

CHAPTER 3

PROJECT EVALUATION

3.1 Introduction

This project evaluation was concerned with participatory evaluation of occupational health service for a community hospital in an industrial area, a case study of Ban-Chang Hospital, Rayong Province. The aim of the project was to bring occupational health services in community hospital up to Ministry of public health standard.

The objective of Occupational Health Service at Ban-Change hospital

1. To improve standards of the occupational health service for community hospital in an industrial area.
2. Job monitoring and evaluation, as compare to Ministry of public health standard.
3. Improvement of area of weakness to standard.
4. Act as pilot group or example for occupational health service in other hospitals.

3.2 Purpose

It was necessary to evaluate the project aims and objective by participatory evaluation. It leads to occupational health service development for community hospital, the case study of Ban Chang Hospital.

3.3 Evaluation Check List

This was to monitor project development, and determine whether it achieved its goal and how far it had gone.

3.4 Evaluation Design

It is participatory evaluation. Participatory evaluation reflects the needs and responses of those who are directly affected by the project.

3.5 Data Collection Method

Development of a checklist to record clinical occupational health activities

3.5.1 Before and after the project, to administer the checklist as pre-and post-test

3.5.2 Teamwork meeting

3.5.3 Summary report on job performance

3.6 Data Analysis and Result

Analysis of pre-and post-test data went as follow.

There were 2 statistical analyses;

- Quantitative information, shown in percentage.
- Qualitative information, is analyzed in the body of the text / detail.

The evaluation found that:

1. Only 17 (94.44%) of standard activities were being implemented. Standards of occupational health service of community hospital, in industrial area consists 102 activities as prescribed by Ministry of public health. The standards were used to evaluate services, and gather information on activities that were below standard.

2. Comparison between actual activities and standard, found that 84 activities took place, out of a total 102 standard activities. It was 18 activities need to be added, but only 17 (94.44%) activities were developed.

3. Based on the 10 standard job categories as listed on page 42 that must be included in occupational health service, the results are as follows:

Job Categories 1. Organization and organization management

1. Organization and organization management has 16 standard activities, there were 3 (18.75%) activities that need to be developed, as the following;

- 1) Job description.
- 2) Occupational health and safety plan in hospital.
- 3) Guideline for occupational health action.

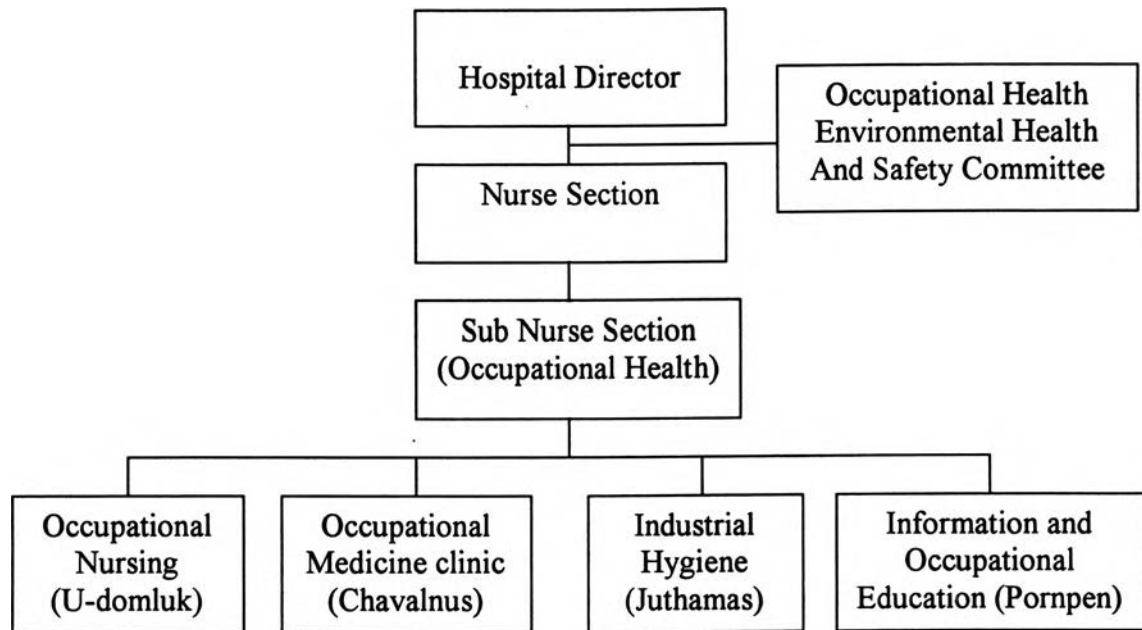
It found, as the following:

1) Job description. The occupational health team displayed their job descriptions for in front of their office. It announced, as follows;

- Mrs. Udomluk Baikrai, nurse level 7, head of occupational health division. She is responsible for occupational health nursing, as follows;
 - Management and service development to achieve Ministry of public health standards.
 - Leader in occupational nursing service.
 - Education for occupational health and safety committee in hospital including observers.
- Mrs. Chavalnus Usadee, nurse level 6, assistant to the head of division. She was main staff for occupational medicine clinic.
- Ms. Juthamas Tipanak, nurse level 5, only staff for industrial hygiene service, in addition to other duties.
- Mrs. Pornpen Jong-anurak, nurse level 5, staff nurse information service, and educational service, among other duties.

Job description shows by organization chart. Figure 7

Figure 3.1 Occupational Health and Safety Organization chart, Ban-Chang Hospital.



2) **Occupational health and safety plan in hospital.** The plan was part of the national budget plan in 2000, 1st October 2000 – 30th September 2001, detail as follows;

- Written plan contained a plan of action time line, and responsible part which composes a total of 12 activities. However, this project only deal with 6 activities.
- Procedure for directing, include meeting with occupational health team. Decision making is made in group.
- The result was as follows.
 1. They arranged training on occupational health for occupational health and safety committee.
 2. Walk through survey of local factory.

3. Staff training on chemical accident.
4. Referral for patients accident.
5. Information development for chemical accidents.
6. Analysis of physical check-ups for exposed staff.

1. They arranged training on occupational health for occupational health and safety committee in the meeting room at Ban Chang Hospital. The lecturer is hospital director. The training concerned the policy, regulations and theory of occupational health. He stated that the hospital was like a factory that has the potentials to pose health risks (Table 3.1).

Table 3.1 Risks to Hospital Staff Health

	Risk	Affect
Physical	<ul style="list-style-type: none"> - Vibration: mow machine - Heat: kitchen - Not enough lighting - Too much work for sight: x-ray film watching 	<ul style="list-style-type: none"> - Hard-arm vibration - Losing of sodium chloride - Eye fatigue
Biology	<ul style="list-style-type: none"> - Contamination 	<ul style="list-style-type: none"> - Tuberculosis - HIV - Hepatitis virus B
Chemical	<ul style="list-style-type: none"> - Alcohol - Acid, alkali - Nitrous oxide - Anti septic - Pharmaceutical - Anti cancer medicine 	<ul style="list-style-type: none"> - Allergic skin - Skin infection - Respiration disease - Potential of cancer
Mind	<ul style="list-style-type: none"> - Stress from patient demanding - Co-operation with other divisions - Working hard: late working shift, emergency in the night time 	<ul style="list-style-type: none"> - If too much stress, it will create psychological problems - Reduce work efficiency. It leads to rising number in accidents.
Ergonomic	<ul style="list-style-type: none"> - Long hours of sitting at working desk create back pain. - Patient transferring 	<ul style="list-style-type: none"> - Backache
Accident	<ul style="list-style-type: none"> - From sharp equipment - Working in dark room for radiation staff - Driver for patient transferring 	<ul style="list-style-type: none"> - Chronic disease - Losing some parts of the body

In addition, the lecturer stated used comparison between occupational health progress and a circus. A tiger is like an agent from Epidemiology. Audience risk like risk factor for protection and prevention of the risk, it is necessary to know what is the risk agent, and who will take the risk.

Epidemiology is used for this matter, which defined as.

1. Reduce number of agents, and exposure using walk through survey to find risk factors of job safety analysis.
2. Host needs to be performed both passive and proactive surveillance.
 - 2.1 Passive surveillance, investigate type of disease and reason for leave from hospital record of personal leave.
 - 2.2 Proactive surveillance, removed of agent that might cause of disease such as suitable lighting in offices and know how to protect/prevent himself, for example, use of personal protection equipment.

Idea from the seminar was risk factors of occupational health in hospital and who is concerned with the risk. In addition, it presented procedure and policies to solve problems. Then the occupational health and safety committee at the hospital developed policy. Committee members came from all section of the hospital.

Self-development and participatory development was the strategy. The problem solving process of the group used both passive and proactive methods.

2. Walk through survey of factories found that noise from machine was the greatest health risk, noise was over 85 decibel in 5 factories. This could lead to ear problem or hearing failure.

3. Staff training for preparedness chemical accidents. Ban-Chang hospital arrange of staff training on chemical accident, as follows:

- The training was arranged for factory staff and hospital staff from public health. The plan included rehearsal plan and response plan for chemical accidents.
- Training for public health officers and the hospital staffs.
- Civilian protection volunteers and policemen training. The training included protection and rehearsal plans in Rayong province. The plan was concerned with chemical accident rescue.
- Educate public health staffs on preparation for chemical accident service.

The training outline

- ❑ Role of service staffs
- ❑ Symbol for triage to separate group of patients according to nature of their express
- ❑ Service roles:
 - Preparation of equipment and location
 - Helping patient between accident location and hospital
- ❑ Protection of personal and information for relative and other concerned persons.

4. Transfers of patient from chemical accident transferring, network activity between Ban-Chang hospital and Rayong hospital, resulted as follows;

- Set up committee, with representatives from both hospitals, appointed by Rayong governor. The committee was concerned with medical treatment, which was part of the civilian protection plan. They are responsible for:
 - Research and gather information on all chemical use in local factories included chemical use in other activities.
 - Education on medical treatment for chemical poisoning.
 - Situation analysis
 - Role of problem solving
- Role for referral system:
 1. Preparation meeting
 - 1.1 Chemical name list and location for antidote medicine preparation.
 - 1.2 Laboratory preparation.
 - 1.3 Oriented for officers. They inspected Rama Thibordee Hospital and observed the treatment and referral process.
 - 1.4 Preparation and rehearsal plan for emergency case.
 - 1.5 Improved referral form. The form should consist of location of chemical problem form, burn referral form and, other accidents form. All the forms should be separated clearly for benefit of continued treatment.

1.6 Rayong hospital designated as poisoning center of the province.

1.7 The rehearsal plan aimed to train for the real situation. The training included other organizations such as the provincial industry division, provincial labour and social welfare division, provincial health office, industrial estate, etc. Rayong governor performed as head of the training.

5. Information development for chemical accident. Ban Chang hospital could reach the standard. Therefore, it was necessary to update the information regularly.

6. Analysis of physical check-up for exposed staff in the hospital.

6.1 Check for hepatitis virus type B and anti body of 23 officers, 11 officers were virus carriers (47.8%), 5 officers (20.83%) without the virus and antibody, 7 offices were normal (31.37)

In the case of these viruses positive, we need to check their liver function every year. At the same time we can protect the officers who have no immunity to hepatitis virus by giving 3 vaccines. After completed vaccines in about 1-2 months, they need to re-check blood for every officer that received vaccine.

6.2 Visual test.

The test separated different groups of persons according to their jobs. The medical check up for officers from computer department and drivers (total 78) has shown that 34 persons (44.9%) have eye problem with 25 persons short eye

sight, 5 persons of long sighted 2 persons with glaucoma, 1 person of impaired vision from accident and one sight failure congenital.

Short and long- eye sighted, persons were told to see on optical doctor for vision check up and order eyeglasses. Lighting check up every year was recommended for occupational health problem solving and monitoring effect on computer user.

6.3 Lung function test.

Risk groups were divided according to type of work where chemicals, respiration, such as x-ray division, mortuary, sanitation and protection division of total of 8 persons, were all negative.

6.4 Audiogram ability test.

The test was done for different division exhibiting set for occupation exposure to a loud noise such as sanitation and protection division, and gardener using mow machine. Six staff (75%) out of 8 staff failed the test: one from accident, one temporary ear nerve problem and four staffs from noisy work. It was suggested that they use equipment for their protection, and avoid work near noisy place. In addition, yearly plan for environmental monitoring was launched.

6.5 Stool exam, 4 staffs from kitchen were checked, and every one was negative for disease.

In the survey of risk factors for officers, the problem solving, process was clear in vaccine protection according to risk factors and knowledge for self-protection. In addition, risk factor monitoring such as lighting monitoring, was covered.

3) Guideline for occupational health action.

Work related disease are accidents, record of Ban-Chang hospital work accident were most common for three consecutive years (1995-1997). In 1998, work accidents were declined, which may be due to economics crisis. Occupational committee of hospital prepares the occupational guideline for occupational service safety both of staff and patients. The first priorities of guideline were keeping records and report of work accidents.

Objective for work accident record and report

1. Work accident monitoring and control, including accident from work process and work related disease.
2. Information gathers concerned with accident and work related disease. These lead to standards for problem solving or health protection.
3. Officer health protection from work accident, work related disease and health protection on patient and relative from accident in the hospital.

The guideline content:

1. Guideline organizer, which was occupational health, safety and environmental health committee.

2. Responsibility and roles

- 2.1 The officer on duty makes an accident report to the head of the division to present to secretary of occupational health committee.

Occupational health committee responsible for

- Accident investigation and report to director
- Keep record of the accident and report to the hospital management team every 4 months

3. Report procedure and accident investigation

- Head of the division kept record and investigate at the early stage then report to secretary of occupational health committee and director of hospital.
- Timing for the report and investigation. Within 24 hours for serious accident. When it happened, officer needed to take sick leave. Within 48 hours for any accident. When it happened, officer does not need to take sick leave.
- Head of section reviews the first accident report. If it happened after hours or on the public holiday, reports to the head of section, and to head of the division the next working day. The division head reported to secretary of occupational health committee to report to chief of the hospital.

4. The committee set up report form for disease especially for hospital

use.

5. Quality indication

5.1 Received report on all the accidents (100%)

5.2 Only one staff took sick leave from accident from work /one per year.

5.3 Number of accident declined by 10% every four months

From 5 factors above, it stated in the report on accident from work of officers at Ban Chang Hospital. Therefore, the report was part of service development in the hospital "Hospital Health Care Accreditation". This related to policy from the Public Health Ministry, which indicated that service development for service place.

Job categories 2

Information center of occupational health, poisoning substance, occupational medicine, safety and environment for useful service.

Information center of occupational and environmental health, toxicology, occupational and environmental medicine. There were 6 standard activities. The hospital could developed all the activities. They have continued development that can be seen in hospital development yearly plan

Job categories 3

Occupational health safety service in hospital

Occupational Health Safety Service (safety at workplace) in hospital. There were 5 standard activities, however, the hospital could develop only 2 activities, as follows;

1. Official plan for fire evacuation
2. Fire rehearsal plan

The project found that the hospital has set regulation for official fire evacuation plan and fire rehearsal plan one time per year.

Members of the occupational health, safety and environmental health committee at the hospital were appointed by chief of the hospital. The members came from different divisions. The head of the sanitation and disease prevention division of the hospital performed as chairman of the committee. The head of the occupational health division worked as member and secretary of the committee.

Plan procedure:

The committee analyzed and approved the action plan. The plan aimed to service for emergency case and preparation plan for fire evacuation in the hospital. The plan indicated details of job description, patient transfer to meeting point. The plan also adapted to use with service in emergency case.

Job categories 4

Industrial hygiene service in hospital

Industrial Hygiene Service (working environment) in hospital. There were 13 standard activities in the hospital. The hospital did 8 activities before the development; therefore, it was necessary to develop 5 activities according to the project. These are as follow.

1. Job safety analysis.
2. Environmental testing.
3. Cooperation with other division concerned with standard of environmental control
4. Evaluation and monitoring for solving environmental problems
5. Occupational medicine risk elimination in hospital

Based on the five activities listed above, this project found the following results.

The project found that:

1. Job safety analysis

Occupational health activities had to analyze safety at workplace. Process of occupational health service begun with present patient ID no. at the hospital

information desk till patient went back home. The officers also provide instruction and prepare for next appointment. Finally, officer reported patient with health report.

Service procedure as the following:

Main Procedure	Occupational risk for
1. Welcoming patient	- Nurse at out patient division such as wrong pulse measurement, record with the wrong person and took wrong ID
2. Examination service at occupational health division	- Nurse at occupational health division examine wrong patient - Forgot complete document - Did not report result from health examination to patient included personnel risk factor such as respiratory tract infection and sight failure from long working hours with computer
3. Special examination for occupational health: - Lung capability - Eye capability - Hearing capability - Others	- Placing error of special equipment - Communication error between examiner and patient - Failure in record keeping - Patient risk because of electricity from equipment - Respiratory tract infection
4. Service fee	- Calculation error in service fee
5. Return of health report to private companies	- Delay of the result - Exploring of personal confidential matter - No record of personnel acknowledge
6. Appointment schedule	- No record of reason for appointment

2. Environmental test: the sample of environmental survey in the hospital area found that the hospital surveyed and protect problem that might happen. In addition, it plan for Healthy Workplace Project.

3. Cooperate with other concerned division for environmental standard controlling at the workplace: It found that occupational health, safety, and environmental committee selected representative from different division for further action and the response officers needed to report to the committee at the meeting.

4. Evaluation and monitoring for solving environmental problems: it found that each officer reported result to meeting. Walk through survey of the hospital was done. If they found problems, they took immediate action to solve the problem. The result was reported to the meeting of occupational health, safety and environmental health committee of the hospital.

Occupational medicine risk elimination in hospital. Supply room personnel use talcum powder with gloves to make it easy to wear. In medical theory, talcum might be associated with cancer of the ovary. Consequently, talcum was changed to corn powder. Dust mask protection was also used. In addition, when they want to put the powder on the glove they need to do in good ventilation area and change their clothes when finished.

In addition, the hospital received a reward for occupational health service from Health Department. The reward stated standard of cleanliness, safety, no pollution and lively environment suitable for workplace, as follows:

Cleanliness Standard

No garbage was left in offices area. Clean up and tidy up offices area:

1. Policy and procedure. It was necessary to have cleanliness policy and assign officers to take action. Each area must provide signage to specify the area such as parking area, chemical storage room and canteen.

2. Action for cleanliness and tidy up

2.1 Area in building was arranged in the right order/tidy up.

2.2 No obstructions in the corridor, walk-way, or road to maintain easy access.

2.3 Separate items to kept in storage room.

2.4 Canteen followed the Sanitation Department's rule.

2.5 Facilities for officers such as wardrobe for delivery room officer, bath & toilet, and sink must have ventilation and be in good condition.

2.6 Waste elimination. Enough waste bins with covers. It is necessary to separate contaminated waste.

2.7 Pest control such as elimination of all food attraction rodents.

Safety Standard

It means no accident that can cause officer to take sick leave more than 3 days and no environmental pollution that effect staffs' health:

1. Health record for serious accidents that resulted in sick leave more than 3 days.

2. Equipment, and machine need to be installed with safety and stability. regular service and maintenance should be part of routine check.

3. Safe workplace. Electric wires and switch need to be in good safe condition. Protective equipment must be used for safety reasons.

4. Working environment. Suitable physical working environment such as regards lighting, temperature and chemical that can effect health.

5. Fire protection such as enough fire extinguishers regularly checked to maintain function. In addition, no obstruction fire escape corridor/stair cases and the fire escape door must have easy access.

Environmental Standard

It means no pollution to community such as noise, vibration, waste chemical or garbage.

Life Standard

Activities were created to support healthy mind and body:

1. Arrange scenery such as beautiful garden.
2. Activities such as sport day, and entertainment in different occasions.
3. Health promotion such as annual physical check up for working people, fitness gym for exercise with different types of exercise schedule in every week at least once a week for one hour.

Job categories 5

Occupational medicine service in the hospital. There were four activities. However three activities needed to be developed.

1. Official health pre-placement orientation
2. Personnel sickness analysis
3. Immunization for exposed staff

It found:

1. Work process along with appointment and inform in advance for any check up.
2. Checking activity. Standard physical check-up according to Financial Ministry's rule. In addition to, that extra physical check up was arranged to individual staff according to individual job such as ear ability check-up for gardener who use mow machine.
3. Result from physical check-up according to risk factor. It was stated in result and monitoring on occupational health and safety plan in organization activity and management number 6. Page 62

Job category 6

Occupational medicine service for labour force

Occupational medicine service for working people. There were 40 standard activities. The hospital processed 37 activities before development project. It was necessary to develop the following 3 activities.

1. Preparation plans for accident in written.
2. Mass casualty internal plan exercise each year.
3. Mass casualty plan exercise each year between organizations.

Moreover, internal and external hospital divisions were part of provincial accident and disaster protection plan for civilian in which the provincial governor was chairman of the committee overseeing this task.

Every division of Rayong province related with this plan, each division had to arrange internal cooperation according to their roles and follow the provincial plan. The plan covered the area of accident, disaster and accident from chemical.

The procedure for accident and disaster preparation plan in community hospital was the following:

1. Emergency plan for accident, disaster and accident from chemical service.
2. Action plan: headquarter office, chief of the hospital as director of the office.

Officer:

2.1 Director

2.2 Secretary of the Headquarter

2.3 Audio communication staff

3. Director: job description

- Receive report on first day of work from head of team
- Commanding and controlling according to the plan
- Internal and external cooperation
- Asking for support from other divisions
- Information to other divisions
- Direct and support workforce, equipment and instrument
- Announce of the action plan and termination plan

4. Job assignment

1. Occupational health and safety at workplace committee at the hospital. Head of sanitation and environment division performed as chairman of the committee. Head of occupational health division performed as secretary of the committee. Representative from other divisions in the hospital performed as member of the committee. Rules and regulations, as follows:

1.1 Prepare written plan

1.2 Inform other divisions regarding their duties concern with the plan.

1.3 Plan rehearsal.

1.4 The rehearsal evaluation.

5. Plan briefing information:

- Objective

Increase efficient service for mass accident and disaster. Officers from Ban-Chang hospital know their roles and ability to work as a team. Moreover, patients receive efficient service with immediate action, which can help them to survive without any complications.

6. Two major factors of action plan

6.1 Service supporting plan

6.2 Service plan

6.1 Service supporting plan

Level of Plan	Authorized Person for Action and Termination of Plan	Workforce	Supporting Workforce in All Levels
<p>Level 1 10-15 casualties and/or only 2 serious casualties</p>	<p>Medical doctor at emergency room</p>	<p>Every officer who on duty</p>	<p>1. Alarm 1.1 Service division: announce via speaker 1.2 Officer at emergency room: press alarm bell Out off regular service hours Officers at emergency room: Press alarm and other communicating equipment</p>
<p>Level 2 16-30 casualties and/ or 3-5 serious casualties</p>	<p>Director or deputy</p>	<p>Every officer who on duty including who stay in hospital area</p>	<p>2. Report to Member report to head of the team</p>
<p>Level 3 More than 30 casualties and/ or more than 5 serious casualties</p>	<p>Director or deputy</p>	<p>1. Every officer who on duty. 2. Officers stay in hospital area. 3. Officers stay outside hospital area.</p>	

6.2 Service plan

Medical Treatment

6.2.1 Medical treatment at the accident location.

- 1st Ambulance with medical equipment, called "Pra Pai 1" Workforce

Regular service hours	Off regular service hours
1. Duty medical doctor at emergency room	1 Medical doctor who off duty
1 Nurse from emergency room	1 Nurse from emergency room
1 Anaesthetic nurse	1 Nurse from deliver unit

- 2nd Ambulance with medical equipment, called "Pra Pai 2"

Regular service hours	Off regular service hours
1 Nurse from outside patient unit	2 Off duty nurses
1 Nurse from occupational health division	

Remarks: in case of accident from chemical and need supported units. Patient must be decontamination before treatment.

6.2.2 Services in Hospital

6.2.2.1 Separate group of patients. It is duty of outside patient unit.

6.2.2.2 Symbol

A green Little injury and patients could help themselves

Transferring point: examination room.

B yellow Medium injury: some parts need to be wound suture, some bones broken. Patients need to be inspected/examined for any change that might happen.

Transferring point: register room.

C red Critical stage need immediate treatment. Transferring point: emergency room.

D Blue Death from accident. Transferring point: in front of x-ray room in the pass

Services

At the transferring point, every division was required to be present to perform their regular duties.

- Registration
- Laboratory tests
- Emergency care
- X-ray service
- Pharmacist
- Communication and technician
- Public Relation, ambulance service and transportation
- Nutrition and reception for relative
- Security, traffic control and infrastructure

Remarks: General accident and chemical accident are separate sets of service. In case of chemical accident, it needs to clean/ wash/ rinse out chemical from body before medical treatment.

Job categories 7

Personnel training

There were 10 standard activities. The hospital did all activity so it was not necessary to develop any activity.

Job categories 8

Occupational health education service.

There were 6 standard activities for this category. There was one activity that needed to be developed to reach the standard, which was occupational health education for community leaders.

Public health volunteers from industry were integrated trained because the community leader was part of industrial volunteers. Most of the leaders were industrial worker.

Outline for the training:

- How we can arrange a satisfactory workplace?
- First Aid
- Family planning
- Chronic disease in workplace
- Risk factors in industry that effect health and how to avoid them
- Safety and labour protection laws
- Physical ability test (sight, lung, hand muscle)

It took one day of training, as each topic used about one hour. There were 20 attendants for the training at meeting room, Ban Chang hospital.

Job categories 9

Investigate/ Research for occupational health improvement

There were 2 standard activities. There was one activity that need to be developed to reach the standard, which was health service research.

Result from the activity

Ban-Chang hospital received financial budget supporting from World Health Organization 253,400 Baht for research on Hospital preparedness for chemical disaster in industrial estate areas: Thailand.

It aimed:

- To survey hospital's preparedness for chemical disasters for hospital service in industrial estate area.
- To evaluate Ban Chang hospital preparedness.
- To assist collaboration of the hospital with other related departments in the community.
- To determine facilities for preparedness and resource implement for chemical disaster in the community.

Timing period: 18 months between August 2000 – February 2002. The analysis separated into 2 periods; study of:

1. To survey the chemical disaster preparedness of hospital in industrial estate area in Thailand.
2. To study appropriation of hospital preparedness model for chemical disasters.

This study gathered information on some hospitals from both public and private hospitals where they prepare themselves for chemical disaster in Thailand and including Ban Chang hospital, as the following:

1. Number of industries in the area
2. Main road for chemical and poisoning transferring
3. Category of chemical or poisoning patients for services
4. Record of patient from chemical and others

5. Ability to support accidents from chemical and poisoning
 - Policy planning
 - Job procedure
 - Cooperate with other related divisions
 - Staff training
 - Training plan for officers
6. Information on chemical
7. Equipment to support patients from chemical accident
 - Decontamination
 - Road planning to transfer patient/casualty
 - Examination equipment
 - Medical support

According to this study Ban-Chang hospital has been trained for the real situation. The training was on 4 May 2001, including education on the topic for offices within the hospital and participate with other divisions. They also supported officers for further education on occupational health at a master degree level.

Job categories 10

Equipment of occupational Health for work environment measurement and sampling and physical check up equipment Measurement equipment, sample of environment in workplace, occupational medical service.

Community hospitals need to provide 3 types of equipment for occupational health service as a standard set up. The equipment are as follows:

1. 5 pieces equipment for environment testing in the workplace.
 - Personal air sampling pump
 - Sound level meter
 - Lux meter
 - Wet Bulb globe thermometer index (WBGT)
 - Gas chromatography
2. 4 pieces equipment for occupational medical services and health
 - Visual test
 - Lung function test
 - Audiometer
 - Fitness test
3. Laboratory equipment
 - Atomic Absorption (AA)
 - High performance liquid chromatography (HPLC)

Inspection in Ban Chang hospital found that they provide 2 sets of equipment as stated in no. 1 and 2. This could indicate that they have prepared themselves for the service.

Data collection, data analysis, planning and development were according to the plan. Data collecting and inspection had to be done again by the end of the project. It aimed to compare occupational health service before and after the development, as stated in table 3.2

Table 3.2 The result of project comparison before and after development

	Problems and Conflicts	Score	Pre-action		Post-action		Remark
			Done	%	Done	%	
	Organization and management						
1	Job description	1	-		/		
2	Occupational health and safety plan in hospital	1	-		/		
3	Guideline for occupational health action	1	-		/		
	Occupational health and safety service						
4	Official plan five evacuation plan	1	-		/		
5	Fire rehearsal plan	1	-		/		
	Industrial hygiene service						
6	Job safety analysis	1	-		/		
7	Environment sample check	1	-		/		
8	Cooperative with other division concerned						
	with standard of environmental ontroll	1	-		/		
9	Evaluation and monitoring for problem						
	solving on environment problem	1	-		/		
10	Occupational medicine risk elimination in hospital						
	Occupational medicine service in hospital	1	-		/		
11	Official pre-placement at work	1	-		/		
12	Personel sickness analysis	1	-		/		
13	Immune for risk factor to officer	1	-		/		
	Occupational medicine service for						
	working people						
14	Preparation plan for accident in written	1	-		/		
15	Mass casualty internal plan exercise each year	1	-		/		
16	Mass casualty plan exercise each year between	1	-		/		
	organization						
17	Occupational health education in community leader	1	-		/		
	Investigation/ research for work environment						
18	Health service research				-		
	TOTAL	18			17	94.44	