occupational health and should receive support from central or regional centers.

The **national health service model** is implemented in the enterprise in a similar way as the large industry model but it is implemented through governmental health staff. This model is primarily implemented in large-scale enterprises. The advantage of this model as compared to the large industry model is that it includes other health services and curative activities.

The **social security institution model** is supported by Social Security Office for both management and financial issues. This model is similar to the group service model except that it is managed by the Social Security Office.

4.5 Recommendations for Integrating OSH Services in Developing Countries' Public Health System

A review of the literature provides guidance on standards and methods for integrating occupational health services into PCUs. Concrete examples of experiences include case studies in Finland and Nigeria. Most studies in other countries have defined the term "PCU" and roles of health services providers in a different context from Thailand. We can, however, extract the most relevant aspects from the available literature.

Herbert et al. (1997) suggest that occupational health service in PCUs should consist of:

Primary prevention for decreasing of injuries and illnesses including:

- Report of occupational injuries and illnesses to relevant agencies, employers, safety committee, workmen's compensation fund, etc.
- Evaluation of working hazards and making suggestions for improvement of working conditions.

Secondary prevention for decreasing disabilities including:

- Early detection and early treatment to decrease risk of disability.
- Coordination between relevant personnel, i.e. physicians, employers, employees, and with the workmen's compensation fund at an early stage to decrease severity of injury and risk of disability.
- Communication with employers and safety officers to adjust working conditions to worker capabilities and limitations.

- Developing treatment plans and "return-to-work" plans for patients with employers, employees, and health personnel.
- Instituting consultation and referral system to experts in necessary cases.
- Problem diagnosis, tracking uncured cases, assessing patients that are unable to return to work.
- Evaluation of working hazards and making suggestions for improvement of working conditions for patients returning to work.

The Health Development Agency in the U.K. conducted qualitative research on processes and supportive factors in health care services in workplaces.[30] The findings result in suggestions to improve occupational health care services, especially in primary care units:

- Health service providers should clearly understand their service roles.
- Employers and relevant agencies should participate.
- Analysis and problem solving at individual and corporate level should be promoted.
- Service provision should be consistent with employers' and employees' needs.
- The programme must be supported by corporate executives and integrated with the corporate policy and culture.
- Process and outcome evaluation should be carried out.
- Continuous training should be provided to health providers to improve new service skills on provision of health care services in the workplace.

Harrison & Harrison (2002) conducted a cross-sectional survey to study the need for provision of OSH services in PCUs. They found that such a need exists and that it is feasible to provide OSH services in PCUs by providing such services together with general treatment services.

The World Health Organization (2002) has developed a training manual for primary health care workers to work on occupational health at PCUs. The goal is for the primary health care worker to provide OSH services in the following areas:

- identify and evaluate work-related health hazards;
- identify basic occupational health problems;
- provide health education for promotion of workers' health and prevention of occupational diseases and injuries;
- provide primary care and primary medical treatment;
- record related data for surveillance.

The development of OSH services in developing countries should focus on the provision of OSH services in the private sector by applying the industry model, group service model, and the private model.

Public sector agencies should integrate OSH into the ordinary health service system and place greater emphasis on its importance. This can be accomplished through strengthening the technical competencies of health personnel, improving administration as well as increasing budget allocations and the number of personnel. The scope of services also needs to be extended to cover a larger area.

30 Health Development Agency, 2002.

OSH services in the public sector should emphasize reaching less-accessible groups or high risk groups, for example farmers, small-scale enterprise employees, family enterprises or self employed groups, and health care personnel.

OSH services in concentrated industrial areas or in industrial estates should follow the national health service model. This means that OSH services should be provided directly by governmental health care agencies. OSH services can be provided through the group service model in other high risk workplaces that can not afford the necessary investments.

Governmental policy on occupational safety and health issues should be clearly defined and promoted by increasing the budget for administration, training, public relations, and capacity building. All relevant governmental agencies should increase their cooperation and implement concrete actions to promote occupational health and safety. Actions should include clearly-defined responsibilities and the establishment of a systematic implementation plan.

Participation of employer and employee representatives in the development of occupational health policies needs to be emphasized so that understanding and support for the provision of OSH services can be enhanced. Services need to be adapted to the needs of target groups.

Improvements in the development and enforcement of relevant legislation are required, particularly as related to the provision of OSH services. The most important factor in this regard is to increase advocacy for and implement legislation, carry out inspections, and monitor service quality.

4.6 Implementing a Model for Integrating OSH in Primary Care Units

Occupational health problems are among the major public health issues in Thailand. The urgency of the need requires that all relevant governmental agencies integrate attention for occupational health issues into major national policy. All agencies also need to ensure that OSH services are provided to all target groups.

The integration of OSH services into existing public health services at all levels including in regional hospitals, general hospitals, and PCUs is particularly important in Thailand. Provision of health care services at PCU level became more important after the health care system reforms instituted by the Ministry of Public Health. Health care services provided at the PCU level are expected to integrate health promotion, health prevention, medical treatment and rehabilitation services. The establishment of efficient interconnecting OSH service networks will ensure that a step forward is taken to extend such services to all areas of the country.

The analysis of the existing health context in Thailand and the study of international OSH service models set the stage for the implementation of the remainder of the ILO-supported project described in the present report. A brief summary of the project objectives and methodology is presented below.

Overall Project Objective

To set up and develop OSH services in PCUs through the development of knowledge and capacity of PCU staff on occupational risk assessment and utilization of information for planning effective OSH services covering all health aspects including curative, health protection, health promotion, and rehabilitation.

Specific objectives

- To study the situation of primary care units and Sub-district Health Offices in terms of occupational health provision.
- To set up the guidelines for OSH services and practices in PCU.
- To design, test, and implement a training curriculum on occupational health for PCU staff.
- To conduct a feasibility study on the application of knowledge on OSH services and implementation of guidelines on providing OSH services in PCUs.

Methodology

The project was carried out with the following corresponding output:

1) Review of international models on integrating OSH at the primary level.
2) A survey on the situation of OSH services in PCUs in Thailand.
3) Guidelines for OSH services and practices in PCUs.
4) Occupational health training curriculum for staff in PCUs.
5) Pilot OSH services in ten pilot PCUs in five provinces; Nakornpathom, Suphanburi, Khon Kaen, Lamphun, and Phayao.
6) Evaluation meetings at the conclusion of the project and exchange knowledge and experience with other PCUs.

The next three chapters describe in greater detail the interventions carried out under the project.

5 Orientation Survey on Occupational Health Services in Primary Care Units

Chapters 5 through 7 provide an overview of the activities carried out in the project to analyse and develop a model for integrated OSH services in selected PCUs.

The project carried out a survey of the existing situation so that the integration of OSH services into PCU work would be well adapted to the realities found. Data was collected to provide baseline data and inform the development of an OSH services training curriculum for PCU staff.

The specific objectives of the survey were to collect:

- data and narrative information on the present status of OSH services in provincial public heath offices and PCUs;
- baseline data for future planning, monitoring, and evaluation of occupational health programme in PCUs.

5.1 Study Design and Methodology

The sample groups were selected from provincial public health offices and PCUs and divided into two groups to study aspects of OSH service provision. The first group completed a self-report questionnaire. Seventy responses were collected (81.4 percent effective response rate). The second group was drawn from a sample in primary health care units in five provinces to be included in a pilot project. A questionnaire was sent to all 217 respondents, of whom 172 (79.3 percent) responded. All subjects were asked to answer questions about their general characteristics such as age, academic qualification, working experience, as well as about existing OSH services, supporting resources, and limitations of working in the occupational health field.

5.2 Results

5.2.1 Data from Provincial Health Offices Throughout the Country

Thailand has 75 provinces of which five were selected as pilot provinces. The other provinces were asked to participate in the background survey on the functioning of OSH services and PCUs. Data was finally collected from 57 provinces out of 70 non-pilot provinces in the country (81.4 percent effective response rate). An additional five provinces also provided data through their participation in a more specific survey that was carried out in the pilot project provinces.

The respondents' data indicates that 28.1 percent of respondents were from the central region, and 57.9 percent finished a bachelor degree. The percentage of participants reporting 1-5 years of experience in the occupational health field was 46.3 percent. The percentage of respondents already working in an occupational health team was 94.7, and 80.4 percent were trained in occupational health. 94.6 percent of respondents expressed a need for (additional) occupational health training.

Occupational health education for workers or farmers was the most common activity performed by PCU staff in every location. OSH education is not very expensive and health personnel can carry it out without using medical equipment. The second most common activity was first aid and emergency treatment for occupational injuries.

Table 2 provides an overview of the most common OSH activities carried out in each of the locations where the respondents worked.

Table 2 Percentage of Activities Related to OSH Services Classified by Sector

Occupational health service activities	Sector		
	Industrial n = 43* locations	Agricultural n = 47 locations	Unregistered/ informal labour n = 32 locations
Occupational health education	86% n = 37	100% n = 47	88% n = 28
First aid and emergency treatment	72.% n = 31	77% n = 36	72% n = 23
Working environmental survey in farms or industries	79% n = 34	38% n = 18	31% n = 10
Environmental measurement using equipment to measure air and noise pollution, etc.	37% n = 16	28% n = 13	22% n = 7
Screening	39.5% n = 17	79% n = 37	13% n = 4
General health exam	42% n = 18	15% n = 7	16% n = 5
Health/disease surveillance	51% n = 22	38% n = 18	16% n = 5
Campaign	0	64% n = 30	0

*= number

PCUs received support from hospitals and other public health network partners for occupational health services such as through provision of human resources (77.5 percent) and medical materials (59.2 percent). In addition, provincial public health offices also support provided supervision/counselling (72.0 percent) and budgetary resources (70.0 percent) to PCU.

Suggestions from Respondents Concerning Occupational Health.

- Responsible units at the ministerial level should issue as a policy and/or set key performance indicator(s) on OSH.
- OSH services should be integrated in PCU activities like other standard health service activities.
- Occupational physicians and health personnel should receive training, sufficient budgetary resources, and support for their involvement in the occupational disease surveillance scheme.

5.2.2 Data from Pilot Project Area Respondents

The number of respondents from PCUs in the study area in five provinces are shown in bracket as follows: Lamphun (29), Phayao (23), Khon Kaen (62), Nakornpathom (12), Supanburi (46). A total of 172 PCUs responded to the study.

General data

The most common OSH services provided in PCU was for the agriculture sector followed by occupational health activities for "self-employed" workers. About 86.3 percent of PCU indicated that less than 10,000 people live in their area. The proportion of the labour force (15-60 years old) to the general population is 66 percent.

Health personnel in PCU

Each PCU had two to four health personnel staff. Most (63.4 percent) had not received any training on occupational health. About 20.3 percent of PCU have one doctor examining patients at the PCU one day per week.

Illnesses and referral data

Respiratory tract disease was the most common illness found in the pilot project areas. The second most common illness was musculo-skeletal disorder. Accidents, blood circulatory system disease and diabetes were diseases with high referral rates. The limitations of the referral system were:

- limited number of ambulances, long distances, and delays in coordination;
- problems with diagnosis;
- limited feedback about patients from PCU contracting unit (CUP);
- patients prefer to go to hospitals which may not be registered providers.

Data on health/disease surveillance

Every PCU has to record personal and family health data into the Family Health Record Form (Family Folders). Health officers also have to report notified diseases including occupational diseases. However, only 68.3 percent of family folders were complete. Reasons for incomplete folders included population mobility, no one at home during day time, and incompatibility between the items in the questionnaire and those in the computer programme.

Related Units and Support

Public health services were implemented with cooperation from communities, local authorities, agricultural workers, and other occupational groups. Specifically, activities with communities focused on health promotion and prevention of health problems such as dengue hemorrhagic fever. Provincial public health officers and CUP provided budgetary support, medical material, human resources, and training for the PCU.

Environmental Problems in PCU area

35.8 percent of PCU reported that the population in their area complains about odour and water pollution from factories. The PCU managed such problems by coordinating with local authorities and providing suggestions to the administrators of factories to prevent of the pollution.

Principal Occupations of Workers in the Pilot Project Areas

42.4 percent of PCU reported that they had industrial factories in their area.

Health problems found in industrial areas included occupational skin disease from chemical substances and work accidents.

72.3 percent of PCU reported that they had unregistered/informal workers in area. Most health problems found in this group were musculo-skeletal disorders, visual problems, chemical toxicities, accidents and silicosis cases.

97.6 percent of PCU reported that they had agriculture workers/farmers in their area. The most common illness found among farmers were musculo-skeletal disorders. The second, and the third most common health problems were chemical toxicities and accidents.

Role of Health Personnel in PCU

The major role of health personnel in the PCU was to provide first aid, health education, and cholinesterase screening test for farmers. The PCU health personnel reported that they lacked knowledge and practice in the occupational health field.

5.3 Discussion

The study indicated that health personnel at the provincial level are well-educated and had 1-5 years of experience in the occupational health field. They have received some training on occupational health, however, they need more training on the topic of risk assessment. The most frequently performed OSH-related activity performed by PCU health personnel was occupational health education. CUP and public health office were the main agencies providing support to the PCU. Health personnel in PCU could receive further guidance on integrating additional OSH services from these agencies.

The study of the situation in the five pilot provinces provided details on characteristics of PCU by region, supporting resources, epidemiological data, data collection, networking, environmental and occupational problems in each area and the role of health personnel. For this reason it is advisable to integrate OSH services into existing health care systems as a strategy to cope with current and future health care service demand. The study showed however that health personnel at the provincial level is faced with many limitations and difficulties in the performance of their work on occupational health. For example, PCU staff complained of high workload since they handle many responsibilities.

More than 50 percent of the respondents suggested that OSH services should be a part of major policy and set as a key performance indicator at the ministerial level.

Conclusions from the Survey

The goal of this component of the project was to study the situation of OSH services in PCUs. The study showed that the PCU personnel had already carried out some occupational health service activities. Although many farmers and other workers in the PCU areas are exposed to risk and occupational health diseases and accidents, most PCU health staff lacked sufficient knowledge and practice in the field of occupational health.

6 Training on Occupational Health Services for Primary Health Care Staff

The survey on OSH services described in the preceding section formed the basis for a capacity building programme of PCU staff in the five pilot areas. This capacity building programme began with a five-day training course on occupational health services, followed by pilot activities on the community level. Chapter 6 presents summary information about the training course while Chapter 7 describes some of the pilot activities. Chapter 8 lists some lessons learned.

6.1 General objective of the training

The training course aimed to develop the knowledge and capacities of PCU staff on occupational risk assessment and utilisation of this information for planning effective occupational health services covering all OSH health aspects: namely, curative, health protection, health promotion, and rehabilitation.

6.2 Specific training objectives

After completing the training health care staff will be able to:

- Describe occupational health situations, problems, and occupational health plans for the area where their PCU is located.
- Evaluate occupational hazards in the area where their PCU is located.
- Provide health promotion, health protection, and surveillance of occupational diseases in the area where their PCU is located.
- Provide primary medical care and referral activities for continuous medical treatment of OSH-related illnesses and accidents.
- Provide health consultations for workers in the area.
- Plan and evaluate occupational health services.
- Coordinate and collaborate with other related agencies.

The training curriculum covered 10 core subjects:

1) occupational health situation and occupational health plans
2) occupational illnesses and surveillance
3) occupational hazards evaluation and health assessment
4) legislation related to occupational health
5) principles of occupational safety
6) occupational health for the agricultural sector

7) holistic and integrated occupational health services
8) occupational health for primary health care workers
9) occupational health for small and medium enterprises and workforce in community
10) planning and evaluation of occupational health services provided

6.3 Course Methods

The course combined theory (lectures, training documents and manuals) and practical field and group work.

The training facilitators divided the trainees into five groups for a field trip study in industries and communities to evaluate occupational hazards, conduct health assessments including provision of appropriate guidelines for solving occupational health problems, and proposing prevention actions in the establishments.

Each group presented their conclusions on:

- work processes
- occupational health hazards and risks
- risks prioritisation
- prevention and control of risks
- health education for workers
- appropriate occupational health services for workers

At the end of the workshop a planning exercise was carried out on provision of occupational health services at PCU and local health centres. The participants developed initial action plans for each province that were to be refined with local stakeholders in each province.

6.4 Description of Participants

A total of 54 people participated in the training consisting of:

- health personnel from primary health care units and local health centers, community hospitals, district health offices, provincial health offices in five pilot provinces; namely, Nakornpathom, Suphanburi, Khon Kaen, Phayao, Lamphun (48 persons);
- health personnel from regional disease control center zones 2, 4, 6, 10 (3 persons);
- lecturer from Nonthaburi Nursing College (1 person);
- ILO staff (2 persons).

6.5 Evaluation of the Training Programme

Tests were carried out to measure the extent to which learning objectives were met on the theoretical component (valued at 60 points) and practical work (valued at 40 points). Participants were expected to participate in at least 80 percent of sessions and pass the test with a score of at least 60 percent. Trainees were expected to have a minimum group score of 70 percent on the practical work.

Forty-six trainees took the pre-test (91.30 percent). The results showed that the post-test score was significantly higher than the pre-test score (p-value < 0.000) and every trainee had a score above 50 percent.

The evaluation of group presentations was carried out by the facilitators who found that every group of trainees could identify occupational health hazards and risks, prioritise risks, develop risk prevention and control methods, and could provide health education to workers correctly.

Additional details on course content and methodology are presented in Annex 2.

7 Integrating OSH Activities into Primary Care Unit Services

Pilot PCUs in the provinces of Khon Kaen, Suphanburi, Nakhorn Pathom, Lamphun, and Phayao carried out activities following the completion of training. Two PCUs were selected in each province to participate in the pilot project on provision of OSH services. The Bureau of Occupational and Environmental Diseases provided financial support to these pilot PCUs so that they could implement specific OSH services for their communities.

The capacity of the provincial, district, and sub-district health personnel from the five pilot provinces had been strengthened through the five-day training on OSH services described in the previous chapter.

The objective of the pilot projects was to study how PCUs put their knowledge of integrating OSH services into practice in their work.

The implementation process was similar in each of the provinces although adaptations were made in accordance with existing local capacities, resources, and types of economic activities of the population.

Section 7.1 provides an overview of the basic implementation steps as applied through the project. Section 7.2 presents details of the implementation process as it was applied by the PCU directly with communities in the field. Section 7.3 discusses pilot implementation procedures as they were implemented with patients visiting the PCU. Section 7.4 provides some case study examples of actual implementation of the actions in different settings.

7.1 Basic Implementation Steps for Pilot Projects

1) MoPH set up a working team in each of the pilot project locations prior to initiating the action plans. The working teams were composed of representatives from several agencies including the MoPH, Ministry of Labour, and Ministry of Industry. Strategies, objectives, and activities to be implemented during the pilot projects were discussed with the teams. The MoPH also interacted with the Ministry of Agriculture (MoA) in locations where the MoA was implementing the ILO WIND (Work Improvement in Neighborhood Development) programme.
2) The PCU developed action plans in collaboration with health staff from the Provincial Health Office, District Health Office, hospitals, and Regional Centre for Disease Prevention and Control.[31] These were further fine-tuned during the implementation of the actions based on

31 Regional Center for Disease Prevention and Control Zone 2, 4, 6, and 10. Participants from the training described in Chapter 6 used the basic action plans they had developed during the workshop as a starting point.

participatory input from workers, employers, local authorities, and local health volunteers. The pilot PCU staff also defined the work guidelines for their OSH service projects.

3) Pilot project team members held discussions with district and sub-district public health professionals, local authorities, employers, and community leaders including workers and health volunteers. The main issues covered were the need for OSH services in PCUs, explanation of the project, awareness raising, identifying the main types of employment and their potential risks, and gathering general data on the situation in each locality.
4) The team participated in local sub-district council meetings to inform members and also accompanied council members to meet with local leaders in different communities.
5) The PCU developed two types of activities on occupational health centering on (1) community-based OSH services and (2) PCU-based OSH services (i.e. services provided to patients who go to the PCU).
6) Statistics were collected on risks in the workplace. Information on past illnesses and injuries were collected and analyzed. Data was collected in two ways, through visits to places of work and through self-reporting by patients visiting the PCUs.
7) A committee at the provincial level listed types of employment and related types of illnesses that they thought were prevalent. The list was then returned to the PCU so that they could provide targeted check-ups for workers. Agricultural workers, for example, who visit the PCU were automatically checked for symptoms of pesticide poisoning. Data collection during visits to places of work included testing workers for pesticide or lead poisoning depending on the type of employment. Data was collected on the illnesses and accidents that were identified by the PCU which were sent back to the Provincial Health Department for data analysis.
8) Promotion of OSH among employers and employees through awareness raising was provided. Additional collection of statistics specific to each of the workplaces was carried out. The resulting statistics were used to inform and motivate the employers and employees to address the issues.
9) PCU staff provided training and/or counselling to workers and employers, either at the work place or at the PCUs.
10) PCU staff and other team members returned to the enterprise, working group, farm, or patient visiting the PCU and explored risk reduction methods jointly.
11) Strategy development for risk reduction was initiated together with employers and employees.
12) The stakeholders carried out monitoring and evaluated implementation of the actions.

Examples of issues discussed when counselling or providing training to workers are:

- accident prevention for fruit tree picking by advising on safe postures and ergonomically best ways to pick fruit, promotion of stretching exercises to enhance flexibility and reduce body pain.
- methods for safely lifting heavy objects.
- explanation of reasons for measuring pesticide levels in the body through cholinesterase tests.
- explanation of symptoms of chemical poisoning as a result of pesticide use such as headaches, other nervous system disorders, and/or gastro-intestinal effects.
- dangers and methods of avoiding the inhaling of fumes from glue and other liquids as in the case of the manufacture of artificial flowers.
- use of safety equipment in small-scale industrial workshops.
- safe use of tools.
- appropriate posture and physical supports (small stools, etc.) to decrease musculo-skeletal problems.
- use of protective gear such as hats, gloves, masks, etc. in various types of work.

7.2 Steps in the Development of *Community*-based OSH services

1) The pilot PCU staff ensured community participation was strong by holding orientation and discussion meetings with community leaders, local authorities, health volunteers, agricultural working groups, and other working groups. The purpose was to describe the objectives, working procedures, and provide occupational health education to their networks.
2) PCU staff developed simple forms for workplace surveys and health exams for agricultural and other work groups.
3) PCU staff conducted workplace surveys and health exams through cooperation with local leaders, health volunteers, provincial health staff, and district health staff. Health exams included pesticide poisoning screening tests for agricultural work groups in homes and work places. Lead poisoning tests were carried out in workplaces where workers were at risk of lead poisoning. Other health tests included blood pressure and diabetes examinations, lung function tests, and physical fitness tests with support from their area hospital.
4) PCU staff collected and analyzed the data through a community participatory approach in meetings with local leaders, health volunteers, and workers representatives to find solutions to health problems for agricultural and other working groups.
5) Monitoring and evaluation.

The pilot PCU staff developed solutions to OSH-related health problems with communities including:

- Development of an action plan based on the problems and solutions identified in each community followed by presentation of the plan in a meeting with local leaders and local authorities to solicit budgetary contributions.
- Enhancing community learning processes by focusing on healthy work life and integrating OSH in adult health education as well as in special courses for school children. Health education focused on safe work/risk reduction and effective use of personal protection devices.
- Home visits to survey occupation-related health problems and follow-up on behaviour change as related to use agro-chemicals and other chemicals.
- Advocacy for safe use of agro-and other chemicals through community announcements, community radio, agricultural exhibitions, pesticide free campaigns, and pesticide free markets.

7.3 Steps in Developing PCU-based OSH Services:

1) Strengthening management capacities of health care staff in terms of knowledge and integration of OSH services into other health services.
2) Determining the necessary scope of services, development of services for specific occupations, one-stop services, emergency referral system, consultation for occupational health problems/occupational injuries/ chemical accidents, and provision of specialized health education for agricultural workers.
3) Adding work history to the family folder (family health record) and establishing specific registries for working people.
4) Implementing early detection of common occupational diseases and integrating data into the occupational disease surveillance system.
5) Counselling and advice for patients on OSH.
6) Monitoring and evaluation.

7.4 Case Study of OSH Services Provided in Ban Gi by the Muang District PCU

The authors have included some examples in Section 7.4 to illustrate the process that was implemented in concrete terms. One example is based on a case study of the project activities by the PCU in Ban Gi, Muang District.

OSH services in Ban Gi was initiated through a series of discussions organized by provincial health authorities with local authorities, PCU staff, and other stakeholders. The staff in the Ban Gi PCU was immediately interested in participating in bringing OSH services to workers in the locality and they were supported by the local authorities.

A team was created composed of PCU and provincial health department staff members to implement the pilot project. A background survey was carried out to determine the types of employment in the area. The team found that 90 percent of the people living in the locality were engaged in farming. The remainder

of the population worked mostly in hat making or one of the eight woodcarving factories in the area.

The project had two main components, one of which is in communities directly with employers and employees, the other by directly servicing patients who visited the PCU.

The project team wrote a project proposal including a description of the implementation steps. The project included the establishment of a network comprised of the Provincial Labour Office and Social Security Office staff, employers, local health volunteers, and local authorities.

7.4.1 PCU Based Pilot Experience: OSH Services for PCU patients

Patients who present themselves to the PCU receive a medical exam which is recorded on their patient card and inserted in their family folder. Each person's file indicates the profession which guides the doctor or nurse in identifying the possible cause of the problem, the diagnosis, treatment, and to gather data. If a patient presented with musculo-skeletal problems, for example, the health professional asked for the cause and, if it appeared occupationally-related, marked it as such in the family folder. Some team members lamented the fact that the computer system did not yet offer the option of indicating occupationally-related causes of illness. The health staff provided counselling to the patient on how to avoid OSH-related illnesses and accidents. Joint problem solving was carried out to solve specific OSH problems encountered by patients as required.

7.4.2 Community Based Pilot Experience: OSH Services for Wood Carvers

The team decided that, for the community based component, they would pilot test the OSH model with wood carvers. The decision to work with this group was taken because pilot testing with agricultural workers was being carried out in other localities. An example of community based work with agricultural workers is included in the following subsection.

The background survey conducted in the area had indicated that between seven and 30 people worked in each of the wood carving factories. Some home workers also provided products to the factories but their exact number was difficult to verify.

A total of seven employers employing about 100 people were ultimately included in the pilot test. Six health volunteers and one person from local government were added to the project implementation team. The onsite project in the wood carving factories was participatory with input from employers and employees.

The team made initial contacts with the employer in each factory. The team found that it was essential to gain the employers' cooperation by making it clear that the focus was on health advice and not on legal obligations. Most of the employers are afraid of the legal implications that might result from opening access to their business to outsiders. The team indicated that their major concern was to improve worker safety. This approach resulted in more openness on the

part of the employers to listen to the important points on OSH. Employers were encouraged to become aware of the illnesses and injuries that can be caused by the wood carving occupation.

A meeting was organized to discuss the OSH and environmental risk factors together with the employees once the employers understood the issues. A local health volunteer assisted with the discussions. Employees were helped to become aware of the types of dangers that they should look for in their work and related risks to their health.

The project team found that they needed to visit the small wood carving factories many times. After the first general discussions, informal visits were made to look around the work environment and talk generally with everyone. A few visits later, employers and employees became more relaxed so that proceeding to the next step, the health exam, was not difficult.

The PCU staff conducted a general health exam in the factory and filled in a risk checklist with the employees. Sometimes the employees took the checklist home to study it, fill it in, and bring back later.

The team prepared focus group discussions in the factory using the initial information collected. A large diagram of the body, also called the "body map", was displayed on which the employees marked their illnesses and other health problems. After indicating the problems on the body map the employees tried to identify the causes of their health problems, how to treat them and to avoid such problems in the future. The team also used special instruments to measure light and noise as well as the functioning of machines in the wood carving factories. Sometimes employees could not find the causes of their health problems so the team questioned the employees to guide them in finding causes and solutions.

The most common occupational injuries and illnesses of wood carvers were eye injuries caused by flying wood chips, cuts from woodworking machines and tools, vertigo, headaches and musculo-skeletal ailments from prolonged work in awkward positions.

The health team collected targeted documentation, brochures, and other materials to further educate the employees based on the specific issues and solutions identified in each workplace.

In some cases adjustments needed to be made in the use of tools and machines or in working positions. Gloves, masks, ear protection and other materials were recommended. Employees found it difficult to switch to new methods and tools in the beginning. Workers often felt these were uncomfortable and that production would drop. The use of masks was especially encouraged to protect from dust and other particles in the air in the woodcarving factory. Workers often complained that using the masks made them feel very hot so they did not always use them. Some only reverted to using masks when they noticed that there was a lot of dust in the workplace.[32] Some workers now continue to use the new working methods, materials, and protective items while others do not. The team noted that female employees followed the suggestions more readily than males.

32 Experience in other PCU pilot sites, such as in Pra-yao province with community-based OSH work with home-based artificial flower makers, was similar. Hot weather conditions discouraged workers from using masks and other protective equipment.

The health professionals showed the workers some simple stretching exercises to help avoid muscle pain. The team tried to motivate employees to at least do the muscle stretching even if they would not modify their equipment.

Once the employers and employees started implementing the OSH activities in their work the team followed up with counselling and monitoring.

7.4.3 Case Study of Community-based Outreach to Agricultural Workers on OSH

The outreach process with agricultural workers in other parts of Lamphun province was quite different from that carried out with the woodworkers. Health surveys were carried out by local authorities and health teams administered blood exams to determine pesticide poisoning in the communities.[33] This was followed by joint problem solving methods with workers to determine ways to decrease the effects of pesticides in the future.

Most of the farmers in the area said they used a mix of different chemicals together so the effects on health are quite varied and difficult to diagnose. In one village, Nong Samana, for example, the farmers decided it would be preferable to generally reduce the amount of chemicals used. The majority of the farmers grow fruit trees with small fruits called "longan". Occupational associated risks include the effects of pesticide use, accidents from falling out of trees, muscle aches and pains, dizziness, and headaches. Almost half of all farmers included in the pilot project had unsafe or risky levels of pesticides in their blood.

The health team promoted switching to organic farming or at least reducing the use of chemicals. Farmers learned to produce natural pesticides by making mixes of vinegar and charcoal, for example. They were even able to produce sufficient quantities so that they could sell these natural pesticides. Different flowers and plants are also available in the village, such as garlic and some species of flowers that can be used to make natural pesticides. A group of farmers joined together to start an organic dairy farm.

Farmers also learned to grow and use a particular herb to help rid the body of the dangerous chemicals. Safer working postures, particularly when harvesting fruit trees were introduced. Farmers started producing an organic fertilizer in powder form that can be mixed with water and used.

The number of farmers participating in the Village of Nong Samana that switched to organic farming—or at least reduced the use of chemicals—increased in the second year after farmers noticed the positive pilot project experiences of the first year.[34] An evaluation also showed impressive results in the village as per national objectives to increase agricultural safety:

- 95 percent of farmers stored chemicals safely
- 66 percent use gloves
- all change clothes after coming home (to reduce spread of pesticide and other unhealthy materials from their work to the home environment)
- 90 percent bathe immediately after coming home (same reason as preceding point)

33 Cholinesterase testing

34 The number of participants increased to 340 people.

In some other pilot project villages the percentage of people using gloves was even higher at 95 percent.

A group of 52 farmers in Lamphun also received ILO WIND training in cooperation with a Ministry of Agriculture programme. Many of the PCU in the pilot project also used information from WIND modules in their training although some do not call the training by its official name. WIND training promotes low-cost strategies for improving working conditions in agricultural activities. The integration of WIND training components reinforces the impact of other OSH prevention activities.

8 Lessons Learned, Constraints, and Innovations

The project monitoring and evaluation system was very detailed and allowed for an extensive analysis of the implementation process. A number of important lessons learned, constraints, and ideas to improve future up scaling and sustainability were identified.

8.1 Observations and Lesson Learned

Below are some observations and lessons learned from the project:

- Effective guidelines on OSH for use in PCUs can be developed through a local committee in partnership with provincial health personnel.
- The pilot project in its current format can be effective in raising awareness of authorities in the health field at local and provincial levels of the importance of integrating OSH into local services.
- Including participation of health officials from the district to provincial level in research and implementation of actions has a beneficial impact on project effectiveness.
- Setting up a network with local employers to address OSH issues in the area can be effective if they are involved from an early stage of the activities.
- Provincial authorities found that PCU and local authorities form a good channel to work on OSH with home workers.
- OSH services tailored to the risks and illnesses associated with specific occupations can be effectively integrated into a health service system at the PCU level.
- Data collection in partnership with local authorities to identify home workers is more effective. A Ministerial Regulation on home workers adopted in 2004 was the motivation for a survey of home and agricultural workers in one province. During the original survey the provincial authorities were unable to identify many home workers so the policy was changed to involve local authorities to help identify home workers. The input from local authorities was very useful in identifying more workers.
- Health promotion efforts to motivate home workers so that they do not accept any hazardous work at home can be effective if channelled correctly. Home workers have some power because the industrial estates

use their services. One large company, for example, employs home workers to weave curtains, tablecloths, etc. The home workers still need to learn how to use that leverage more effectively.

- Promotion of preventive measures through training programmes such as WIND and WISH (Work Improvement for Safe Home; both ILO programmes) is effective.
- Reducing of the use of chemicals and adopting natural insecticides and herbicides is feasible and can be effective. Interest among farmers to switch to organic farming can also be stimulated effectively.
- PCU staff increased their understanding of occupational health services during the implementation of the project. PCUs were able to provide OSH services both in the community and to PCU patients.
- The population in the local communities were concerned about OSH issues, particularly as related to agro-chemicals, which resulted in a willingness on their part to cooperate with the project.
- The project model has potential for long-term impact in communities. Working groups express interest in taking action to address OSH-related problems in the workplace beyond the life of the project.
- One of the most important lessons learned from the project was that PCU teams can coordinate OSH activities inside and outside of the MoPH system. Examples include coordination with local authorities to obtain financial support and cooperation with local schools to integrate safety training for children of agricultural workers.

8.2 Implementation Constraints

Some constraints were identified that affected the impact of the project. The project was able to test and successfully implement a number of activities during a short time. The monitoring and evaluation system integrated into the project made a detailed analysis of the constraints possible. Fortunately, most of the constraints identified can be addressed in the future.

Policy and Budgetary Constraints

1) Political advocacy on OSH is still limited. Occupational health has a low priority in national policy with repercussions at the provincial level which in turn has an impact on provision of OSH in PCUs.
2) Resource allocation at national level is limited. New decentralised resource allocation policies have led to allocation of larger budgets to sub-districts. The central Bureau of Occupational and Environmental Diseases (BOED) is, as a result, unable to allocate sufficient budgetary resources to support the provincial health office in this endeavour.
3) No budget was available to implement the occupational health activities in the provinces. Resources in terms of number of staff, financing, and equipment are limited. As a result provision of OSH services is difficult. Budget allocations from the National Health Insurance Bureau to

health care units do not include any specific budgetary allocations for occupational health. Consequently, the local sub-district PCUs have no budget for implementing OSH services.

4) Local budgets for health care are allotted based on the number of patients registered in an area. Although all migrant workers have a right to access health services not all of the patients are registered. About 60 percent of the migrant workers are not registered but avail of the services of PCUs even as the budget does not take their presence into account. The result is that the PCUs are short on funds to provide all the required services.
5) Continuous financial support is needed to implement the activities of the OSH services for groups of workers not yet covered.

Staffing

1) The PCU staff have a large number of responsibilities and tasks that are varied in nature. The PCU staff have many other politically designated priority tasks.
2) The number of staff in PCUs is limited. The provincial staff in Lamphun, for example, recommends that the number of staff at the provincial level and in the PCU be increased. Most staff only do community-based work if they are ordered to do so or if they are provided with more funding.
3) Some health professionals consider the provision of OSH services difficult and complicated work making it an unpopular activity in some locations. Some PCUs have staff with less motivation and/or skills so there is less potential for implementing effective OSH services effectively in those locations.
4) Concern and involvement of the CUP networks was somewhat limited and there was a lack of linkages to support the OSH services of the PCUs.
5) Coordination between PCU staff and their supervisors at the provincial level was difficult, thereby causing delays.

OSH Service Capacities

1) The PCU staff capacities on early diagnosis of occupational diseases is still limited. Some PCU staff still lacks confidence to make early diagnosis.[35]
2) Lack of continuous capacity strengthening on occupational health issues of the PCUs team.
3) Some groups within the Ministry of Public Health still have limited understanding of OSH services and further attention is needed to develop understanding and functioning.
4) Implementation of occupational health activities requires multi-disciplinary input including from medical personnel, legal experts, engineers, socio-economic specialists, etc. The implementation of

35 The range of illnesses targeted for early diagnosis by the PCUs staff were prioritised. They concentrated on diagnosis of pesticide poisoning, musculo-skeletal disorders, occupational skin diseases, and occupational injuries.

occupational health activities is difficult and complicated. Public Health professionals cannot handle this issue alone. Addressing OSH effectively requires cooperation from various organizations including from the Ministry of Labour, Ministry of Industry, Ministry of Agriculture, etc. Involvement of other public sectors, employers and workers is also vital.

Referral and Epidemiological Reporting

1) Referral of OSH cases was crucial because only PCU staff attended training. Their superiors in the Community Hospital, regional representatives and those among the Local Authority did not fully understand the issues.
2) The epidemiological reporting system for the PCUs level is incomplete. In some provinces, the reporting system was set up at the provincial hospital level only. In such locations only the occupational specialist can fill in data for the occupational illness or accident report. The nurse can not enter the data even if she/he makes a diagnosis she/he is not allowed to register it in the system because the computer programme does not allow for entering such data. Existing statistics are, therefore, incomplete since not all information on occupational illnesses is officially entered into the data information system.
3) Collection of occupational risk factors data to be kept in the family folder (family health record) of the PCUs was incomplete in some PCUs.

Practical Implementation Constraints

1) Local authorities sometimes lacked support from senior officials to implement the OSH services for workers.
2) Common OSH-related health problems in pilot Districts have been identified but solutions for health problems for some types occupations still need to be found.
3) Technical/engineering know-how to advise and improve working conditions is limited. PCU staff are unable to give good advice on how to improve safety when working with machines, especially in the case of home based and other small scale industry.
4) In some cases, good OSH is not practiced because of the cost of investing in protective measures, lack of comfort of protective gear, and lack of awareness of the dangers.

8.3 Selected Innovative Ideas Implemented in the Project

Health booklets for individual farmers. The booklets contain guidelines on the safe use of chemicals and safe farming that farmers can consult at home. The farmers also use the booklets to keep records that they show to the doctor when they have a health check-up.

The goals of the health booklets are to:

- provide safety guidelines
- provide guidelines on symptom recognition
- provide a checklist of risky behaviours in agriculture
- facilitate participatory record keeping

Data included in the record keeping section of the health booklets could, for example, OSH-related incidents such as: "1 person fell from a tree, 2 people got pesticide products in their eyes, etc."

Family folder: records for family units are gathered together in a "Family Health Folder". The advantage is that doctors can look at the patient holistically taking various familial factors into account. The project promoted the integrating of OSH information into the family health folder. For example, the profession of the family members is indicated on the cover of the family folder, while work history of individual family members is included inside. Patient data sheets inside the file are marked with colour indicators to show the profession of individual workers so that it is instantly recognizable and allows health professionals to know which risks to look for.

Using Line Drawings of the Human Body During data collection and training on risks various methods are used to ensure that workers can provide clear input into the process. Health professionals show line drawings of the human body and ask each worker to indicate on the picture where they may have pain. The exercise is called "body mapping". Each worker is asked if they know the possible cause of the pain followed by discussion of how to prevent and/or stop the pain.

Traditional herbs are used to treat chemical poisoning from agricultural pesticides. These herbs help to detoxify the body.

Farmers learned to produce **natural pesticides** by making mixes of vinegar and charcoal, for example. Different flowers and plants are also easily available in many villages, such as garlic and some species of flowers that can be used to make natural pesticides.

Development of community level regulations. In addition to national laws and regulations, sub-districts also make their own internal regulations for community members. Such regulations cover issues such as garbage collection, air pollution, and personal safety. Some sub-districts, such as in the province of Pha-yao, have implemented regulations to prohibit small scale economic activities from carrying out work that causes noxious fumes in closed quarters or near other dwellings.

9 Conclusions and Recommendations

The project is the first of its kind to develop an OSH services model for PCUs in Thailand. The project consisted of several components starting with a literature review of types of recommended primary care level OSH service models and an examination of the experiences of other countries. This was followed by a review and analysis of the current situation of OSH services in Thailand—especially the services provided at provincial level, district, and sub-district level.

The model focuses on health prevention, health promotion, medical treatment, and rehabilitation through primary health care for workers. A major difference with other countries is that the Thai model relies on provision of OSH services at primary care level by health personnel that are frequently not medical doctors. The project's OSH services model can serve to inspire other countries, especially developing countries or newly industrialized countries that do not have highly trained medical staff in all communities.

The Ministry of Public Health had a policy to provide OSH services through provincial hospitals and some community hospitals at district level but no OSH services model existed for the PCUs. There was no clear systematic development of an occupational health service model for PCUs (PCU were established after the Thailand Health System Reform in 2002).

The research team and experts cooperated on the development of a draft training curriculum for PCU staff and conducted training for selected PCU staff in five pilot provinces.

The training objectives required that the trainees be able to understand the conceptual framework of primary OSH services, conduct simple health assessments related to health and safety at work, and have knowledge on provision of primary OSH services. The results of the training evaluation indicated that the five-day training was sufficient for the trainees to meet the basic requirements in their work. The training curriculum did not, however, emphasize the use of occupational health and medical equipment.

Following the training, the trainee representatives of the ten PCUs staff returned to their offices to start to implement their OSH services action plans. The action plans were designed in a preliminary way during the training. The project provided financial support to implement the action plans.

Researchers, experts, and the trained PCU staff participated in the development of draft and practical guidelines on OSH service provision and the

setting of service standards. The research team determined that the practical guidelines for OSH services provision should emphasize holistic health care services and be integrated into the existing health care services. Only a few PCUs with a relatively high capacity will have specialized OSH service staff.

Each pilot PCU conducted their own OSH services activities based on their action plans after completing training.

OSH services provided through the PCUs can be classified into two major types. First, health services provided at PCUs that emphasize provision of medical treatment or primary treatments for the injured or ill. The roles and responsibilities of health staff for this type of service emphasizes diagnosis of illnesses of the working population, establishing linkages to occupational health issues, and gathering surveillance data of occupational illnesses and accidents.

The second type of service focuses primarily on actions carried out in the community on prevention of occupational illnesses and injuries and integrating them into existing PCU outreach services.

Most of the population in the pilot areas consisted of agricultural workers. As a consequence, agricultural workers formed an important focus of the project. The services provided included assessments of working conditions and the working environment. In the case of agricultural workers, promotion of and education on safe use of agricultural chemicals was combined with health examinations. The objective of these activities was to prevent negative health effects from the use of agro-chemicals. Some PCUs also provided services to other working groups such as home workers, and workers in small and informal factories.

The project researchers and experts do not expect that the health care staff at PCUs level will be occupational health experts. The occupational standards described in the practical guidelines on OSH in PCUs reflect emphasis on *basic* OSH services.

9.1 Key Factors Influencing Implementation Success

The project researchers identified several key points that contributed to the success of the project.

1) **Existence of good networks supporting such activities.** The researchers found that impact was greater where supportive networks comprised of provincial health offices, regional/ general hospitals (provincial hospital), community hospital (district hospital), and district health offices existed from the beginning of the project. Specifically, results were best where greater involvement existed in setting up service standards, training, service provision, attendance at meetings, and in drawing project conclusions. Networking can provide synergy and support including administrative, resource, and technical support. Especially important in improving the functioning of OSH services is the adequacy of the referral system. A good referral system requires a good network with an extensive body of knowledge on the issues, an adequate number of personnel, and specialized medical equipment for the treatment of serious cases.

3) **Existence of clear policies.** Clear occupational health policies exist at the provincial level in each of the pilot provinces.[36] The existence of these policies helps to enforce implementation of OSH services including allocation of resources. It is necessary to note, however, that these policies and budgetary allocations still need to be extended to the local levels (districts and sub-districts).
4) **Involvement of the local authority,** i.e. district and community administrative organizations, in the identification of occupational health policy for the community.
5) **Clear OSH problems and awareness of population in the area.** The project researchers found that the population in the local communities were concerned about these issues, particularly as related to agro-chemicals. Such issues are recognized as national health problems. National policies, including on food safety as a result of consumption of food produced with agricultural chemicals, exist. The governor in many provinces also considers these issues to be important. Health care for agricultural workers is closely related to other types of problems prevalent in the provinces.
6) **Continuous support, monitoring, evaluation involving teams at all levels.** The project not only identified the standards and conducted training, but also carried out the project monitoring, evaluation, and drew conclusions, with the participation of teams at all levels. The research team became thoroughly familiar with implementation problems, need for support, and need for improvement. Teamwork from central and regional government agencies helped encourage the local teams and reinforced their ability to provide the OSH services.

9.2 Expected Expansion and Sustainability of the Project in the Future

Some positive indications already exist that the project will be successfully scaled up and be sustainable:

- MoPH interest in expanding to all PCU exists.
- Some budget allocation for training is already provided by MoPH.
- Groups consisting of the PCU, community hospital, regional hospital, local authority will be organized and will work as a team on OSH issues.
- The project found that participation by local authorities can create awareness on the importance of budget allocations and local legislation on OSH.[37]
- MoPH is already working with one university on integrating OSH issues for IE workers in medical training.
- Planning of MoPH includes capacity building programme on OSH for Local Authorities.
- MoPH will advocate for the Local Authority to include WIND training as part of its capacity building programme.

36 Extension of policies to all district and sub-district levels accompanied by resource allocations at all levels are still needed, however.

37 In addition to existing laws and regulations sub-districts also make their own internal regulations for communinity members. Such regulations cover issues such as garbage collection.

9.3 Recommendations

1) Quality assurance system for OSH service needs to be developed for all PCUs as well as other health service levels. The standards and related guidelines must be practical, appropriate, and suitable for each area of the country and should be distributed to health care units for its application.
2) Extension of coverage of OSH services to other PCU and other health care units in the country and at other levels.
3) Advocacy to ensure political support for more far-reaching and wider implementation of OSH services needs to be continued. Some groups within the Ministry of Public Health and other government agencies still have limited understanding of OSH services and further attention is needed to develop understanding and functioning. It is necessary for OSH to be recognized as a major health issue to be considered in policy making
4) Advocacy for full health insurance coverage for informal economy workers, including agricultural workers and home workers, should be carried out.
5) Closer networking with the Ministry of Agriculture is needed to maximise the impact of the WIND (agricultural safety) training and programme and its links to the local OSH services in PCUs. WIND should be extended to all of the provinces and integrated with the actions on health in agriculture carried out through the MoPH. At a minimum, PCU need to be aware of such training and assist in networking with potential target groups.
6) Closer networking with Ministry of Labour (MoL) staff is still needed because the health teams can only work on health aspects. The main reason for the lack of collaboration with the Ministry of Labour at the sub-district PCU level is that MoL staff is only decentralised at the provincial level and not at the district or sub-district level.
7) The training curriculum that has been developed under the current project can be implemented through various training institutes under the Ministry of Public Health or universities. Wide adoption of the curriculum is preferable since training requires a large amount of resources and the burden can thus be shared. Political support is essential and should be supported by long-term implementation plans.
8) Continuous training for permanent upgrading of skills and knowledge on OSH services is needed at all levels. Existing trainees still require additional knowledge on occupational diseases, related legislation, occupational safety, and occupational disease prevention guidelines. The researchers suggest that it is necessary to implement a continuous training programme for personnel on OSH including through conferences to promote exchange of experience and update knowledge.

9) Resources limitations in terms of number of staff, financing, and equipment need to be addressed. PCU staff will be able to provide better OSH services if their resource and logistics concerns are addressed.
10) Reporting on occupational illnesses and surveillance system should be further developed.
11) Continuous supervision, monitoring, and evaluation by the local, regional, and central government is necessary for the effective implementation of the programme.
12) Development and strengthening of the health care networks on OSH is necessary.
13) Strengthening of the community and working groups' ability to implement self care related to occupational health and safety is needed.
14) Strengthening of the community and working groups' ability to participate in policy identification with the governmental sector on OSH is needed.
15) Clarification on financial issues, benefits, and appropriate services, are necessary so that PCU staff can advise workers at their request. Health officers working through mobile units noted, for example, that workers frequently ask about clarification of laws on social protection and health schemes, such as the 30-Baht Scheme.
16) Although the current project was stated to cover occupational and environmental health services, most of activities focused on OSH services. Attention to environmental health problems affecting health was limited. The main reasons were the limited body of knowledge on this issue on the part of the central and local agencies, the period of the project, and amount of budget. Attention needs to be paid to this issue in the future.

9.4 Concluding Remarks

PCUs are part of a large network of supporting healthcare services throughout Thailand. OSH services integrated into the PCUs conventional health services include prevention of occupational diseases and injuries, health promotion, medical treatment, and rehabilitation.

The project supported the development of standards and practical guidelines on OSH services provision at PCUs including standard for actions, development of training curriculum, and conducting of training, budget allocation, and support for the programme monitoring and evaluation. The results of this project indicated that the selected PCUs staff was able to provide primary OSH services to their target population as delineated in the project objectives. OSH services provision should, however, be extended to cover every area of the country. The OSH services need to be implemented continuously. Political advocacy, resource allocation, development and strengthening of the health care units and community networks are needed to accomplish these goals effectively.

ANNEX 1
Guidelines for Occupational and Environmental Health Services at the Primary Health Care Unit

Part A: Standard of Occupational and Environmental Health Services for Communities	Indicators
1. Conduct basic survey of working conditions and evaluation of health status, including related factors, by coordinating with community, local authorities, health volunteers, and employers' and employees' representatives.	1.1 Availability of community data on occupational and environmental issues 1.2 Availability of health status and work-related information included in Family Folder of the PCU 1.3 Availability of charts and graphs indicating trends and situation as regards occupational and environmental diseases
2. Cooperate with health networks and agencies in implementing health promotion, health prevention and control activities; empower community leaders in improving and evaluating occupational risk factors and injuries towards the reduction and surveillance of major occupational and environmental diseases and injuries.	2.1 Availability of health promotion, health prevention and control activities among various groups of workers and involvement of health networks and agencies in implementing such activities in the community. 2.2 Activities established for surveillance of major occupational and environmental diseases and injuries. 2.3 Availability of reports on occupational and diseases and injuries.
3. Communicate with communities, establishments and concerned agencies regarding occupational and environmental health issues	3.1 Communication carried out on occupational and environmental health issues between the PCU and relevant agencies.
4. Involve PCU staff in investigating occupational and environmental diseases and cooperate with related agencies in providing health services in case of accidents.	4.1 Reports available on occupational diseases and injuries in collaboration with relevant agencies. 4.2 Existence of emergency preparedness plans in collaboration with relevant agencies.

Part B: Standard of Occupational and Environmental Health Services in PCUs	Indicators
5. Develop capacity of the health care team in linking health status data with measures to prevent and control occupational and environmental diseases.	5.1 Capacity strengthened within the health care team to link health status data with health promotion activities (including mental and physical health, prevention and control of occupational and environmental diseases)
6. Provide primary care services to the working population through the integration of health promotion, health prevention and control, and rehabilitation, with other services of the health unit and through provision of appropriate emergency care services.	6.1 Capacity strengthened to conduct screening tests for pesticide poisoning, including early diagnosis of occupational diseases and evaluation of workers' health for timely referral. 6.2 Satisfaction with PCU services among the working population in the community.
7. Utilize occupational and environmental health information system.	7.1 Application of occupational and environmental health data in planning and programme setting.

Part C: Standard of Continuous Occupational and Environmental Health Services	Indicators
8. Conduct home and office visits to advise workers with work-related health problems / disabilities while also counseling the workers' family on how to take care of family members in this condition.	8.1 Capacities of health care staff strengthened in integrating home or office visits to health services. 8.2 Capacities of health care staff strengthened in advising community, workers and their family on the rehabilitation process, including effective follow-up on health improvement.
9. Create a health care team that is responsible for occupational and environmental health issues.	9.1 List of committee members responsible for occupational risk prevention at district/ sub-district level. 9.2 Regular meetings of the committee and availability of meeting reports. 9.3 Establishment of policy and clear identification of target groups and articulation of mission that addresses community problems. 9.4 Clear identification of responsible personnel to carry out the mission.
10. Develop occupational and environmental health annual plans and/or long-term, integrated plans that are linked to provincial policies and community issues.	10.1 Existence of occupational and environmental health annual plans/programmes/integrated plans. 10.2 Existence of programme implementation reports (progress reports which also describe obstacles and solutions to problems).
11. Facilitate community participation in work conditions improvement and in the rehabilitation of workers with disabilities and other health problems.	11.1 Existence of networks made up of agricultural workers, workers with disabilities, others types of workers in the community and involving them in occupational and environmental health activities.
12. Continuously improve the technical knowledge of the health care staff on occupational and environmental health.	12.1 Participation of PCU staff in occupational and environmental health conferences or involvement of PCU staff in related research.
13. Evaluate occupational and environmental health activities.	13.1 Availability of evaluation activities and results on implemented occupational and environmental activities.

ANNEX 2
Details of Project Implementation in Pilot Sites

1. Khon-Kaen province

1.1 General characteristics

Type of Data	PCU Ban-Peu	PCU Kao-Ngiew
Main Contract Unit (CUP)	Khon Kaen Hospital (714 beds)	Phol Hospital (60 beds)
Number of responsible villages and population	9 villages with a population of 9,773 No. of people in the labour force: 6,724	7 villages with a population of 3,486 No. people in the labour force: 2,235
Principal occupations	Main occupations: Agriculture, rice production, formal wage employment.	Main occupations: Agriculture, rice production Other occupations: cloth weaving
PCU health personnel	No. of staff: 6, including: 1 health administrative staff 2 health technical staff 1 professional nurse 1 technical nurse 1 dental technician	No. of staff: 3, including: 1 health administrative staff 1 health technical staff 1 public health officer
Characteristics of services provided at the PCU	1. Primary medical treatment 2. Maternal and child health 3. Dental health 4. Prevention and control of communicable and non-communicable diseases in the area.	1. Primary medical treatment 2. Maternal and child health 3. Dental health 4. Prevention and control of communicable and non-communicable diseases in the area.
Supervision activities	Supervised by CUP team and district health office team once a year.	Supervised by CUP team and district health office team twice a year.

1.2 Components of the OSH services model

Type of Data	PCU Ban-Peu	PCU Kao-Ngiew
Working strategies	Working in accordance with the strategies indicated by the central government.	
Working team/ working committee	No appointment yet of working committee consisting of relevant provincial government agencies such as provincial health office, provincial labour office, and provincial industrial office.	
Involvement of community workers/ networks	- Health volunteers participated as coordinators and evaluators of workers' health problems. - Involvement of public and agricultural sector in promoting and exhibiting pesticide-free products.	- Involvement of the agricultural sector in promoting pesticide-free products and in exchanging experiences with others villages and groups on pesticide-free activities and study tours.
Roles of health care team	- Occupational medicine staff from the CUP hospital (Khon Kaen Hospital) imparted occupational health knowledge to the PCU. - District health officers also supported OH service by allocating funds, supervising improvement of service quality, and transferring technical knowledge. - Provincial health officers supported PCU in its activities.	- The CUP hospital (Phol Hospital) supports PCU activities by providing OSH service such as funding, staff, and equipment. - The district health officers support the implementation of the PCU.
Future Plans	Extending OSH services to other villages by: - Collecting baseline data of agricultural, industrial, and informal workers in 9 villages - Evaluating health status and occupational risk factors for each group of workers in 3 villages. - Providing health care services by working on risk factors. - Educating workers to recognize health and safety issues. - Developing occupational health information system for retrieving data with support from CUP hospital and establishing a network involving other health units, hospitals, and other relevant governmental agencies.	- Conduct health surveillance for agricultural workers by using finger tip screening test and providing services to the communities and at the PCU for each village. - Integrate occupational health issues into other tasks. - Coordinate with the district authority board for enacting of district regulations on occupational health for the community.

2. Nakornpathom province

2.1 General characteristics

Type of Data	PCU Talad Chinda	PCU Huy-Tago
Main Contract Unit (CUP)	Nakornpathom Hospital (552 beds)	Nakornchaisri Hospital (30 beds)
Number of responsible villages and population	6 villages with a population of 4,314. No. of people in the labour force: 2,674	4 villages with a population of 3,610. No. of people in the labour force: 2,403
Occupations of responsible population	Major occupations: agriculture; work in fruit orchards. Other occupations: wage employment and trade business	Major occupations: industrial wage employment. Other occupations: formal wage employment and trade business
PCU health personnel	No. of staff: 4 including: 1 health administrative staff 1 health technical staff 1 dental technician 1 employee	No. of staff: 3 including: 1 health administrative staff 2 health technical staff
Characteristics of services provided at the PCU	1. Primary medical treatment 2. Disease prevention and control, sanitation. 3. Maternal and child health 4. Rehabilitation 5. Dental health 6. Administrative work 7. Home visits	1. Primary medical treatment 2. Disease prevention and control, sanitation 3. Maternal and child health 4. Dental health 5. Administrative work 6. Home visits
Supervision activities		Being supervised by their provincial health office, district health office, and CUP team

2.2 Components of the OSH services model

Type of Data	PCU Talad Chinda	PCU Huy-Tago
Working strategies	Working in accordance with the strategies indicated by the central government.	
Working team/ working committee	No appointment of working committee consisting of relevant provincial government agencies such as provincial health office, provincial labour office, or provincial industrial office but roles were identified and working as provincial network team.	
Involvement of community workers/ networks	- Health volunteers acted as coordinators for activities. - Involvement of local authorities.	Involvement of existing networks was not observed.
Roles of health care team	- Occupational medical staff from CUP hospital (Khon Kaen Hospital) did not provide technical support to the PCU. - Provincial health officers coordinated and advised the PCU on the implementation of activities. - District health officers coordinated and provided support to the PCU on the implementation of activities. - Local authorities and district agricultural office supported the PCU on OSH activities.	- CUP hospital (Nakornchaisri Hospital) supported PCU activities. - Provincial health officers coordinated and advised the PCU on implementation of activities. - District health officers coordinated and advised the PCU on the implementation of activities.
Provision of OSH services	Holistic working strategies and solutions to problems were developed using participatory methods. Appropriate integration of health services and provision of holistic health care including health promotion, health prevention and control, treatment, and rehabilitation.	Workplace surveys and risk assessments were not completed, aspects related to ergonomics and occupational accidents only were covered. Provision of health care services was provided by their CUP- Nakornchaisri Hospital - which also provides vehicle for patients referred to the hospital.
Future Plans	Meetings of Nakornchaisri and Sampran district networks were held to clarify roles and responsibilities, provide orientation on occupational health activities, and establish preparedness of OSH services for health care units as well as implementation of the PCUs data collection programme	

3. Lamphun province

3.1 General characteristics

Type of Data	PCU Pa-Sang Hospital	PCU Muang-Gie
Main Contract Unit (CUP)	Pa-Sang Hospital (90 beds)	Lamphun Hospital (390 beds)
Responsible area	Responsible area of Nakornchedee local authority.	Responsible area of Muang-Gee local authority.
Number of responsible villages and population	8 villages with a population of 5,443 No. of people in the labour force: 3,660	7 villages with a population of 5,527 No. of people in the labour force: 3,830
Principal occupations	Major occupations: agriculture; farm work in longan orchards Other occupations: formal wage employment, basket making, and wood making	Major occupations: agriculture; farm work in longan orchards, rice fields and vegetable fields Other occupations: employment in Northern Industrial Estate, basket handicraft, wood handicraft, and blanket sewing
PCU health personnel	No. of staff: 6 including: 4 professional nurses 2 health technical staff	No. of staff: 2 including: 1 health administrative staff 1 health technical staff
Characteristics of services provided at the PCU	1. Primary medical treatment 2. Disease prevention and control, sanitation 3. Health promotion, maternal and child health 4. Rehabilitation 5. Dental health 6. Home visits	1. Primary medical treatment 2. Disease prevention and control 3. Health promotion, maternal and child health 4. Administrative work 5. Home visits
Supervision activities	Supervised and monitored by the Provincial Health Office and District Health Office on the Department of Service Support's CUP standard.	Supervised and monitoring by the Provincial Health Office and District Health Office on the Department of Service Support's CUP standard.

3.2 Components of the services model

Type of Data	PCU Pa-Sang Hospital	PCU Muang-Gie
Working strategies	Working as a specific programme with financial support from the central government.	
Working team/ working committee	No appointment of working committee consisting of relevant provincial government agencies such as provincial health office, provincial labour office, or provincial industrial office but roles were identified and working as provincial network team.	
Involvement of community workers/ networks	- Health volunteers acted as coordinators for activities. - Community workers and leaders participated in problem solving.	- Health volunteers acted as coordinators for activities. - Community workers and local authorities participated in implementation of activities.
Roles of health care team	- Occupational medicine staff from CUP hospital (Pa-Sang Hospital) provided technical support to increase occupational health knowledge in the PCU. - Provincial health officers coordinated and advised the PCU on implementation of activities. - District health officers coordinated and provided support to the PCU on implementation of activities. - Local authorities and district agricultural office support the PCU on OSH-related activities.	- Their CUP hospital (Lamphun Hospital, Occupational Medicine Section) does not provide enough support to the PCU because of lack of staff and funds. - Provincial health officers coordinated and advised the PCU on the implementation of activities. - District health officers coordinated and provided support to the PCU on the implementation of activities including risk assessment, monitoring of the working environment, and provision of other technical knowledge. - Local authorities and district agricultural office support the PCU on OSH-related activities.
Provision of OSH services	Holistic working strategies and problem solving processes were developed using participatory methods. Discussion of OSH services extension to cover all primary care units under this CUP are underway. The occupational health reporting system is unclear. The PCU staff have still have limited confidence or ability to carry out early diagnosis of occupational diseases.	Implementation of workplace surveys and risk assessment was completed. A participatory approach was used with workers with the result that workers developed awareness regarding their OSH situation. Appropriate OSH services were established for the target groups. The occupational health reporting system is unclear but OSH data have been inserted into family folders and classification of risk groups have been made.

Type of Data	PCU Pa-Sang Hospital	PCU Muang-Gie
Future Plans	A one-day occupational health network meeting for Pa-Sang district was conducted. The participants included: - 29 health care staff - 11 local authorities - 30 health volunteers from villages not yet covered. The objectives of the meeting were to orient and educate the participants on the details of the project, assess frequency of occupational diseases in the community and cooperate on developing occupational health action plans. Health education and health exams for agricultural workers were carried out by the PCU network team in 28 villages.	To conduct work place survey and risk assessment for wood handicraft workers in 3 villages by using checklist to monitor lighting conditions, evaluate chemical levels in the blood, and other risk factors To support workers in identifying health problems by using simple techniques such as using a photo of the human body to identify abnormal organs (this is the body map technique illustrated in the report) To conduct a one-day training on working hazards and accidents for wood handicraft workers To conduct a networking meeting at the village level on cooperation for problem solving for community workers. Target groups included; community leaders, local authorities, health volunteers, and wood handicraft workers.

4. Supahanburi province

4.1 General characteristics

Type of Data	PCU Suan-Tang	PCU Plub-Pla-Chai
Main Contract Unit (CUP)	Chaoprayayommarat Hospital (509 beds)	U-Thong Hospital (90 beds)
Number of responsible villages and population	3 villages with population of 5,899 No. of people in the labour force: 4,010	5 villages with population of 5,058 No. of people in labour force: 3,301
Principal occupations	Major occupations: agriculture; farm work in rice field, vegetable field, herbs, fruit orchards. Other occupations: formal employment and trade business	Major occupations: agriculture; farm work in rice field, crops, and fruit orchards Other occupations: various types of employment.
PCU health personnel	No. of staff: 7 including: 1 health administrative staff 2 professional nurses 2 public health officers 2 dental technician	No. of staff: 4 including: 1 health administrative staff 2 public health officers 1 health technical staff
Characteristics of services provided at the PCU	1. Primary medical treatment 2. Disease prevention and control, sanitation 3. Health promotion, maternal and child health 4. Rehabilitation 5. Dental health 6. Administrative work 7. Home visits	1. Primary medical treatment 2. Disease prevention and control, sanitation 3. Health promotion, maternal and child health 4. Dental health 5. Administrative work 6. Home visits
Supervision activities	Supervised by a specialised team from the Provincial Health Office	

4.2 Components of the OSH services model

Type of Data	PCU Suan-Tang	PCU Plub-Pla-Chai
Working strategies	Working as a special programme with financial support from central government.	
Working team/ working committee	No appointment of working committee consisting of relevant provincial government agencies such as provincial health office, provincial labour office, or provincial industrial office but roles were identified and working as provincial network team.	
Involvement of community workers/ networks	- Health volunteers acted as coordinators for OSH-related activities. - Local authorities participated in the process.	- Health volunteers acted as coordinators for OSH activities. - There was limited involvement of local authorities in problem solving.
Roles of health care team	- Occupational medicine staff from the CUP hospital provided technical support to the PCU. - Provincial health officers coordinated and advised the PCU on the implementation of activities. - District health officers coordinated and provided support to the PCU on the implementation of activities in the early phase. - Local authorities and district agricultural office supported the PCU on OSH-related activities.	- The CUP hospital (U-Thong Hospital) provided limited support to the PCU activities. - Provincial health officers coordinated and advised the PCU on implementation of activities. - District health officers coordinated and provided support to the PCU on implementation of activities. - Local authorities and district agricultural office support the PCU on OSH-related activities.
Provision of OSH services	- Occupational health problems and its risk factors were not yet sufficiently applied to the development of concrete solutions to address the problems of target groups. - The occupational health reporting system is unclear.	- Information about occupational health problems and its risk factors was not yet sufficiently applied to develop any concrete solutions for the target groups. - The occupational health reporting system is unclear. - CUP network and referral system is unclear.
Future Plans	1. Further development of other PCUs on occupational health activities are extended and training will be provided on OSH services to 8 other health care units. 2. Evaluation programme for the project evaluation and monitoring the agricultural workers' behavioural changes.	

5. Phayao province

5.1 General characteristics

Type of Data	PCU Ban-Tom	PCU Yuan
Main Contract Unit (CUP)	Phayao Hospital (373 beds)	Chieng-Kam Hospital (225 beds)
Responsible area	Responsible area of Ban-Tom local authority	Responsible area of Yuan local authority and Chieng-Kam Municipality
Number of responsible villages and population	18 villages with 4,395 households No. of people in the area: 14,174	15 villages with 3,445 households No. of people in the area: 12,760 No. of people in the labour force: 8,980
Principal occupations	Major occupations: agriculture, wage employment, trading business, and civil servant Other occupations: handicraft, and gem cutting/polishing	Major occupations: trade business, civil servant, private business Other occupations: agriculture, cloth weaving, and formal wage employment
PCU health personnel	No. of staff: 5 including: 1 health administrative staff 3 professional nurses 1 health technical staff Additional staff: 1 medical doctor 2 professional nurses from the CUP hospital supporting the PCU services part-time	No. of staff: 6, including: 1 health administrative staff 3 professional nurses 1 public health officer
Characteristics of services provided at the PCU	- Medical treatment - Dental health - School health - Family health - Immunization - Maternal health - Narcotics - HIV, AIDS - Diabetes, Hypertension screening - Home visit	- Medical treatment, - Dental health - School health - Family health - Immunization - Maternal health - Narcotics - HIV, AIDS - Diabetes, Hypertension screening - Home visit
7. Supervision activities	Supervised and monitored by the Provincial Health Office, CUP, and District Health Office on the Department of Service Support's CUP standard	Supervised and monitored by the Provincial Health Office, CUP, and District Health Office on the Department of Service Support's CUP standard and being evaluated by random sampling for Healthy Thailand Indicators

Type of Data	PCU Ban-Tom	PCU Yuan
Financial and other supports	- From CUP's service fee - CUP provided support for medicine and medical equipment, monthly allowance, overtime and other expenses - CUP's health promotion and prevention per capita budget for action programmes intended to address community problems. Proposals to district health offices and the chairperson of the CUP Board for consideration of needed budgetary support.	- CUP's service fee - CUP provided support for medicine and medical equipment, monthly allowance, overtime and other expenses - CUP's health promotion and prevention per capita budget utilization through identification of target for PCU activities

5.2 Components of the OSH services model

Type of Data	PCU Ban-Tom	PCU Yuan
Working strategies	Working in conformance with government policy is main strategy for Ban-Tom	Integrated OSH services to their day-to-day work
Working team/ working committee	Working committee was appointed that networked with other agencies	No appointment of working committee
Involvement of community workers/ networks	- Coordinate with health volunteers from among workers as coordinators and leaders for the implementation of activities - Local authorities participated in the project.	- Focused on participation in the workplace - Participation of employers and employees on provision of data and finding solutions to problems.
Roles of health care team	- Occupational medicine staff from their CUP hospital (Phayao Hospital) and district health officers	- Their CUP (Chieng-Kam Hospital), social security section, technical section, and community medicine section and district health officers.

ANNEX 3
Training for OSH Primary Care Unit Service Providers: Course details

1) Occupational health situation and occupational health plans - 3 hours

Topics: Occupational diseases and injuries, categories of workers, occupational plans and policies, structure of occupational health services and related agencies, roles of primary care units and local health units in the provision of occupational health services.

Objectives: By the end of the session the trainees will be able to:

- Identify occupational health situations and problems and prepare occupational health plans in the area where their PCU is located.
- Summarize occupational plans and policies under the National Health Development Plan.
- Identify structures of occupational health services and related agencies.
- Identify the role of primary care units and other local health units in the provision of occupational health services.

Methodology: lecture, discussion, self-study

Evaluation: in-class questions and answers, pre- and post-training tests

2) Occupational diseases and surveillance - 3 hours

Topics: General knowledge of occupational diseases and injuries, work-related diseases, frequently-found occupational health problems, signs and symptoms of occupational diseases in the working population, collection of working history, early detection and diagnosis, primary medical care, report of occupational diseases and injuries and work-related diseases, surveillance of occupational diseases in the community.

Objectives: By the end of the session the trainees will be able to:

- Describe frequent occupational illnesses and injuries in the area where the PCU is located.
- Identify methods for collection of working history and assess work-related health problems.
- Identify major signs and symptoms of occupational diseases for early diagnosis.

- Provide suggestions on health care and health protection for occupational and environmental diseases.
- Report occupational diseases and injuries.
- Describe methodology for surveillance of occupational diseases.

Methodology: lecture, discussion, self-study
Evaluation: in-class questions and answers, pre- and post-training tests

3) Occupational hazards evaluation and health assessment - 6 hours

Topics: Occupational hazards, job-safety analysis, legislation related to occupational health, working conditions improvement.

Objectives: By the end of the session the trainees will be able to:

- Identify occupational hazards.
- Conduct job-safety analysis for each type of work in their community.
- Provide suggestions on working conditions improvement.
- Describe environmental and biological standards related to occupational health.

Methodology: lecture, discussion, self-study, job safety analysis practices
Evaluation: in-class questions and answers, output from practical work

4) Legislation related to occupational health - 1.5 hours

Topics: Legislation related to occupational health, major contents of legislation that primary health care staff should know, roles of primary health care staff in providing information on legal framework to local authorities.

Objectives: By the end of the session the trainees will be able to identify legislation related to occupational health:

- Describe major contents of legislation related to occupational health.
- Analyze occupational health problems by using legislations related to occupational health and provide solutions for the problems.

Methodology: lecture, self-study
Evaluation: in-class questions and answers, pre- and post-training tests

5) Principles of occupational safety - 1.5 hours

Topics: Causes of occupational injuries, principles of occupational injury prevention, safety techniques, personal protective equipment and guidelines for selection of appropriate personal protective equipment.

Objectives: By the end of the session the trainees will be able to:

Describe principles of occupational injury prevention.
- Identify occupational safety techniques.
- Select appropriate personal protective equipment.

Methodology: lecture, self-study

Evaluation: in-class questions and answers, pre- and post-training tests

6) Occupational health for the agricultural sector - 3 hours

Topics: Occupational hazards in the agricultural sector, agricultural chemicals management, screening test, first-aid, referral system, health surveillance conducted by farmer and by primary health care staff, collection of necessary information for provision of occupational health services for the agricultural sector.

Objectives: By the end of the session the trainees will be able to:
- Describe occupational hazards in the agricultural sector.
- Describe methods for agricultural chemicals management.
- Describe screening test and first aid methods for patients with pesticides poisoning.
- Describe health surveillance methods conducted by farmers and by primary health care staff.
- Describe methods for collecting information necessary for providing occupational health services to the agricultural sector.

Methodology: lecture, discussion, self-study, group work.

Evaluation: in-class questions and answers, pre- and post-training tests

7) Holistic and integrated occupational health services - 3 hours

Topics: Health promotion, health protection, primary medical care, referral system, rehabilitation, concept of holistic and integrated occupational and environmental health services at primary health care unit level.

Objectives: By the end of the session the trainees will be able to:
- Describe methods for promotion of workers' health.
- Describe methods for protection of workers' health from frequently found occupational diseases.
- Identify principles of primary medical care for frequently found occupational diseases.
- Identify guidelines for appropriate referral system.
- Describe methods for rehabilitation of workers' health.

Methodology: lecture, discussion, self-study.

Evaluation: in-class questions and answers, pre- and post-training tests

8) **Occupational health for primary health care workers -** Duration depends on the trainee

Topics: Occupational hazards for health care workers, occupational health guidelines for health care workers, management of work environments for safety at work and in community.

Objectives: By the end of the session the trainees will be able to:

- Describe occupational hazards for health care workers.
- Describe guidelines of work-related health promotion and health protection, and occupational health surveillance.
- Identify methods for management of working environments for health care workers.

Methodology: self-study

Evaluation: in-class questions and answers, pre- and post-training tests

9) **Occupational health for SMEs and workforce in community -** Duration depends on the trainee

Topics: Occupational hazards in SMEs and informal sector, worker health promotion and health protection models, active and passive occupational health services models for risk groups.

Objectives: By the end of the session the trainees will be able to:

- Describe occupational hazards faced by SMES and the informal sector
- Identify guidelines of work-related health promotion and health protection for risk groups
- Describe occupational health services models for risk groups

Methodology: self-study

Evaluation: In-class questions and answers, pre- and post-training tests

10) **Planning and evaluation of provided occupational health services - 3 hours**

Topics: Systematic utilization of information for problem analysis, planning, implementation, and evaluation of occupational health services.

Objectives: By the end of the session the trainees will be able to:

- Describe methods for using data gathering for planning occupational health services.
- Develop occupational health services plan of action.
- Identify methods for implementing and evaluating occupational health services.

Methodology: discussion, self-study

Evaluation: in-class questions and answers

Course evaluation indicated that most trainees were highly satisfied with the application of knowledge gained from training subjects, except for the subject on legislation related to occupational health which received a score of medium satisfaction.

Most trainees were highly satisfied with the duration of training and contents on occupational diseases surveillance, occupational hazards evaluation and health assessment, principles of occupational safety, holistic and integrated occupational health services, planning and evaluation of occupational health services provided, and application of toxicology for occupational diseases prevention. Other subjects were judged at a medium level of satisfaction.

The trainees visited an industrial factory and a local art and crafts working group. Most trainees were very satisfied with the field visit and found it compatible with the training objectives, contents, and relevance to practical application as well as high capabilities of local speakers. The duration of the field visit study received a medium satisfaction rating.

About 67.6 percent of trainees were satisfied with the five-day training period. 29.4 percent of trainees were unsatisfied with the duration. About 60 percent of this group prefers a three-day training period.

ANNEX 4
References

Bundit, T, Draft, Labour law and the informal economy in Thailand, Arom Pongpangan Foundation - Labour Resource Center Bangkok, Thailand. 2005

Bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Annual Epidemiological Surveillance Report 2001. Bangkok: ETO Press, 2001.

Bureau of Health Policy and Plan, Ministry of Public Health. Health Future Studies: OSH services for Thailand in 2010. Nonthaburi: Ministry of Public Health, 1999

Bureau of Health Service Network Development. Practical Guidelines on OSH services for Health Care Unit, Volume 1. Nonthaburi: Ministry of Public Health

Caillard JF. Occupational Medicine Services in France. In: Jeyaratnam J, Chia KS. Ed. Occupational Health in National Development World Scientific. Singapore, 1994: 397–405.

Chanpen Chuprapawan. Thais Health Status. Nonthaburi: Health System Research Institute, 2000

Department of Disease Control, Ministry of Public Health. Standard of Diseases and Health Hazards Prevention and Control for Local Health Care Units and Local Authorities. Bangkok: March, 2004

Department of Health Service Support and Department of Disease Control, Ministry of Public Health. Practical Guidelines on Diseases Prevention and Control for Primary Care Unit. Bangkok: War Veterans Organization Press.

Economic and Social Statistics Bureau, (Thailand) Labour Force Survey, Data frpm 2001-2005. http://web.nso.go.th/eng/stat/lfs_e/lfse.htm#pe

Economist Intelligence Unit, Fact sheet Thailand, From Source: Country ViewsWire, Oct 13th 2005

Harrington JM, Gill FS, AW TC, Gardiner K. Occupational Health. 4th ed. Blackwell Science, 1998.

Harrison, J. & Harrison, CE. Developing a model for occupational health provision in primary care. Int Occup Med Environ Health. 15(2): 185–192.

Health and Safety Laboratory. The Profile of Patients' Occupational Health in Primary Care: Research Report. Health and Safety Executive 2004.

Health Development Agency, Workplace Health in Primary Care: Research Report. 2002.

Herbert, R. et al. (1997). The Union : A Working model for clinical care linked to preventative OSH services. American Journal of Industrial Medicine, 31: 263–273.

Human Development Report, Thailand 2005. http://hdr.undp.org/statistics/data/country_fact_sheets/cty_fs_THA.html

Jeyaratnam J, Ling SL. OSH services and Primary Health Care. In: Jeyaratnam J, Chia KS, ed. Occupational Health in National Development World Scientific. Singapore, 1994 : 334–49.

Koh, D. & Chia, HP. (1994). Occupational health through primary health care clinics in Singapore, Ann Acad Med Singapore, 23(5): 737–741.

Ministry of Public Health Thailand, Thai Health and Health Care, Web site consulted 1-06-2006; http://eng.moph.go.th/TechResearch/hsri/hsri_web.htm

National Statistical Office, Thailand, Labour Force Survey. Employed Persons by Industry for Whole Kingdom, First quarter 2006. Website consulted 1-6-2006. http://web.nso.go.th/eng/stat/lfs_e/lfse.htm (2006b)

National Statistical Office, Thailand, Labour Force Survey. Population by labour Force Status for Whole Kingdom. First quarter 2006. Website consulted 1-6-2006. http://web.nso.go.th/eng/stat/lfs_e/lfse.htm (2006a)

Nationmaster.com 2005. http://www.nationmaster.com/pie-T/peo_per_liv_in_rur_are

Nursing Division. Practical Guidelines on Primary Nursing Care Services. Nonthaburi: Office of the Permanent Secretary, Ministry of Public Health, 2002

Rantanen J. OSH services in the Nordic Countries. In: Jeyaratnam J, Chia KS, ed. Occupational Health in National Development World Scientific. Singapore, 1994: 397–405.

Rantanen, J, & Fedotov, I.A., Standards, Principles and Approaches in Occupational Health Services. Web site accessed 1-06-2006. In Encyclopedia of Occupational Health and Safety, ILO, Geneva, 1998. http://www.ilo.org/encyclopaedia/?doc&nd=857400245&nh=0&ssect=2

Samroeng Yangkratoke and Rujira Mungklasiri. Primary Care Unit: the Way to the Services Needed. Bangkok: Somboon Printing, 2002

Seaton A, Agius R, Mcloy E, D' Auria D. Practical Occupational Medicine. London: Edward Arnold, 1994–2: 415–43.

Social Security Office, Ministry of Labour, Annual Report 2002. Nonthaburi, 2002.

Tassana Boonthong. Medical Services Reform relevant to the Future Needs of Thai Health Services. 1st Edition. Bangkok: Siriyod Printing, 1999

Thai Workmen's Compensation Fund, Report of Activities, Bangkok: Social Security Office, Statistics and Report Section Print, 2003.

The National Health Association of Thailand. Public Health Diary 2005: Ministry of Public Health Administration. Bangkok: Sahaprachapanich Holdings Press, 2005

United Nations Thailand Website, 21 December, 2005. http://www.un.or.th/

United Nations Thailand Website, accessed 31-05 2006. http://www.un.or.th/thailand/index.html

Wilawan Juengprasert. Provincial Occupational Health Team Training Documents: Roles and Responsibilities of Organizations related to Occupational Health. Nonthaburi, 1997.

World Bank, Thailand Country Data. 2001. http://devdata.worldbank.org/genderstats/genderRpt.asp?rpt=profile&cty=THA,Thailand&hm=home

World Bank, Thailand Country Data. 2005. http://devdata.worldbank.org/external/CPProfile.asp?SelectedCountry=THA&CCODE=THA&CNAME=Thailand&PTYPE=CP

World Health Organization, Identification and Control of Work-related Diseases. WHO Technical Report Series No. 714. Geneva: WHO, 1985.

World Health Organization, WHO Definition of Health, website accessed 01-06, 2006. http://www.who.int/about/definition/en/

World Health Organization. Occupational Health: A Manual for Primary Health Care Workers. Regional Office for the Eastern Mediterranean. 2002.

Integrating Occupational Health Services into Public Health Systems: A Model Developed with Thailand's Primary Care Units

Dr. Somkiat Siriruttanapruk and team
Ministry of Public Health, Thailand

The public health system is a potent channel for delivering occupational health advice and services. Community-based public health units are the first resort when illnesses or accidents befall workers in the informal economy - that is to say, people who are working in such places as homes, streets, markets, farms, and microenterprises.

The development of occupational health services that can be integrated into public health systems is an important step towards improving workers' physical and mental health. In addition to their traditional functions of treating and referring patients to hospitals, they can promote good health practices at work, train workers on occupational health and safety, carry out occupational rehabilitation, and track data on health and occupation in order to better identify occupational health risks.

In collaboration with ILO, Thailand's Ministry of Public Health (MoPH) developed operational procedures for primary health care units. They trained staff in providing occupational health services to all types of workers, including home-based workers, agricultural workers and outworkers. The model they developed was successfully applied and can serve to inspire other countries to provide similar occupational services for workers in the informal economy.

This is part of a series of papers being published by the Informal Economy, Poverty and Employment Project, implemented by the ILO Subregional Office for East Asia, Bangkok, Thailand. This project is funded by the UK's Department for International Development (DFID).

This publication is also available online. Please visit:
ILO Regional Office for Asia and the Pacific Library,
http://www.ilo.org/asia/library/pub7.htm
ILO Informal Economy Resource Database,
http://www.ilo.org/dyn/infoecon/iebrowse.home

ISBN 92-2-119284-9
978-92-2-119284-8