CHAPTER 1

INTRODUCTION

Progress of national development from agriculture to industrial in the last 20 years has led to rapid growth in an industrial sector. This growth created a 12 % increase in industrial jobs and a 10 % increase in service industry jobs, with a 2.2% increase in agriculture job. (The Eighth National Economic and Social Development plan 1997-2001 Thailand).

In the same period, there were positive and negative changes in the economic structure. The positive effects were increase in population revenue, higher education, knowledge, and understanding of health. One of the negative effects was reduction on economic growth in major cities. Many factories, and offices in the city created health problems for working people and local people.

Problems in occupational health result from movement of population to industrial area, where increases in the number of population per square meter. Working in factories often involves shift works with high technology equipment. However, most workers lack knowledge and understanding about industrial work. There are increased high risks at work place, working environment, and change in family life style.

The impact on the Thai health systems can be classified as follows,

1.1 Rural-Urban Migration.

1.2 Health Problems Related to Working Conditions and Occupational Health.

1.3 Expenses for Occupational Health Service Industrial Employee Assurance.

1.4 Problems with Occupational Health in Thailand.

1.5 Organization for Occupational Health and Safety in Thailand.

1.1 Rural – Urban Migration

The migration of labour from the agricultural sector to the industrial sector in urban areas has resulted in family separation, stress, crime, traffic problem, drug abuse, health problems, and environmental pollution problems. Slum areas and solid waste disposal are becoming major problem, as result of inefficiencies in environmental management in both public and private sectors. This has unavoidably affected public health.

Because of the economic crisis year, urban – rural labour migration has increased as there were 474,000 unemployed workers in the agriculture sector, in 1998, compared with less than 280,000 during the period of 1996-1997 (Table 1.1). According to a report of the Bank of Agriculture and Cooperatives, a large portion of farmers who have income is from the non-agricultural sector, i.e., remittance from their children who work in cities. In 1997, on average a farmer had an annual income of 19,701 Baht (38%) from the agricultural sector and 32,060 Baht (62%) from non-

agricultural sectors with the reduction of job opportunity in these urban cities. The workers go back to the rural areas to engage in agricultural activities, but actually they have no job, waiting at home with their families. As they used to be "breadwinner" of their families, in such a situation they are all in trouble, resulting probably in stress, violence and crime.

Table 1.1 Number of employed People who used to work in Agricultural and Non-Agricultural Sectors. February 1996-1998

Sector of last employment	**Number (thousands)**		
	1996	**1997**	**1998**
Unemployed workers who used to work:			
Total	546.8	567.9	1,325.5
In agricultural sector	289.4	279.8	474.1
In non-agricultural sectors	257.4	288.1	851.4

Source: Surveys on People's Employment, Round 1, February 1996, February 1997, and February 1998, National Statistical Office. Refer to Health profile Thailand 1997-1998.

1.2 Health Problems Related to Working Conditions and Occupational Health

In 1997 the population in Thailand was 61.1million people. There were 32.4 million employed people in the work force, 55.5 percent of the total population of the country. Of the total work force, 16.6 million were in the agricultural sector, 13.6 million in the industrial sector, and 2.2 million in civil service as well as government employment. (Chuprapavarn, 2000)

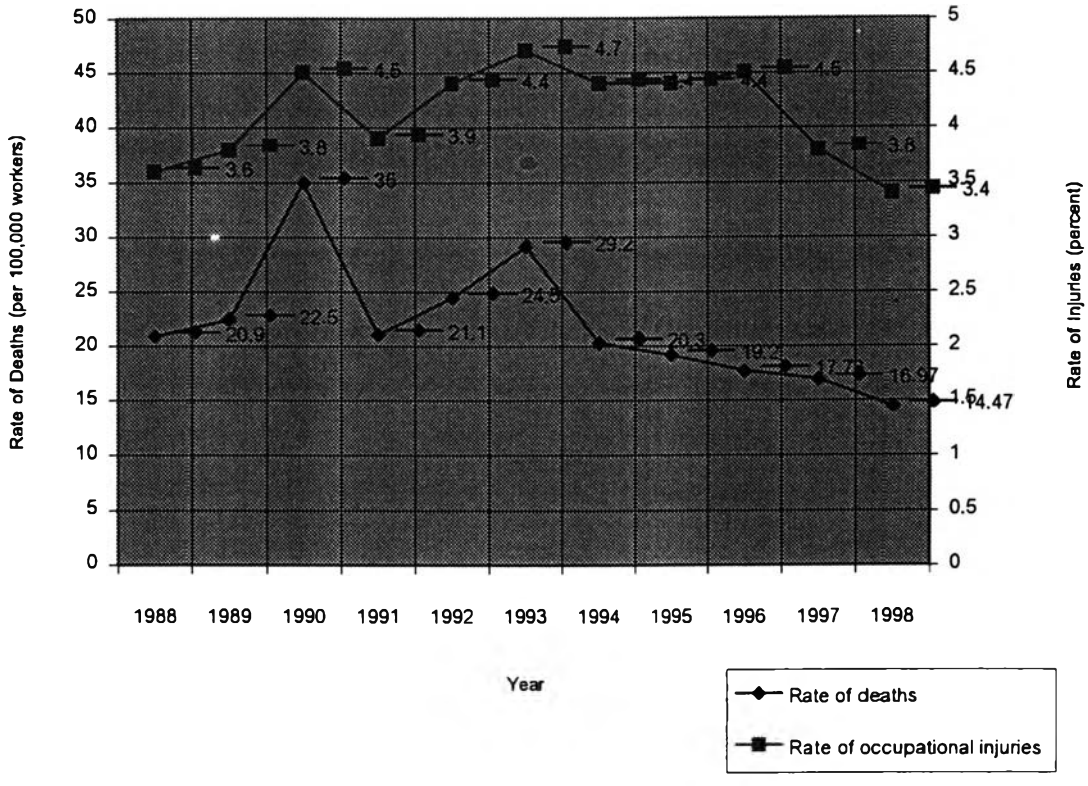
According to the Health profile Thailand 1997-1998, 2000 (Table 1.2 and Figure 1.1), the number of workers in various business places or industries who had occupational injuries rose from 3.6% in 1998 to 4.5% in 1996. But the number of workers who died from occupational activities had decreased from 3.5 per 100,000 working in 1990 to 17.73 per 100,000 in 1996. The economic crises and the collapse of industries resulted in the declines in occupational illness and death in 1997-1998 (Figure 1.1)

Table 1.2 Number and Rate of Occupational Death and Injuries of Workers (per 100,000 Workers), 1988-1998

Year	No. Of Workers Coverage by assurance	No. Of Workers With Injuries	Percent Injured	Deaths		Disabilities		Loss of part Of organs		Temporary sick leave	
				No	Rate	No	Rate	No	Rate	No	Rate
1988	1,346,203	48,912	3.6	282	20.9	7	0.5	1,179	87.6	47,444	3,524.3
1989	1,661,651	62,766	3.8	373	22.5	15	0.9	1,582	95.2	60,796	3,658.8
1990	1,826,995	80,065	4.5	640	35.0	30	1.6	1,509	82.6	77,886	4,263.1
1991	2,751,868	102,273	3.9	581	21.1	9	0.3	2,141	77.8	99,542	3,617.3
1992	3,202,415	131,800	4.4	740	24.5	15	0.5	2,010	66.5	129,035	4,272.1
1993	3,355,805	156,543	4.7	980	29.2	10	0.3	5,436	161.9	150,122	4,473.5
1994	4,248,414	186,394	4.4	863	20.3	23	0.5	4,548	107.0	180,960	4,259.5
1995	4,903,736	216,525	4.4	940	19.2	17	0.4	5,469	111.5	209,909	4,280.6
1996	5,425,422	245,616	4.5	962	17.73	18	0.3	5,042	92.93	239,754	4,416.1
1997	6,084,822	230,376	3.8	1,033	16.97	29	0.4	5,272	86.64	224,042	3,681.9
1998	5,416,182	186,445	3.4	784	14.47	19	0.3	3,692	68.14	181,956	3,358.1

Source: Ministry of labour and Social Welfare. Refer to Thailand Health Profile 1997-1998,2000.

Figure 1.1 Rates of Occupational Deaths and Injuries of Workers, 1988-1998



Source: Ministry of Labour and Social Welfare, refer to Thailand Health Profile Ministry of Public Health 1997-1998,2000

Table 1.3 illustrates the cause of work related injuries in 1997-1998. Cut wound represented the main cause of injuries, 22% of the to the injuries followed by a hit or bumb (20%) with ergonomic problems being the least (1.6%).

In 1997-1998, the cause of work-related on injuries distribute by cause as follows:

Table 1.3 Cause of work-related injuries in 1997-1998

Cause	Percentage of Total
- Cut wound	22.1%
- Hit or bump	19.8%
- Foreign body in eye	16.5%
- Dropped material	16.0%
- Moving heavy object	6.2%
- Physical risk (crash, electric shock, noise, heat, cool)	4.7%
- Fall from height	3.6%
- Chemical exposure	3.6%
- Road traffic accident	2.7%
- Fall on level	2.6%
- Ergonomic problems	1.6%

Source: Chuprapavon 2000

The distribution of injuries by type of factory is shown in table 1.4. Most injures occurred in basic metal industry followed by construction business

Table 1.4 Distribution of injuries by type of factory

Type of factory	Percentage of Total
- Basic Metal industry	20%
- Construction business	15%
- Manufacture of food, beverage, textile, ornaments and technical	5-10%
- Paper product, metallic, non-metallic, mineral product, transportation 2.5% and mining survey and others industry public utility 0.10%	
- Increasing patient by cause of chemical oil and byproduct and construction business, expect the economic crisis in 1998 decline by report	

Occupational disease

The number of workers with occupational disease (hearing loss, lead poisoning, occupational lung disease, heavy metal poisoning solvent poisoning, fumigant poisoning) is very low when compare with occupational injuries. This may be due to lack of report and the number of workers with occupational disease was found to be 34 and 15 cases the year 1998 and 1999 respectively. (as shown in Table 1.5)

Table 1.5 Number of patient and death of occupational disease year 1989-1998

Year	Poisoning										Occ. Lung Disease		Caisson Disease	
	Pesticide		Lead		Heavy Metal		Solvent		Fumigant					
	No. Case	Death Rate	No. Case	Death Rate	No. Case	Death Rate	No. Case	Death Rate	No. Case	Death Rate	No. Case	Death Rate	No. Case	Death Rate
1989	5,348	39	18	0	11	0	23	0	43	0	0	0	0	0
1990	4,827	39	4	0	6	0	7	0	6	0	0	0	0	0
1991	3,828	51	25	0	10	0	25	0	51	0	0	0	0	0
1992	3,599	31	12	0	8	0	50	0	56	0	1	0	3	0
1993	3,299	44	17	2	16	0	52	0	26	0	24	0	138	0
1994	3,165	0	20	0	14	0	51	0	21	1	10	0	61	0
1995	3,398	0	30	0	36	0	65	0	32	0	11	0	8	0
1996	3,175	0	29	0	54	0	73	0	44	0	32	0	8	0
1997	3,297	34	28	0	37	0	115	1	44	0	21	0	8	1
1998	4,398	15	47	0	63	0	93	0	113	0	86	0	12	1

Source: Epidimiology Division, Office of Permanent Secretary, Ministry of Public Health surveillance Report 1989-1998 refer to health situation of Thai people, 2000

1.3 Expenses for Occupational Health Service Industrial Employee Assurance. (Law enforcement)

Presently, there are many organizations responsible for health services and expenses for the labour force. These are as follows.

(1) Social Security Fund

Office of Social Security, Ministry of Labour and Social Welfare, The fund's objective was to offer health insurance for employees. Any company that has more than 10 employees has to register with the fund. The Social Security Fund will compensate for 4 categories; sickness, disabilities, death, (other reasons expect from work), and birth delivery. In 1996, compensation to employee total about 6,238.6 million Baht, an increase of 2,247.17 million Baht or 56.30% from 1995.

(2) Worker's Compensation Fund

Worker's Compensation Fund is part of office of Social Security and directs toward any companies employing more than 10 employees. Companies employing less than 10 persons are supported by another fund. The compensation fund also can force the employer to play compensation for their employee. The compensation fund will pay for sickness and injuries from work. In 1996 the compensation fund paid 1,265.30 million Baht. In 1996-1997 to the compensation fund increased 19.30% or 1,509.62 million Baht as show in table 1.6.

Table 1.6 Category compensation fund compare the year 1996-1997

Compensation Fund	Year		Increase in percentage compare 1996-1997
	1996	1997	
- Compensation	647.68	764.48	18.03
- Treatment	601.76	726.52	20.73
- Funeral	14.12	16.22	14.87
- Rehabilitation	1.74	2.40	37.93
- Total	1,265.30	1,509.62	19.31

Source: Bureau of health plan and policy, 1999.

Table 1.7 Occupational health assurances Expenditure (current price) 1991 – 1998 public sector (million Baht).

Year	Workers' Compensation fund	Social securely	Remark
1991	624	778	
1992	753	2,057	
1993	927	2,473	
1994	1,169	3,773	
1995	1,370	3,991	
1996	1,610	6,239	
1997	1,987	10,245	
1998	1,630	7,637	

Sources: 1. National Economic and Social Development Board, Thailand National Income, 1951 – 1998.

2. Viroj Tangcharoensthien. Suffering and cause in the Health System, 1996

3. Charles Myers. Financing Health service and Medical care in Thailand. 1985.

(Adopted from Thailand Health Profile 1997 – 1998 September 1999 Page 200)

Table 1.7 provides information that were recorded from workers in the industrial sector, In fact, many people working in agricultural sector and service sector, also had accidents or illnesses from work, However, this project only examine occupational health in industrial sector from hospital record. In addition, we look at the results of sickness or accident that has direct impact on occupational health.

Direct impact means short or long period or time, absence from work, and effect on those families because of lost income. The government paid a great deal of compensation for health and psychological problems.

These impacts also affect the community and society, and lead to other problems. As a result, public and private sectors try to improve employees health unit of occupational health and safety program at work.

1.4 Problems with Occupational Health in Thailand

(Sonsern Gunvatanon, 1995)

1. Lack of personnel in occupational health service, especially in the medical sector. The occupational health division cannot service the patients with full efficiency. The government already knows this problem. However, because of reduced size of all government offices, it is difficult to find persons to take care of this unit.

2. Development of knowledge and training. Problems with occupational health and safety are a new issue in Thailand. Hence, it is necessary to develop knowledge in this issue including training for interested and concerned staff.

3. Employer and employee attitude to occupational health. Both employer and employee did not pay enough attention on this issue. It also difficult for employers to invest in occupational health and safety because of economic crisis. Consequently, it also difficult to allocate this service to the employee without cooperation from employer.

4. Government's policy and planning. Since the government emphasizes industry investment to stimulate economic growth, the government did not pay as much attention to the occupational health and safety, as they should. Consequently, some owners did not emphasize those matters as well. There were many public organizations set up to take care for these matters. However, different policies and procedures caused difficulties in cooperation between the organizations.

5. Problem with working system. Problems could not be solve within holistic approach because, multi-displinary never corporate in this system.

6. Law was set up in a society in order to control the right of people for peace in the society including rule and regulations for the society. Unfortunately, it seems that law was set up after the problem had started, partly because society changes quickly. Since law for occupational health and safety has been in effect, there were some main problems, such as the following:

(1) Different laws in different divisions or authorities affect job procedures, such as the Standardization Division and Welfare Division respond for employee's safety at work, while Industry Department Manufactory control Industry Division respond for controlling of industry construction including safety of equipment and

machine. Occupational Health Division responds for standard of safety at work.

(2) There are many procedures to follow as instruct in the law, consequently sometimes it is too late to solve any problems. For example, there was an incident that a manufacture process had distributed some toxic, in work place and environment. The Department of Manufactory Control wanted to close that factory. However, there were some procedures to be followed. First, warning letter to the owner to improve the standard. If they did not meet the standard after improvement, manufacturing can be suspended. Public health services had to take responsibility for treating all casualties from the toxicity.

(3) Lack of number of person or specialist to check safety standard.

(4) Difficulties in interpreting the law.

(5) There were many accidents caused by inappropriate working system such as overtime, no day off, no annual medical check up or the check up did not meet the standard.

(6) Unused personal protective equipment.

(7) No information center, thus the law could not be adapted to use with the real situation.

(8) Some information needed specialist to analyze the information in order to find solution for problem.

1.5 Organization for Occupational Health and Safety in Thailand

Ministries in Thailand responsible for occupational health and safety are Ministry of Industry, Ministry of Labour and Social Welfare, and Ministry of Public Health. However, those ministries did not present a clear picture of cooperation.

1.5.1 Ministry of Industry

1. Industry department is responsible people and environment from effects of Industry people and environment and the process of occupational health protection and safety. The department also has to controls industrial permit licenses. The office under control is as follow.

(1) The Safety Technology Center who plays important role in:

1) Research to develop safer and mare sanitary manufacturing procedure.
2) Energy conservation.
3) Set up policy, plan, and standard of safety and sanitation.
4) Support for safety technology safety management and industrial hygiene.
5) Checking on risky manufactures or special restrict manufacture.
6) Protection from any dangerous material or chemical.
7) Control of private companies units certificate for safety and industrial hygiene.
8) Work as National Focal Point emphasis on project of awareness and preparedness for Emergency at local level.

This was one of projects from the United Nation Organization.

9) Cooperation with other domestic and international organizations.

10) Production of safety and industrial hygiene handbooks.

11) Cooperation with other departments, division or organization and supporting others.

(2) Office of Toxics Control

Responsible for laws regarding poison and toxic. Controls as specially vapor poisoning. Set up standard, rules and regulation to reduce impact of chemicals, including international agreement regarding industrial activities.

(3) Office of industry control

Divided into 4 main regions, responsible for controlling and checking poisoning and vapor poisoning investment. The office responds to legal action agent factories.

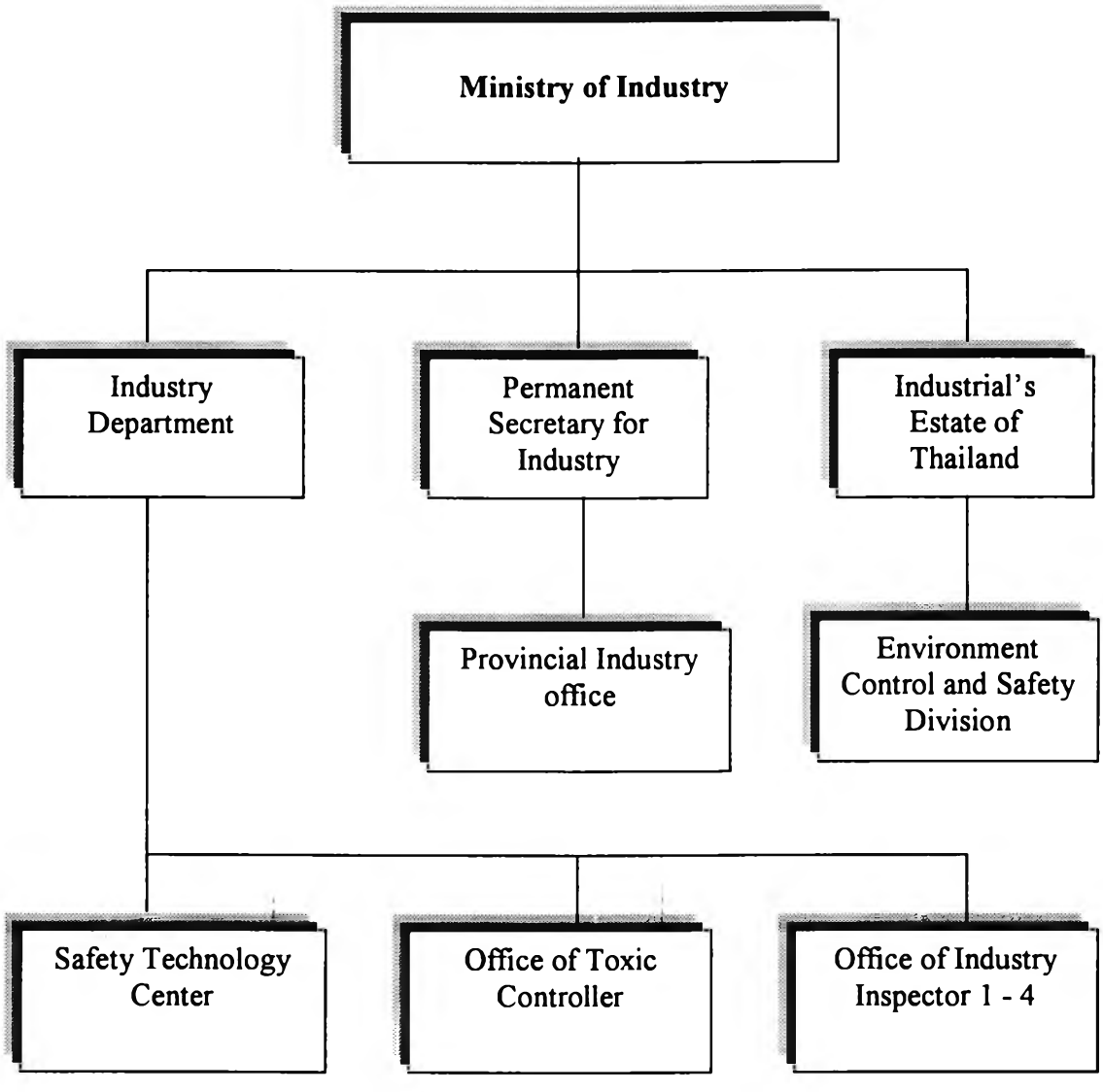
2. Permanent Secretary for Ministry of Industry

Every province has a provincial industry office, while play an important role in licensing establishment, expansion, and extending manufacturing licenses.

3. Industrial's Estate of Thailand

This office stimulates industrial development in Thailand. It also research solution industrial problems in major cities, which effect rural plans.

Figure 1.2 Ministry of Industry Organization chart



Source: Compensation Fund Office, 1999

1.5.2 Ministry of Labour and Social Welfare

1. Social welfare and Labour Protective Department

This Department has an important role in occupational health and safety law compliance.

(1) Safety control division

This division plays an important role in enforcement of laws regarding safety at work place, including drafting laws for occupational health committees to support safety at work.

(2) Work safety institute

This institute supports Social Welfare and Labour Protective Division goals through research and theory. The main concern of the institute in support and development of occupational health and the working environment. It provides central information and training for working safety and health for working people.

(3) Provincial Social welfare and labour protection office. It's important role in to stimulate safety in the factory work place and to enforce occupational health and safety law at the provincial level.

(4) Office Social Security

This office has control of 2 Social welfare funds. The Social Security Fund offers health insurance for non-work relates conditions, and the worker's compensation for sickness caused by the work environment.

1) Medical rehabilitation center

Employees who register with The Social Security office may get medical rehabilitation services after accidents on the job.

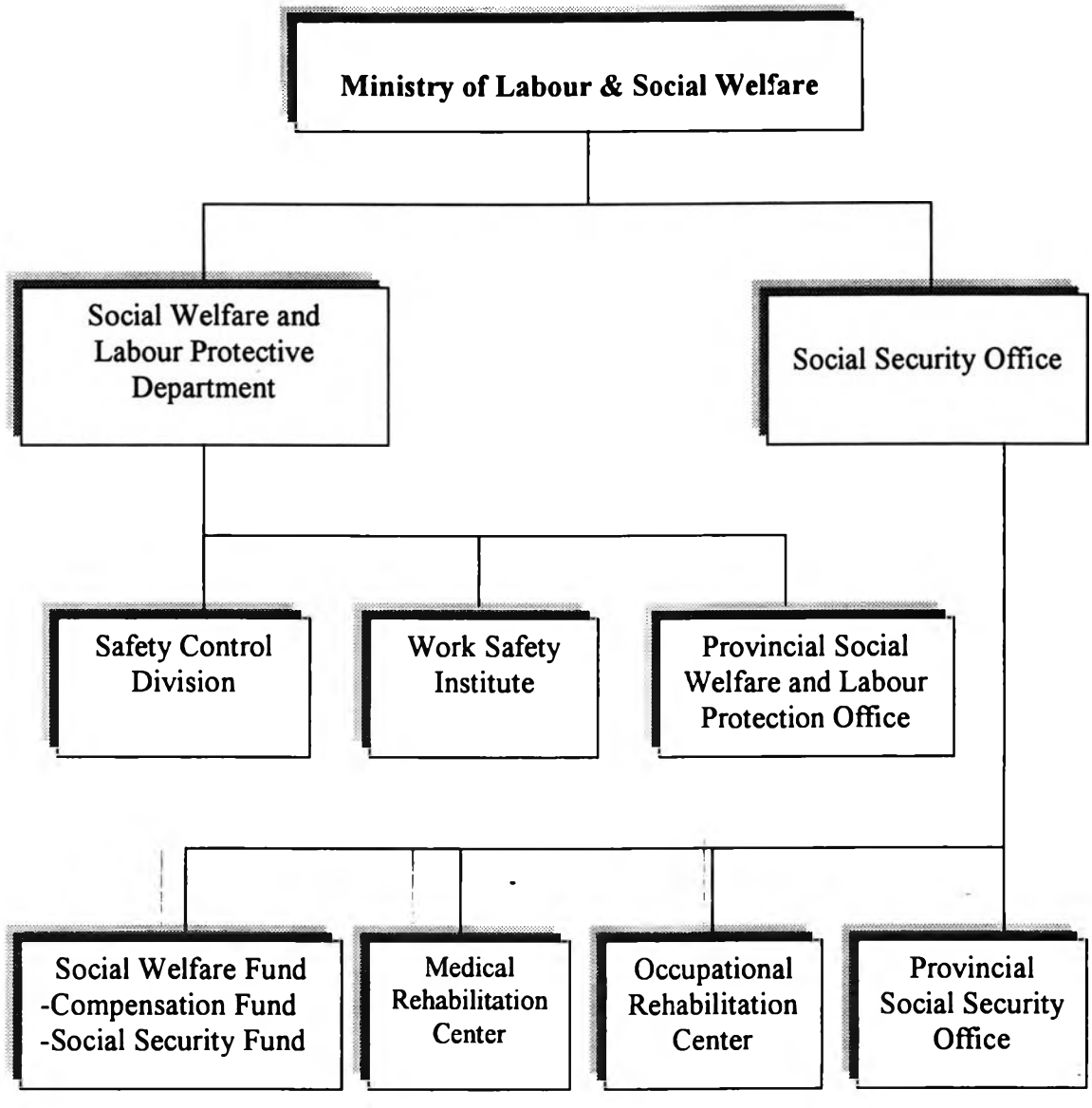
2) Occupational Rehabilitation Center, offer two main categories of service

- work preparation
- vocational training

3) Provincial Social Security office

It plays important role at the provincial level for employees working in factories. It disperses 2 social welfare funds, Social Security fund offer health insurance for non-occupational injuries illness, and the worker Compensation Fund will pay in benefits for work related injuries and illness.

Figure 1.3 Ministry of Labour & Social Welfare Organization chart



Source: Compensation Fund Office, 1999

1.5.3 Ministry of Public Health

The Occupational Health Service includes health promotion disease prevention control work related disease, medical therapy, and work rehabilitation. These activities will be done through the Technical Department and Provincial Health Office.

1. Medical Service Department

Its role in education and research to develop medical technology. The office under control are as follow

(1) Bureau of Educational Development

Occupational Medical and Environmental Office under control of Bureau Educational Development Office. It aims to develop and support occupational medicines including cooperation with other organization for training medical doctor in occupational medicine treatment.

(2) Nopparat Rachathani Hospital. This is the research center for occupational disease and treatment development.

2. Health Department

Its major roles are research and technology development for health promotion and environmental health. Occupational Health Division is directly responsible for occupational health concerns. Its roles include the following:

(1) Occupational Health Division roles

1) Information center including occupational health theory in every occupation.

2) Planning for occupational health service for working people as much as possible with cooperation between nation occupational health committee and other committees.

3) Research and follow up as stated in public health Act A.D. 1992 (B.E. 2535) including the Notification of Ministry of Public Health and Ministerial Regulation and related especially anything that effect on health.
4) Support and follow up as stated in the Act including related Notification which related to employment and work place such as Labour Protective Act 1998 (B.E. 2541), Social Security Act B.E. 2523 (A.D. 1990), Industry Act 1992, and Poisoning Act A.D. 1992, etc.
5) Research and development to adapt occupational health theory and technology to working environmental policy and employee health. This also provider good social and mental health.
6) Occupational Epidemiology development in action plan.
7) Laboratory standard, and identification of physical, chemical, biological and microorganism in occupation health.
8) Details and characteristics of instruments and equipment used in occupational of health, and laboratory equipment.
9) National planning for occupational health developments in any division of Ministry of public health including local health offices.
10) Job evaluation on occupational health from public and private sector.

11) Occupational – health technology education to develop organization, service person and quality of life for employment.

12) Demonstration and support on occupational health recommendations from World Health Organization (WHO) in Thailand. In addition, it is an information center for occupational health from public and private sectors.

Occupational Health Division has total of 14 technical centers including Samrong Tai Occupational Health Center and Matapud Occupational Health Center. The centers have to respond for their areas over Thailand. The major responsibilities are education, medical check-ups, working environment surveys, occupational health information through advertisement, and occupational health training for health service officers.

3. Permanent Secretary for Ministry of Public Health

Its major roles are control supervisor and inspector of comphrehensive rural health. Occupational Health Division is directly responsible for occupational health concerns. Its roles include the following.

(1) Epidemiological Division. Information Service for disease and public health problems including suggestion and equipment development to prevent disease.

(2) Rural Health Division. Responsible for resources support, systems development, and follow-up training in provincial health offices except the provincial hospital.

(3) Rural Hospital Division. Responsible for reso... systems development and follow up training in central hospital and general hospitals.

(4) Provincial Health Offices. The office under control are as follows.

1) Occupational Health and Environmental Health Section are responsible for

- Occupational health disease and safety in work place.
- Occupational health and safety.
- Occupational health training
- Research for occupational health service and safety.
- Reporting of occupational disease.

2) Provincial Hospital Occupational Medicine Sector is responsible for:

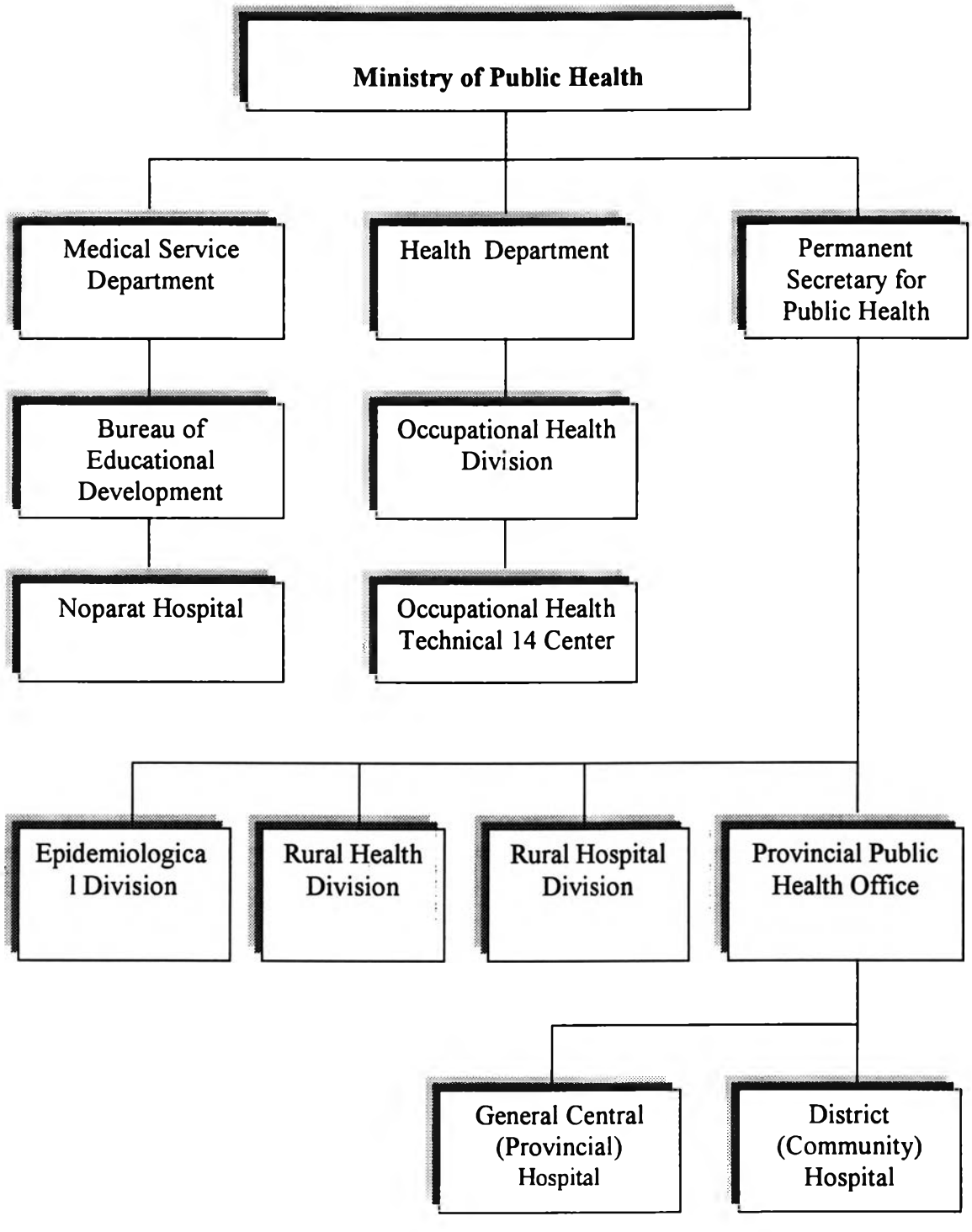
- Occupational disease investigation.
- Medical therapy for work related disease and injury.
- Transfer patients to other health facilities for further treatment.
- Annual medical check – ups for working people.
- Medical check- up before employment.

3) Community Hospitals are responsible for:

Medical and public health services. District Hospitals offer medical and health education, including health protection, health promotion, environmental health and health rehabilitation.

Occupational Health role will be discussed in Chapter 2

Figure 1.4 Ministry of Public Health Organization Chart



Source: Compensation Fund Office, 1999