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## PREFACE

Thailand has a long experience in latrine development which can trace back to Sukhothai Era, 700 years ago. However, this development was stagnant and did not progress as it should be. The progress was made from the past four decades. The preparation of this document was made possible by the financial of the United Nations Children's Fund (UNICEF) which is gratefully acknowledged to the Department of Health.

The foundation of latrine development was laid down since the inception of the Ministry of Public Health in 1942. However the current development strategy was developed in 1960 during which village health and sanitation project was initiated. In this connexion, water sealed latrine was a choice of technology. It proved to be the most appropriate technology for the country. This type of latrine was designed by the Governor Sawadi Mahagayı. It be noted that the Administrator was the designer of this type of latrine and made it possible.

Experiences revealed that motivation is the most important element leading to the success of latrine development. The motivation strategy for social mobilization is lengthly discussed in this document. This may be applied and practised elsewhere with some modifications. Based on the lesson learned during the past four decades, programme guides for latrine development are also included in this document which may be useful to all concerned with latrine development in the rural areas of developing countries.

It is hoped that the experiences and suggestions contained therein will contribute towards the achievement of the national targets established under the International Drinking Water Supply and Sanitation Decade and towards the achievement of Health for All by the year 2000.

“... Sanitation is the maintenance and control of exits and entrances of the body and premises in which humans reside. Do not let them be the sources and transmission channels of diseases...”

“... Several millions of Baht have been spent annually for the treatment of people suffering from gastro intestinal diseases. With this amount of expenditure, human excreta can be systematically disposed. When excreta has been properly disposed, sickness from these types of diseases will eventually be halved.....”

**HIS ROYAL HIGHNESS PRINCE MAHIDOL OF SONGKHLA  
THE KING'S FATHER**



# CHAPTER I

## INTRODUCTION

It is necessary to define the term "health development" which can be illustrated by the health house and its supporting pillars shown below. —



It is universally understood among public health administrators that "health" means the state of complete physical, mental and social well being and not merely the absence of disease or infirmity. If we compare a community's health to a house, this health house must stay on top of the four important pillars:

- (a) Health habits -- consistency in daily practices for good health such as eating cooked food, having all groups of basic nutrient foodstuffs, refraining from smoking, exercising frequently, etc.
- (b) Health services --- services for promotion of good health, prevention of disease, early diagnosis and treatment of diseases and rehabilitation after illnesses.
- (c) Heredity -- genes which are inherited from parents to children.
- (d) Environmental sanitation -- the state of environment which favours good health.

The meaning of sanitation was clearly defined by His Royal Highness Prince Mahidol of Songkhla, the present King's father at a seminar in 1924 that "Sanitation is the maintenance and control of exits and entrances of the body and premises in which humans reside. Do not let them be the sources and transmission channels of diseases."

It is evident that sanitation is an activity and practice to control environment and people who cause unclean environment, in order to prevent the living surroundings from pollution which will be the root cause of diseases and illnesses. The definition of sanitation is currently modified to read as follows -

"Sanitation is the art and science of bringing about development, correction, and improvement of environment for the purposes of prevention of diseases and deterioration of health. It is a very important fundamental activity in the development of communities and the quality of life."

Health development refers to the attempt to keep an individual or a community healthy, and to create good living conditions for humans through the improvement of the main pillars of the health house which is comprised healthy habits, health services, heredity and environmental sanitation. Among these, sanitation is considered to be the most important factor.



Excretion is a human's necessity in disposing of body waste. The characteristics of waste disposal from a human's body of various communities has evolved for a long period and has been integrating to their culture. The evolution of human waste disposal depends very much on living conditions, mentality, knowledge and environments. The Thai society, which has settled down and expanded into a large society in Southeast Asia, also has a history of human excreta disposal. This behaviour has a long historic development. Its evolution is very interesting when studying and analysing for the benefit of health development in any under-served areas. The environmental sanitation in Thailand can be traced back to the Sukhothai Era in the year 1238 and before the establishment of the Ministry of Public Health in 1942. However, the current strategy of latrine development had been laid down four decades ago since the inception of the Ministry of Public Health. The chronological events in the history and future of environmental sanitation is as follows: –

YEAR	EVENT	REMARKS
1897	Promulgation of Bangkok's first sanitation law with an aim to curb communicable diseases. There was a garbage eradication campaign, arrangement of pit latrines and toilets for the general public.	Period of Queen Sri Patcharindra who acted as Regent of King Chulalongkorn (King Rama V) while he was on a European tour.
1918	Beginning of the pilot project to eradicate hookworms	With the assistance of the Rockefeller Foundation.
1921	Hookworm eradication project was expanded to 44 provinces.	
1926	Interior Ministry issued Regulations called "the Little Singha" banning defecation in rivers and canals.	
1928	Self-reliance in the project to suppress hookworms.	Director-General of Department of Health circulated the instruction to all provinces for the installation of pit Latrines.
1942	Establishment of the Ministry of Public Health.	Ministry of Public Health was established to merge health agencies in various departments in one place, comprising The Office of the Secretary to the Minister, Office of the Permanent Secretary, Department of Medical Services, Department of Public Welfare, Department of University of Medicine, Department of Medical Sciences and Department of Health. It was the first time that environmental sanitation was designed as an integral part of overall health development.
1960	Establishment of Village Health and Sanitation	<ul style="list-style-type: none"> <li>- Dr. Mali Thainuea was director of the project.</li> <li>- Latrine development was strengthened and expanded nation-wide.</li> </ul>

YEAR	EVENT	REMARKS
1967–1971	Launching of Second National Economic Development Plan.	Latrine coverage at the end of the plan was 22%.
1972–1977	Social Development Plan was included in the Third National Social and Economic Development Plan.	Latrine coverage in 1977 was 36%
1978–1981	Fourth National Economic and Social Development Plan.	Latrine coverage at the end of the fourth plan was 43%
1982–1986	Fifth National Economic and Social Development Plan.	Latrine coverage in 1986 was 50%.
1990	Ending of International Water Supply and Sanitation Decade.	Target of latrine coverage is 75%
2000	Health for All	Every household will have a latrine.



## CHAPTER II

### HISTORY OF THAI LATRINE

#### Sukhothai Era (1257 A.D.)

There was no definite evidence to clearly indicate the use of latrines in the Sukhothai Era, but the discovery of some stone slabs with grooves chiselled on one side in the middle was presumed to be used for the draining of urine into ditches. It was believed that the slabs would have been used in palace areas where large communities lived together. The public at large in those days lived outside the palace which was normally surrounding by bushes. They might use such surroundings for defecation. That is where the idiomatic expression "going to the bush" is derived from and is still in use with the same meaning until the present.

#### FRONT VIEW OF SUKHOTHAI LATRINE



**TOP VIEW OF SUKHOTHAI LATRINE**



### **Ayutthaya Era (1347 A.D.)**

There was also no evidence of latrine usage in the Ayutthaya Era except for records of illnesses written by the French diplomat, La Lubere, who was assigned by King Louis XIV of France to come to Ayutthaya during the reign of King Narai the Great. Upon returning from his three-month visit in Ayutthaya, La Lubere wrote a book portraying living condition and illnesses of people during that period showing that they had shorter life expectancy than the Westerners. The most dangerous diseases which normally cause of death were cholera and diarrhoea. The foreigners need to be careful of these diseases. Apart from these there were epistaxis fever which would become influenza, encephalitis and dysentery. Malaria was also prevalent but it was not the leading cause of death. Other common illnesses were yaws, abscesses. It was also reported that 19 out of 20 people were affected with scabies and decomposed wounds. Leprosy was rarely found and venereal disease was a leading cause of morbidity.

“Another epidemic disease which was the leading cause of mortality was smallpox. This was more severe than cholera. Dead bodies of smallpox victims were buried for at least three years before cremation could take place in order to make sure that there would not be any epidemic diseases”.

### **Ratanakosin or Bangkok Era (1782 A.D.)**

“Bangkok’s latrine history dated back to the days when people could dispose of faeces in different ways. At the beginning of the Bangkok Era, the cost of land was cheap. Most of the houses and their compounds were large enough for small pits to be dug under the houses or in the compounds for defecation. Another method to make a toilet was to dig a hole, lay down two planks with a roof over it. The waste would then be drained into canals or rivers. Those who lived near the rivers directly defecated into the rivers. Some of them defecated on the ground. There were also the public latrines established during this period.

Bangkok’s first law on cleanliness was promulgated in 1897 when King Rama V went to Europe and his Queen was appointed as his Regent. A cleanliness act was implemented because Bangkok was very dirty and no organization looked after it. There were piles and piles of garbage. While taking a bath in the canal, pieces of faeces could be observed. They floated all over the canal surface. One had to clear these away by hand and when clear enough, be quick to dip the head in the water, clean the face and wash it off. It was really like faeces blended water.

There was nothing as painful to the government as the human waste disposal problem. At the beginning, the excreta disposal was carried out by the private sector, namely Siri Isawan Company, and subsequently by a Chinese company named On Weng. No one knew how human waste was disposed off. It could have been dumped in the river or somewhere else.

Subsequently the government took charge of excreta disposal by itself. A committee, comprising of high ranking officials, was established to tackle the problem. The committee first had the idea of laying sewerage pipes to drain waste water from all houses from Bangkok to a main tunnel and drain it to the sea, but the government had no budget available, thus the project could not materialize. Subsequently, the Department of Capital Administration purchased two boats and berthed them at Klong Sarn District. All the houses, must have their own buckets and pay a 1.50 Baht service fee per month. A bucket would be left in front of the house or by the road for workers to collect after midnight. The excreta was carried by boats and dumped in the sea. However, during the high tide and strong winds, the excreta would be returned back up the river again. The project was far from satisfactory.

On February 7, 1917 the Thai Government requested the International Health Council of the Rockefeller Foundation to cooperate with the Department of Public Protection, Interior Ministry, to eradicate hookworms in Thailand within an initial phase of two years. The pilot project would be launched first in Chiang Mai. The survey conducted among 30,000 people revealed that 80 per cent of them had hookworms in their excreta. Health education for improvement of sanitation was conducted by means of lectures and distribution of leaflets. Construction of 1,160 latrines was completed and regularly inspected. In April 1920, the Department of Public Health of the Interior Ministry, which was responsible for the project, transferred the hookworm eradication suppression project to the Siam Red Cross Society. The Sanitation Division of the Siam Red Cross Society at Chiang Mai carried on the project with Dr. Barnes as its director. Dr. Barnes once expressed his opinion in the Medical Bulletin of the Siam Red Cross Society, that "To eradicate hookworms in a society, patients must be grouped together for treatment. Proper, hygienic latrines must be arranged for the people. Latrine construction had to carry out at low cost to the poor, otherwise prevention of the disease would never be possible. Emphasis should be placed on educating the public on sanitation and the understanding of root causes rather than just implementing rules and regulations. Dissemination of sanitation education as well as some compulsory measures on what was necessary would not only eradicate all hookworms from the communities, but would also control outbreaks of other intestinal diseases." This principle is still valid today.

Major achievements in 1921 were the fact that among the 100,000 people who were checked up, 68% had hookworms, against 80 per cent at the inception of the project. More than 10,000 latrines were built, and demonstrated. Sanitation education was provided to the target groups. All of these were completed at the expense of 76,000 Baht.

The project to eradicate hookworms was expanded to 44 more provinces and it became evident that the promotion of environmental sanitation, other than the suppressing of hookworms, would help in eradicating other diseases derived from improper, unhygienic environment. The Siam Red Cross Society realized that this project would be a strong stimulation for villagers to cast away misconceptions, traditional beliefs and turn to scientific measures in their



livelihood and learn to prevent themselves from illnesses properly. This work, the Red Cross opinioned, should be deemed a national public health pathfinder and should be carried out continuously. The Society, on September 1, 1923, transferred the project back to the Department of Public Health after more than three years under the Society.

After the transfer, the International Health Council offered to provide assistance for another five years with an agreement that the Royal Thai Government would take over the responsibilities step by step, until it could be self-reliant in 1928. The initial annual budget was set up at 90,000 Baht which would be paid for equally by both parties. Every year the Council would reduce its payment by 10 per cent whilst the Thai Government made up the sum. After five years the Thai Government would pay the whole amount.

The sanitation promotion work of the Department of Public Health was reorganized into nine mobile units, comprising five ordinary units and four special units. The ordinary units had duties of medical treatment and sanitation guidance, with one physician and eight officials per unit. The special units comprised of a health education unit, a diagnostic unit, a mother and child care unit and a health boat unit. There were a total of 57 officials in these units

Apart from the nine laboratory units, there were also permanent officials stationed in many provinces where the mobile units had completed their work. These officials had the title of sanitation superintendents and their duties were to look after the work left behind by the mobile units and maintain it as well as to provide sanitation guidance concerning latrines, excreta disposal, waterworks, markets, slaughterhouses, food shops, rice barns, wastewater drainage, garbage collection and suggestions for general communities and house cleanliness. A total of 30 officials were attached to this section.

During this period health education was included in the curriculum for the training of physicians and sanitation inspectors. From 1924 to 1925, 26 physicians and 77 health inspectors were trained with the new curriculum. Apart from local training, during 1922 to 1928 the International Health Council of the Rockefeller Foundation granted scholarships to five public health physicians to study for doctorate degrees in public health in the United States, all of whom later took over important posts in the Ministry of Public Health such as deputy director-general, director-general, permanent secretary and minister.

Later, the Interior Ministry issued a regulation called "Little Singha" to every municipality to supervise sanitation work concerning excreta disposal and to destroy all ramshackle latrines along the river and canal banks as well as to provide more sanitation education to the public at large.

On November 21, 1928 the Director-General of the Department of Public Health circulated letters to every Provincial Public Health Office describing how to build earth seepage pit latrines for demonstration. The instruction emphasized that doctors and health officials should advise, demonstrate and supervise villagers to build latrines by themselves, which should be more appropriate than telling them verbally without a real example available for them to see".

During the same period the Provincial Chief Medical Officer at Chanthaburi laid out guidelines for monks in various monasteries to build proper latrines with correct sanitation features to prevent the spread of intestinal parasitic diseases as examples for nearby villagers. The Chanthaburi Provincial Chief Monk was asked to provide cooperation in explaining the matter to monks in the ecclesiastical conclaves.

The assistance from the International Health Council was terminated in 1928, the Department of Public Health still carried on the promotion of sanitation. The five sanitation promotion units expanded their operations to cover various provinces in all regions of the country. However the scope of work gradually decreased. In March 1929 only three promotion units remained in the provinces, the other two were assigned to conduct other work in Bangkok. The end came in September 1930.

The project to promote sanitation for eradication of intestinal parasitic diseases was carried out with the cooperation from the International Health Council of the Rockefeller Foundation from 1917 to 1928. It was considered to be a great evolutionary step in the development of public health work in Thailand because of the following —

- (1) The project laid down the foundation of public health operations.
- (2) It was the first rural health development project in the history of Thailand's health work.
- (3) It was the first nation-wide campaign to eradicate communicable diseases.
- (4) It was the first serious implementation of health education.
- (5) It was the first project to obtain assistance from a foreign health organization.
- (6) It revolutionized rural villager's behaviour in health, especially in environmental sanitation and the prevention of diseases.
- (7) It provided training in modern disease prevention to physicians and officials. Scholarships granted to Thai officials for studying abroad enabled them to serve

in high-level public health positions and to start several national health projects.

- (8) The project set in motion a special public health intensive work programme in Lop Buri Province with an aim to develop village health services by the local villagers themselves. It then became an excellent model for other provinces.

The article "Community Cleanliness. Evolution from the Past to the Present" by Phra Bamras Naradura, the late Minister of the Ministry of Public Health, described the results of the intestinal parasitic disease eradication in the sanitation promotion project with assistance from the International Health Council and how it encouraged more people to use latrines. According to a survey conducted before the inception of the project, less than 10 per cent of the people had latrines. But after the sanitation promotion project more people acquired their own toilets.

It is disappointing that sanitation promotion work gradually lost its vigour after the termination of assistance by the International Health Council, due to shortage of funds. Moreover the Department of Public Health at that time had a heavy burden in suppressing dangerous epidemic which erupted annually. Sanitation promotion officials were transferred to help in epidemic suppression by inoculation and medical treatment, and they lost interest in the improvement of sanitation work in their respective areas.

As a matter of fact, the main cause of the stagnation in sanitation promotion was the populace's lack of indepth understanding in the significance of sanitation, in spite of the establishment of good principles during the intestinal parasitic disease eradication campaign.

In actual implementation, however, the campaign was carried out in only a brief period because of staff shortage and time constraint. Public relations in health education were performed within limited areas since there were only two health education units. The official had to make it brief by compulsory measures and forced villagers to build their latrines within a given deadline. Disobedient villagers were summoned for explanation at district offices. The rural people, therefore, unwillingly built their toilets and did not realize the real objectives. It was found that some of the toilets were locked up to prevent children from making them dirty. Some of them became storage areas for firewood and charcoal. This could be illustrated by a survey conducted in Phutthaisong District in 1926. Out of 3,919 households, only 1,154 had hygienic latrines or 27 per cent. It was worse when a survey was conducted in 40 villages of Ubon Ratchathani Province in 1957. Out of 7,298 households, there were only 56 toilets or 0.7 per cent.

## CHAPTER III

### FOUR DECADES OF LATRINE DEVELOPMENT

#### It's Inception

Since its establishment in 1942, the Ministry of Public Health has conducted vital and intensive campaigns to control the prevalence of communicable diseases with the cooperation of many international organizations, especially WHO, UNICEF and USAID. The following diseases, therefore, are completely eradicated from Thailand:—

- (a) Yaws. Prior to 1950 it was estimated that there were approximately 1 to 1.5 million people suffering from this disease nation-wide. But with the project aimed at suppressing the disease and receiving assistance from WHO and UNICEF, in 1966 Thailand was declared a yaws-free zone.
- (b) Smallpox. This was another prevailing communicable disease in Thailand apart from cholera. The statistics for 1917–1961 showed that smallpox cases increased year after year. During the Great Epidemic of 1945–1946, the number of cases topped 628,000 and mortality figures totalled 33,621. As a result of the campaign, no case of smallpox has been found since 1963.
- (c) Bubonic plague. Since 1953 the spread of this disease has never occurred.

In addition, the following communicable diseases have been kept in check and have been dramatically reduced:—

- (d) Malaria. The mortality rate caused by malaria, which has long been a major fatal disease among Thai citizens, increased rapidly during the Second World War when male conscripts were sent to build a new capital at Phetchabun, a malarial infested area. As a result, statistics of malarial mortality from 1937 to 1940, which was normally about 212–262 per 100,000 population, increased to 351 during 1940–1945. After the launch of the malaria control project in 1950, it was rectified to aim at completely eradicating the disease in conformation with WHO's policy in 1958 and again it was intensified in 1965. The mortality rate of 183 per 100,000 population in 1950 was gradually reduced to 15 in 1965 and only 8.2 in 1979.

Such a remarkable, effective control and notable decrease of malaria since 1950 was achieved through assistance from WHO, UNICEF, UNDP, USAID and the Japanese government.

- (e) Tuberculosis. This disease has been well known among Thai citizens and was no less significant than malaria, ranking second in mortality rate in the country. The social situation caused by the scarcity of food, stress and overcrowding, caused tuberculosis to spread to a wider extent. WHO therefore recommended that its member countries work towards the control of tuberculosis and dispatched its tuberculosis specialists to provide consultation as well as education to local staff to enable them to carry out the task. Overseas fellowships were also awarded to physicians and nurses. In addition, tools, equipment and supplies, as well as vaccine, were granted from UNICEF. Furthermore, assistance from the Japanese Government through the Columbo Plan and from the Norwegian Government were also accorded.

As a result of the above mentioned assistance plus the vigorous implementation made possible by appropriate technology, the rate of mortality caused by tuberculosis of the respiratory system was reduced from 48.6 cases per 100,000 population in 1957 to only 14.3 in 1979.

- (f) Leprosy had for a long time been a chronic public health problem for Thailand. The survey conducted in 1918 revealed that there were tens of thousands of lepers nation-wide. Formerly, the treatment of leprosy was not widely known and people who were deformed and objected by society were usually helpless and tragically abandoned. Some became beggars and led miserable life.

The first leprosy treatment hospital was established by an American missionary led by Dr. McKane in Chiang Mai. The hospital was subsidized by the Government with an annual fund of 10,000 Baht, through the request of His Royal Highness Prince Damrong Rajanupap and the Thai Red Cross Society.

Leprosy-related work gained tremendous assistance from several organizations such as WHO, UNICEF, Zazagawa Foundation of Japan, the Leprosy Assistance Association of Germany, the Hartdegen Foundation Fund and the Peter Conderus Foundation of the Netherlands.

- (g) With regard to environmental sanitation, Dr. E.H. Sadun, a specialist under American sponsorship, who surveyed intestinal parasitic diseases in Thailand in 1951, reported that Thailand's environmental sanitation especially the use of hygienic toilets, was at a very underdeveloped stage. People kept on defecating in canals and in the fields. He expressed his opinion "Success in a sanitation project could not be accounted for by the number of latrines built, but should be based on the habits of people using the latrines they built." Thailand's sanitation project of 1923 clearly indicated that if the people did not realize the benefit of latrines,

they would not use or repair the latrines which had been built at all. Without health education, there would be no hope for a complete achievement in sanitation work.

Up until 1952, the Communicable Disease Control Division of the Health Department started another campaign for intestinal parasitic disease control. It first surveyed the disease in 17 provinces and set up two intestinal parasitic disease units at Nakhon Ratchasima and Udon Thani. The two units carried out excreta examination of 17,700 people and found out that 50.5 per cent of them were plagued with worms. Two more units were later set up in Bangkok and Songkhla. In this connexion, the Department of Health has made a major policy that the Provincial Health Offices had to continuously carry out the work in the field during that period.

In 1953 the Department of Health started to plan for the project of "Community Health Management Model" or "Rural Health Promotion" with an aim for local people to take part in the management to improve sanitation and work together with health officials. The first community health model unit was opened in Chiang Mai. People were allowed to participate in the project in order to learn how to improve their community by themselves. In case problems arose, the health officials would be there to lend a helping hand, particularly in the construction of proper latrines or water wells. The project gained much success during this period. In 1954 the Community Health Management Model Project was expanded to Thamuang District, the Kanchanaburi Province, and to the Phra Buddha Bat Sub-district, Saraburi Province. In 1955 it was expanded to Min Buri, suburban Bangkok and Thalang District, Phuket Province; in 1956 it was opened in the Health sections, Nakhon Ratchasima and Ubon Ratchathani Provinces.

The Ministry of Public Health had given special attention to the prevention and control of major communicable diseases and brought down their fatality rates. However, causes of death from diseases of the alimentary system, infections and diseases relating to sanitary deficiency became evident and was given higher priority. From 1957 to 1959, a three-year pilot project entitled the Local Health Development Project was implemented. It aimed at using community development principles to modernize health and sanitation development in rural villages. It was later evaluated as having attained the planned objectives. And as a result it assured the Department of Health that the potential existed to accomplish Thailand's health and sanitation development. From its inception to 1959, the Ministry of Public Health had tried out various pilot projects to improve environmental sanitation. The foundation of current latrine development was laid down.

### Village Health Sanitation Project (Current Latrine Development Strategy)

In 1960 the Department of Health, established the Village Health and Sanitation Project with the aim to improve sanitation and further strengthen the latrine development in rural areas under an overall health development scheme. Prior to the inception of the project, the situation was analysed. The disease pattern was shown below. —

	(per 100,000 persons)
1. Diarrhoea and dysentery	34.0
2. Pulmonary tuberculosis	31.6
3. Pneumonopleuritis	28.9
4. Malaria	24.3
5. Accidents	19.1
6. Cardiac diseases	19.9
7. Complication of pregnancy	13.1
8. All types of cancer	10.2
Percentage of death from infections	20.0
Infant mortality rate	97.4 per 1,000 surviving infants
Percentage of death among the 0–4 year-olds	34.3
Average life expectancy Male : 54, female . 59	

There was still shortage of health personnel particular in the rural areas. Rate of population per one medical official was the following. —

Doctor	1	10,000
Nurse	1	5,355
Pharmacist	1	66,201
Dentist	1	196,000
Midwifery official	1	15,364
Health official	1	16,580
Percentage of district clinic coverage		44.0
Percentage of tambon clinic coverage		14.0

### Problem Reduction Objectives

It is aimed to reduce mortality and morbidity due to gastro intestinal infections so as

to support the national rural development project.

### **Strategic objectives**

- (1) To improve sanitation and promote the health condition of the rural inhabitants.
- (2) To install latrines for use by each household.
- (3) To train and educate health officials to be sufficiently competent in health and sanitation development.
- (4) To improve and promote research concerning sanitation.
- (5) To cooperate and coordinate with other sectors concerned with health and rural development.
- (6) To encourage all rural people to improve sanitation and to maintain cleanliness of their households and surroundings.
- (7) To promote improvements in personal hygiene to rural people.

### **Project level objectives**

- (1) Training of 900 provincial health officials in 60 provinces on health development management from 1960–1963.
- (2) Training of 40 health officials for supervision work in the provinces from 1960–1963.
- (3) Implementing health development projects in at least 900 villages by assigning at least one trained provincial health official to work in each village from 1960–1963.
- (4) Assisting provincial health officials to improve quantitative and qualitative performance through assigning the monitoring officials attached to 71 Provincial Public Health Offices during the planned period.
- (5) Training of 80 provincial health officials in 11 provinces on health development management from 1964–1966.
- (6) Training of 60 officials to supervise provincial health operation from 1964–1968.



- (7) Training of 600 local leaders of village development committees from 1968.
- (8) To establish 8,450 health development villages.
- (9) To install 202,000 latrines during the planned period.
- (10) To install 5,500 sanitary water wells during the planned period.

### **Project Administration**

The main principles in village sanitation administration were adapted from community development techniques. The major concept was the recognition of local people's roles as important cogs and wheels in the development machinery which would run smoothly only with their cooperation. The project was designed to instill an attitude in the people that they could have their own creativity and be self-reliant in the improvement of their livelihood, not expecting only government help. It was emphasized specifically that in the field of health, villagers should mobilize themselves in the construction of sanitary waterworks, maintenance of community cleanliness and building proper latrines for all houses. The use of available raw materials in local areas for all project construction was also stressed. It was to be understood that government officials could provide, most of all, technical consultation and only some necessary funds and equipment beyond the villagers' affordability. The work also had to have consent from village committees who had been selected by the villagers themselves – another method to lessen the tasks of health officials, promote democratic ideas and instill self-reliance in the villagers. The health officials who were sent from health offices to villages would start their work as described. These officials would move from one village to another and implemented the same methodology. By this approach, the work progressed rapidly. The following were supported during the project implementation –

The village health and sanitation project regarded personnel as an indispensable factor, particularly a project director who should have a pleasant personality, hard worker, creative ideas, high efficiency and good human relations. Professor Dr. Kamthorn Suwannakij, Director-General of the Department of Health during that period had been highly regarded among his subordinates and students, because he had most of the said qualifications and with a high dedication to his work. In addition he had comprehensive knowledge and experience in sanitation work, as well as the socio-economic situation of the country. Dr. Kamthorn, responsible for selecting the director of the project which was of utmost importance for sanitation development in Thailand, finally selected Dr. Mali Thainua, Ubon Ratchathani Provincial Chief Medical Officer who was the first Thai doctor to discover typhus fever in the country. Dr. Mali himself was much surprised by the decision but was willing to move to Bangkok despite his long term upcountry postings and had never had any plans to spend his life in Bangkok.

Dr. Mali has a firm belief that "All humans have their worthiness, ability and desire to work". But sometimes their ability is not put to good use, and the performance is not realized by others because of the lack of opportunity and insufficient driving force. Whenever they are given chances and motivated, they will surely show off their potentials". His leadership and such a belief brought about active performances with successful village health and sanitation activities without any extra budget.

The management of the Village Health and Sanitation Project was under the Project Director who reported directly to the Director-General. The Project Director was delegated full authority in the administration of workplan, personnel and budget. In practice, however, the Project Director never failed to make regular weekly reports to the Director-General in person on the progress of the work and sought his opinion or decision on some important issues. These official and unofficial contacts, as a result, made the Director-General feel he was one of the project owners in no less a degree than the Project Director whom he appointed to look after the project. These meaningful and regular communications, as well as the advancement of the project itself, even more enhanced the trust in the Project Director by the Director-General.

Two assistant directors were appointed to help in the administration of personnel, budget and grants, supply and equipment. They also had a role in the support of training, education and follow-up work. In order to implement the project according to workplan, the project staff were required to accomplish their target in a specific period of time. After everything was accomplished the staff on loan were returned to their original divisions. This concreteness was very advantageous to the development of work within the project's plan.

A government organization administration is generally divided into departments, divisions and sections. But the administration in the form of a project, which had not yet been established as a unit, would be against tradition, unless it was attached to an existing division with a similar nature of work. The project's objectives were to give health education on sanitation and technology, with the help of provincial health and service units, to the people through village committees, which were to be established by means of health education. If it had to be established according to past practice, it should be the responsible of the Health Education and Sanitation Divisions. However, a model derived from the pilot rural health project indicated that the people should in the first place, be organized into groups under a single unit for effective operations. The mentioned model was innovative in the public health system, and even in the government at that time. This was the main reason that the project was not placed under any existing divisions, but it was established as a project with its own administration and "borrowed" officials from other units to work on a temporary basis. No one could anticipate the project's destiny. In case of its failure, all the officials would simply be returned to their original units. But if it was successful, its status was yet to be decided. The project's temporary office was then set up in the warehouse of the Department of Health. Officials were borrowed from other existing divisions as well as from provincial health offices. Nobody was

sure of the outcome, but was willing to cooperate and comply with the Director-General's requests.

The project organization was divided into four sections – training, education, technical, general affairs and finance. The follow-up work was separately organized at regional-level units.

Follow up work was regarded as important and had to be carried out systematically and continuously. The establishment of follow-up units which later expanded into nine regions showed priority of this work. This systematically and continuously helped the following operations: –

- (a) Training of various levels of provincial health personnel – second grade.
- (b) Training of health development supporters – community leaders, tambon health workers, tambon council members, tambon committee members, monks, religious teachers and border patrol policemen.
- (c) Assist in – latrine installation, waterwell drilling, cleanliness campaign, setting up of model health villages, construction of garbage incinerators, biogas tanks, and excreta disposal.
- (d) Establishment of temporary supporting units, which could be dissolved if revision had been completed.

Mobile health development units were set up to provide support to health development units and also give support to the provinces needing these operations during the initial stage of the project. They were dissolved after they had completed their tasks. Such support helped the provinces to set up their own units and operate by themselves – in line with the concept of helping them to gain self-reliance. It was cautioned here that the staff involved in the temporary unit be advised in advance of the necessity to dissolve the unit in order to avoid discouragement.

### **Political Support**

At the national level, a health and sanitation development conference was organized in 1962 both participation by all departments in the Ministry of Public Health and chaired by the then Premier Field Marshal Sarit Thanarat.

The Northern Health and Sanitation Development Conference in 1963 was presided over by Prime Minister Field Marshal Thanom Kittikhachorn.

Civil Service Commission teams were sometimes taken on health and sanitation development observation tours and this activity was considered another strategy to gain their understanding and support in the approval of manpower recruitment and positions. Similar strategy was also used in inviting influential decision-making people in the government agencies such as the National Economic and Social Development Board, the Bureau of the Budget and the Department of Technical and Economic Cooperation to go on observing and supervising the operation consistently. Most officials in these agencies understood the operation very well and provided much assistance to the project.

### **Programme Support**

The success of the project depended very much on a strong support from the management. Having recognized the importance of this factor, the following areas were continuously supported through the project implementation.

#### (a) Technical

- Training of local and district health officials to understand the objectives and methods of work.
- Training of village leaders and arranging meetings of villagers to explain the benefits of environmental sanitation, cooperation among themselves and health promotion.
- Training in other fields of knowledge necessary for operations.
- Promotion of competent, experienced officials to further their education or go on study tours abroad.
- Research and experimentation in the applications of more appropriate sanitation technology and health education techniques, as well as working demonstrations.
- Introduction of appropriate technology i.e. water seal latrine which is suitable for local condition.

#### (b) Supplies and equipment

Provision of all necessary equipment in sanitation work operations and health education such as latrine squatting slabs, moulds, film and slide projectors, amplifiers, at the right time, at the right place and at the right amount.

(c) Transportation

Providing trucks, motorcycles to the officials for use in equipment transportation, for commuting to work and for follow-up work in villages.

(d) Finance

Allocating a revolving fund of 1,500 Baht per health official to produce latrine squatting slabs, and subsidizing another 5,000 to 10,000 Baht per village to be used as a revolving for latrine installation.

During 1960, it was the first time that a village revolving fund was established for latrines construction. The health officers in the area were responsible for the management of the fund and to remit the amount to the provincial health officers as soon as it was completed. The cyclical use of the fund helped low-income villagers to be able to have latrines and to repay for the purchase of some materials in instalments within a long period without much burden.

In the past, several first class health centers were faced with a shortage of medical personnel. In order to motivate more doctors to work at district-level units, a lump-sum per diem was considered to be paid as an extra remuneration for these medical personnel. This practice was quite effective and later a government budget was allocated for this purpose until now.

(e) Mobile unit

- Arranging mobile health development units to help and stimulate project officials in carrying out work and health education. Since local officials had limited capabilities to provide effective health education, they could then be supported by the central administration. This could be done by deploying mobile health development units to give assistance to them.

(f) Personnel support

The regional health development centres which were established during the project implementation would provide personnel support to health officials as follows –

- Assigning senior health officials to follow up provincial level operations, to provide technical suggestions, to alleviate problems, to act as communication between provincial operations and the central administration, and to coor-

dinate the operations with other relevant agencies.

- Assigning health development supervisors stationed in the provinces to supervise the operations, provide assistance and give suggestions to village health operations in all districts so as to reach the target and gain results quantitatively and qualitatively.

(g) Staff Training

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Local and overseas study tours are encouraged for staff at all levels. Upon returning, experience gained is usually recounted and used in the officials' responsible areas.

The past project ceaselessly gave consent and support to its officials to pursue their studies and increase their educational status. Formerly the basic qualification of follow-up officials was a diploma in sanitation. Many of them have been supported to further their studies for a bachelor's degree in sanitation or health education at the Faculty of Public Health. At present most officials have acquired at least a bachelor's degree. Moreover, the grant of fellowships to study for master's degree in the United States was also an important factor channeling international standard knowledge and experience into the project to consistently improve work quality.

### Monitoring

Assign monitoring officials to supervise and monitoring in 71 provinces and to help the provincial officials in gaining quantitative and qualitative achievements. Furthermore, the following were periodically arranged.

- Conferences for sanitarians and physicians in 71 provinces for reviewing the progress and setbacks of project implementation.
- Conferences for provincial/district and sub-district health officials.
- Annual conferences for programme review.

Most monitoring officials were graduates of the Faculty of Public Health, Mahidol University who had been trained and to work closely with experienced officers to learn the arts and techniques of health work. These highly capable staff with good human relations would visit every project sites, particularly the remote villages.

Other officials were "supervisors" who had gone through a one-year course in health supervision organized by the Health Development Division. After graduation they were posted in their respective provinces to support health officials in health and sanitation activities at sub district and village levels and also to regularly monitor project implementation at the grass-root level.

Monthly reports were submitted to the Project Director and his key staff for scrutiny for feedback to the implementors at the right time to correct any errors or to solve the bottlenecks, if any.

The project was assessed after six years of implementation, a result of which was found to be satisfactory. Furthermore it has laid down the foundation for the current latrine development. This could be seen from the following:—

- (a) The Sanitation Division was established under the Department of Health to undertake sanitation development nation-wide. The government also allocated an annual budget from its regular resources for these undertakings. This indicated that the project achievements had some influence upon the decision-makers to realize its significance and to give sanitation a high priority.
- (b) It was an opportunity for educational institutions, especially those concerned with sanitation such as the Faculty of Public Health, Mahidol University, to participate in the project. The institutions played very important role in improving the curriculum involving sanitation to be in line with actual practice, in which theories had been successfully applied. The project's policy to support field training of the Faculty of Public Health, resulted in the development of personnel, sanitation, public health, and so on to fulfil the real needs of Thailand.
- (c) A medical personnel problem, in which doctors were unwilling to practice in first class health centres, or district hospitals, was solved by the project's authorization of extra allowance for doctors working in rural areas. This practice has been recognized and committed in annual government budgetary allocations in later years.
- (d) The medical education personnel and leaders of the Faculty of Medicines, namely Siriraj Hospital, were impressed with the rural work when the Director of the Village Health and Sanitation Project took them on a study tour to observe the project and visit rural people. Consequently the doctors of this hospital were inspired to form a group and provide help to rural health work at first class health centres and mobile units in Udon Thani Province. This has changed the attitudes of medical institutions and public health officials towards the work to alleviate

the country's health problems latterly.

- (e) Project participants, who had received intensive training, had been inspired with ideology and determination in the attempt to avert problems plaguing rural communities, with objectives to upgrade public health development work. They later took higher positions and more important roles in the education of sanitation and public health services in other institutions, such as Chiang Mai and Sri Nakhairindrawiroth Universities. Some other high-ranking officials later became major forces in other agencies such as consultants in the WHO advisory board and its other offices.
- (f) The use of provincial and regional health offices as training, study tour and research centres by various public health-related educational institutions was a significant stimulation in the country's effort towards the promotion of health education. It was the first time that a village development committee was established which was one of the current strategies for the acceleration of self-management and self-reliance. It was also one of the strategies of primary health care being implemented at the present.
- (g) Based on the base line data in 1961 comparing the outcome at the end of the project in 1968, the project had reached its objectives. The number of latrines installed were three times higher than the target. The result was the installation of 615,772 latrines against the 202,000 planned target. Deaths due to gastro intestinal diseases were reduced. However, it is difficult to report on the reduction of morbidity due to information discrepancy and data fluctuation. There was no systematic data collection on morbidity of gastro intestinal diseases.

	<u>1961</u>	<u>1968</u>
Number of latrines installed	6,513	615,772
Mortality of gastro intestinal diseases	13,826	10,776

The favourable factors which helped in the accomplishment of this project within a short span were as follows:—

- (a) A number of health centres were already established at the district and sub-district levels. This was better than the intestinal parasitic disease eradication project in 1919–1928. This was done by means of mobile units without permanent stations to monitor and follow up the work. The mentioned project was far from



satisfactory. This reflected that the role of health workers who have familiarized themselves and gained much faith from the villagers in the project areas was essential. Living in the area, their performance could be systematically continued especially during crucial periods. Although there were insufficient health centres to cover the entire areas, it could be considered as a favourable resource for the project.

- (b) Appropriate technology for environmental sanitation, health education, and community participation had already been developed to some extent. USAID had extended technical cooperation and support to the Department of Health for a long time. Starting with the establishment of the Chonburi Training and Demonstration Centre, USAID provided assistance in the development of appropriate technology in health and sanitation affairs especially in the areas relating to latrines, water pumps and wells, conducted a pilot village health and sanitation project, selected potential villages and village committees, and experimented some of the sanitation projects with the villagers. As a result, a manual for health officials in village operations was developed. It should also be noted that some of the important principles in the manual such as the sociogram procedure, which was used in interviewing villagers to find their natural leaders, was later applied properly in the selection of village health volunteers and village health communicators.
- (c) Major principles in the pilot project were applied on project implementation. Experiences from pilot projects had been conducted in the following districts:— Pak Thongchai, Amnat Charoen, Min Buri, Mae Taeng, Phra Phuttabat, and Thalang of the following provinces:— Nakhon Ratchasima, Ubon Ratchathani, Bangkok, Chiangmai, Saraburi, and Phuket were analysed and used as guideline for execution. The utmost importance was the techniques of motivation for social mobilization and community participation, which were deemed the core of the project.
- (d) Experienced staff were the leaders of the operations and trainings. From these pilot projects, the staff involved have gained some experience and confidence. At the time the Health and Sanitation Project started they were invited to lead the project as trainers and supervisors for provincial health officials.
- (e) Prior to the project's inception, those prevalent diseases such as malaria, small-pox, yaws and bubonic plague were sticking people, and pressing health officials in time management. Administrators attention were also swayed from sanitation work while prevention and treatment cut into budgets. These diseases were drastically reduced.

- (f) Many international organizations showed interested and supported the project. At the initial stage, the Village Health and Sanitation Project had "limited budget and resources while requirements and financial needs were unlimited". Without the help of external assistance in forming tangible projects, government decision makers would hesitated to allocate funds for the projects that they could not envisage and would doubt their feasibility.

The lesson learned from past experiences can be summarized as follows:—

- (a) The prevention of gastro intestinal infections and intestinal parastic diseases will be possible if people have and use latrines, drink potable water and keep their households clean.
- (b) The more people have and use latrines, drink only potable water and keep their households clean, the less cases of ailmentary system infections and intestinal parasitic diseases will occur. Apart from this, health education should also be provided in order to encourage proper household cleanliness.
- (c) "The extensive construction and use of latrines cannot be accomplished through compulsory measures – but must be done with understanding and willingness as well as satisfaction in the accomplishment". This concept should not be ignored as in the project to eradicate intestinal parasites during 1917–1928. After project termination, latrines became firewood storages. Some years went by and the number of latrines consequently dwindled. Such ignorant practices were repeated time and time again in the subsequent projects since the responsible staff were incompetent in providing health education, lacked systematic procedures in work and did not carry out a follow-up inspections for a proper period of time.
- (d) Rural people have been plagued with all kinds of problems – poverty, sickness and ignorance – together known as the vicious cycle. All three have been causes and effects of one another and should all be solved simultaneously.
- (e) The causes of their sickness were mostly preventable communicable diseases such as dysentery, diarrhoea and intestinal parasites. These groups usually resided in remote areas too far to receive proper health care services and other assistance. Therefore, they are the most unfortunate people, who receive the least assistance.
- (f) Community development is a key factor for the success of the project. In order to encourage extensive construction and use of latrines among rural people, the community development procedures should be applied. In the procedure, village

leaders were selected and appointed members of the committee for health education dissemination. Local health officials also joined in the work with systematic plans and steps. Village committees, with good knowledge and understanding in what they should do, were considered owners and administrators of the project, because only in this way cooperation from local people could be obtained.

- (g) The project provides support of appropriate technology, subsidy and revolving funds. In developing villages, especially in the fields of latrines and waterworks, villagers needed to be provided with proper knowledge and appropriate technology such as latrine squatting slab and latrine pit building, water well locating and drilling, and water pump installation. Moreover, owing to the villagers' poverty, they could only afford to contribute their labour but not the fund to buy supplies, equipment, cement, etc., in drilling of water wells and latrine installation. The extended subsidy and revolving fund, of which repayment would be made in installment, tremendously helped in acceleration of latrine installation.
- (h) Persistent and continuous performance by local health officials is necessary. The development of environmental sanitation required persistent and continuous performance by local health officials – not those sent from the central health administration. The local officials, therefore, needed to be trained to gain the trust of villagers and to know how to educate them. The committee also needed to know the working techniques in sanitation, health education and community development principles, all of which must be set as their basic responsibilities.

The above-mentioned training has been realized in the form of formal education the staffs had in schools, the orientations before starting their career and the special refresher courses. They should also be supported with supplies, equipment and necessary per diem, and their working performance should be continuously followed up and supervised by senior officials who have more knowledge and experience.

- (i) In summary, the principles of environmental sanitation development should be similar to those of community development so as to obtain cooperation from the villagers. This idea coincided with one of the important health principles that:— health affairs must be implemented utilizing efforts of the communities.

## CHAPTER IV

# MOTIVATION STRATEGY FOR SOCIAL MOBILIZATION AND COMMUNITY PARTICIPATION

Motivation refers to everything that inspires one to produce high quality work.

Looking back on experience gained over the past four decades, it is worthwhile considering what is the driving factor which makes these people perform such works at all levels.

Project executives – what motivates them to pay more attention to project implementation?

Regional health development centers' personnel – The officials who follow up the work of provincial officials at tambon and district levels. What motivates them?

Provincial-level health administrators – what motivates them to support health development work, more than other tasks under their responsibility?

Field health workers – what motivates them to go to work with rural villagers and village committees?

Village committees – What is their motivation to participate in the project of health development in their villages?

Each family and individual – What is their motivation in the construction and use of latrines? This group is the key to achieving the objectives and target of the project.

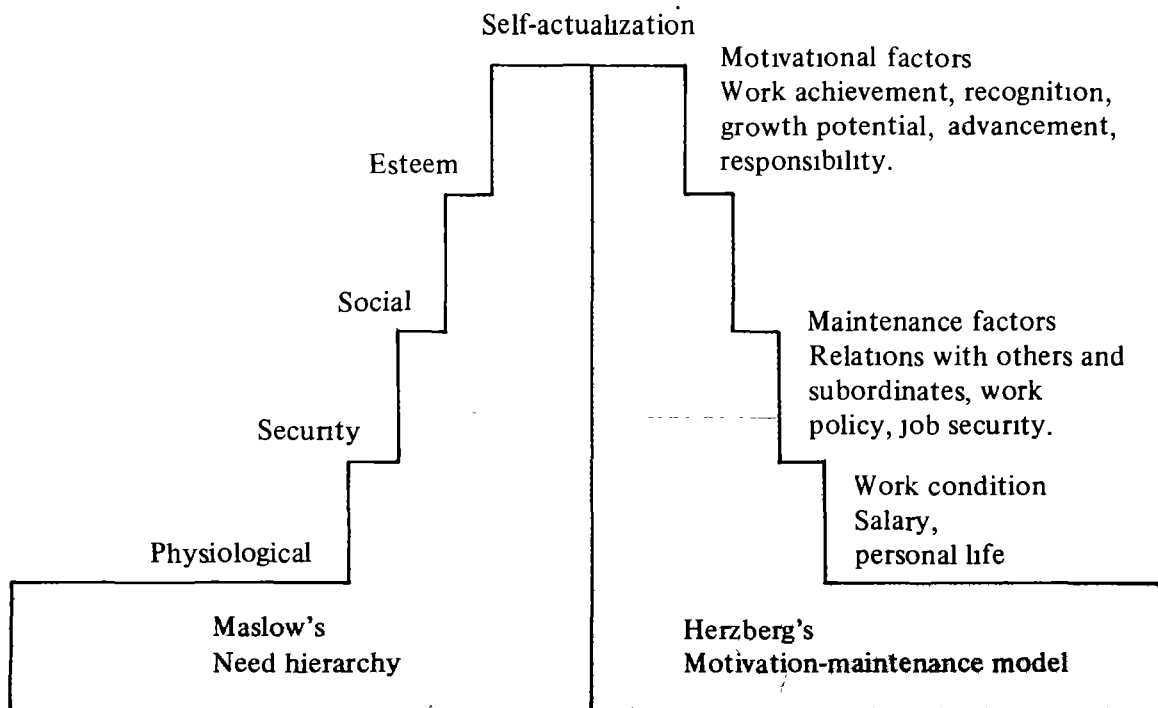
It is a convincing fact that motivation is the most important element leading to the success of health and sanitation development and should be discussed in detail to seek answers to the questions above.

There are several theories regarding motivation.

- (a) Frederick Taylor, developer of the Classic Theory, concluded: “people work for money, and they will work harder if they can earn more money”.
- (b) Abraham Maslow, concluded for the Self-actualization Continuum: “Individuals pursue the following needs, in sequence: physiological needs, safety and security needs, love and belonging needs, self-esteem needs and self-actualization needs.”

- (c) Frederick Herzberg, on the Theory of Motivation vs Maintenance, concluded: "The meeting of low-order needs such as salary, security and personal relationships, is necessary to prevent dissatisfaction, but does not motivate. Satisfaction of higher order needs, such as achievement, recognition and growth, brings motivation."
- (d) Process theories.
  - (i) B.F. Skinner concluded for the Theory of Operant Conditioning: "Behaviour is totally determined by the environment. Therefore, behaviour can be motivated by making desired changes in the environment to control through rewarding and reinforcing, the performance of required tasks".
  - (ii) Victor Vroom proposed in the Theory of Preference/Expectation. Motivation is the product of relative value which an individual attaches to the possible outcome of his efforts, and the probability which he perceives that his action will really bring about the desired outcome".
  - (iii) Lawler and Porter concluded for the Theory of Perceived Equity Model. "The fairness, or equity, of the earned reward, as perceived by the individual, will produce or deter satisfaction and further motivation"

Comparison of Maslow's and Herzberg's Models



What motivated villagers to build and use latrines is the crucial question in latrine development. Interviewers received different replies when asking villagers of varying ages and sexes what made them build and use latrines. In defining the word "latrine" most male respondents described it as a clean, convenient, safe and decent place whereas housewives said it meant privacy, safety and free zone. Students responded that a well-educated student must know how to use a latrine. All these answers were received after a period of latrine development campaign from 1960–1968.

At the initial stage of the campaign the word "suam" (latrine) in Thai did not mean to these people as what is generally known. Most rural people knew only "to go to the bush", "to the field" or "to the pit".

It was evident that safety from the spread of diseases from improper excretion was not the main factor in motivating them to use latrines. It was found that love and respect and faith in the persons instructing them on what was correct made them comply.

After the project had progressed, others who felt that they would become a minority among those who had acquired proper latrines, followed suit. This feeling of not wanting to be left behind is another motivation.

Another motivation is the crowded condition of communities which had made improper defecating difficult, because of many nearby houses.

There had also been increasing convenience in latrine construction. All types of materials could easily be acquired at low prices. This was also considered another motivation. In summary, esteem, and recognition were the villagers motivating forces.

What motivated village committees is another important factor in programme design.

Village committee members are selected from people with natural leadership after questioning villagers about their respectable persons in their communities. They had qualifications in promoting good activities, helping the public and charity work, with strong dedication to the people.

After going through the work, the motivation might be an attempt to maintain relationships with other people which is one way to secure public recognition in the long run. In addition, the sense of responsibility to the community and society also motivates them.

A visit by health officials to community leaders is also regarded as a gesture of honour. This is another form of motivation. It is traditional that health workers must visit these leaders and treat them, with respect and admiration.

Other types of motivation include gaining their friendship, providing some gifts, assisting in technology and so on.

Government officials generally responded to a major motivation in salary and promotion in ranks, according to the merit system depending upon their performance and responsibility. Apart from that the publicity of their outstanding performance to create recognition among health circles is also a motivation.

The provision of equipment, per diem and vehicles to field workers is also another type of motivation.

Another method of motivation is the creation of a sense of responsibility in a government employee through the provision of knowledge and understanding during the project's campaign.

An example can be illustrated through an article, written by Phraya Sunthorn Pipit, the late Minister of Public Health as follows: –

“The consideration of holding duty as one's life and honour is the highest virtue which makes the person a man of high spirit. Everyone naturally expects happiness and prosperity, but happiness and prosperity do not depend on money or power but on proper behaviour in life. To be proper a person must have a career. Government employees have service as their career and during their career receive a salary, medals and ranks as their honour. In future they will have pension funds which they should consider their auspicious goal. First they should think that the prosperity and happiness of a government employees can materialize through proper conduct. Then they should know that a career in the government is an honourable one, it can not to be acquired easily as a career by common people in general. Only knowledgeable and trained persons can have such a career. Moreover, apart from high security and honour, government service is the service to the nation and people. This apparently means duty is an admirable honour. When one already lives one's life in this duty, one must maintain one's duty as life and honour at all costs. One must protect this honour from being tarnished by any evil deeds and corruptible acts which might entice one to sell one's duty and honour. One should think that honour is life, or is the virtue of life. Above all, a life without honour is a life without anything...”.

Motivation of project officers in the project office and regional health development centres is necessary and should not be overlooked. Project officers working at the project office and regional health development centres are regarded as health officers who must go through severe instilling sessions. They are shaped into follow-up officers who take the role of “teachers” to train other people. They are groomed to possess the valuable virtues of good conduct, right concepts and proper knowledge because these people themselves have to be

well-adjusted before they can train others for these qualifications.

A democratic atmosphere in administration has proved to be one of the key factors for the success of project implementation. All project or division directors practice democratic procedures in administering the project. It is advantageous that unit leaders should be respectful to ideas, resolutions and agreements proposed by their subordinates. The Project Director should always adhere to his personal motto "All humans have their ability and desire to work", at all opportunities activated, stimulated and entrusted to them with confidence. The Project Director should provide suggestions or accept opinions wholeheartedly, giving everyone under him/her a chance to propose ideas. He/she should patiently listen to his/her subordinates complaints and protesting, while tirelessly explaining or clarifying any situation with reasons and calmness. All his/her subordinates will take this as an example and treat their workers with love and respect, down to the most junior ranking person. Everyone should try to adopt the motto that all men have abilities and values in themselves. At the same time they should adhere to the tradition of respecting their seniors with sincerity, and no offensive or insulting acts. It has become traditional in health and sanitation development circles that joint brainstorming, decision-making and operating are the main working principles. In community development, these principles have also been strictly adhered to among project administrators and all people concerned.

The stimulation is taking religion as a principle to work by regard working performance as practicing religious principles.

"In order to accomplish a government service operation, it is known that a lot depends on several necessities, such as money, equipment, working techniques, manpower and willpower to accomplish such work. But above all, leading administrators have often stressed that 'man' has the highest priority. It is solely man who has the power to push work towards either success or failure".

"Health and sanitation development operations also depend on all the above-mentioned necessities. After several years of operation, it can be concluded that all successes in most villages in the countryside have truly rested upon such necessities. And the varying success rates of such an operation is due to the difference in the quality of 'man' or in this case 'health officers' who performed the work."

"It is apparent that among the successful areas, project administrators from top to bottom, or from provincial chief medical officers down to the grassroots field health workers are all dedicated to their work. They classify priority, design work procedures carefully and determine the method of personnel assessment fairly. Low-level workers are determined to work hard since they have a lot of willpower and are sure that their superiors are watching them closely and will protect them from any injustice. When the time comes for assessments



they are evaluated fairly depending on their performance. The workers at all levels are together through thick and thin, overcoming any obstacles they encounter, be it money or equipment, and they eventually achieve their goals.”

“Other health administrators who are determined to achieve in this field can always take the success of the mentioned provincial approach as examples.”

“As for health workers, determination and willingness to accomplish their objectives are the key to success. Apart from that they must possess other qualifications such as responsibility and knowledgeable.” Comparatively all of these principles are in the Path of Accomplishment, or the Basis for success, one of the teachings of the Lord Buddha, which comprises.

Aspiration, the satisfaction to accomplish a task,

Effort, the perseverance in duty,

Thoughtfulness, the determination or attention in work, and

Reasoning, the consideration to seek ways to overcome problems and obstacles.

“Health and development work cannot be achieved in thoughts without practice. It is now time for thinkers to start working. Health and sanitation development is just like any other work that has its own fascination. Fascination in health and sanitation development is the sense of happiness, pride and satisfaction to see the delight of rural villagers when they acquire the results of our efforts to create such a pleasant environment. The happiness in good deeds initiates a willingness to do more good deeds. Many people without self-respect, self-confidence and self-righteousness after spending a period in health development work among rural villagers are able to gain several opposite qualities. Why don't you try doing it now? Is there any other career where the worker receives not only salary and honour after a job is done, but also admiration from those who receive his help, and merit from charity as in your present career?

The Virtues for Fraternal Living, the six concepts that enable practitioners to gain endearment and respect, to help each other, to prevent conflicts and to create harmony and unity are worth mentioning.

- (a) To be amiable in deeds. One must have the right attitude to create a happy working environment, which in turn enable the people to enjoy the results of health development. This must be practiced both in the friends presence and behind their backs. One must possess kindness of mind, pay attention to friends activities, sincerely help by doing their work when they are away and relieve their burdens with kindness and understanding.

- (b) To be amiable in words. Help to suggest to each other ideas for better deeds and give opinions with kindness.
- (c) To be amiable in thought. Thinking of all the beneficial things for every colleague.
- (d) To share any lawful gains. Sharing ups and downs together enjoying entertainment, and parties at proper occasions and within appropriate measures.
- (e) To keep the rules of conduct. Everyone must have the same privileges, with no exceptions.
- (f) To be endowed with right views. One must respect the views of the majority as a working rule, despite one's different opinion. One must not turn a discussion into a conflict and should explain one's opinion by giving reasons. After deliberation and decision making, everyone must respect that resolution, even though it is not in line with one's opinion.

Criticism of each other's weaknesses with kindness is a means of a feedback. It is agreed among the new chiefs and the group leader of the village health and sanitation project that the day-time meetings would be carried out according to the official agenda but the evening session would be called for everyone to help criticize weaknesses which one could perceive in each other. The exchange of criticism was done on a voluntary basis and was strictly made with kindness – not to let loose one's abuses and curses on friends, but with an aim to let them know, voluntarily, of the flaws they wished to eliminate. The principle behind this special meeting session is derived from the ceremony at the end of the Buddhist Lent. That special session of criticism results in more unity among the fellow centre chiefs. Each of them helped to suggest to one another the causes of dissatisfaction which were not clear – and all such causes were explained and clarified. This was deemed a necessary practice in co-existence and the activity set trends for later practices.

Adequate convenience in working and living conditions should not be ignored. It is considered that the personnel working and living convenience is necessary for them to work at their best. Accordingly, measures are adopted to facilitate their work in no less a degree than those of other government units, but at the same time differences must be kept to a minimum.

Field officers receive per diem, accommodation and transportation allowances, fuel expenses and advance money. The financial arrangements should be relatively flexible and satisfactory to most of the staff, while regulations and discipline should be strictly kept. In relation to accommodation for regional-level officers and their family, living quarters should be built at the same time as the regional centers' construction. This will help boost their morale in working because they do not have to worry about their family's living conditions.

### **Merits and promotion**

As most project officers are civil servants, their promotion and salary increment are along the same lines as the government system. It is necessary to keep in touch with the Personnel organization. The issue is how to persuade the higher-level authorities to understand and appreciate the performance, which is one of the most important factors to facilitate promotion.

Opportunities for further study and study tours abroad to increase experience and knowledge is another means of motivation. Scholarships for further post-graduate studies and study tours are regularly provided for suitable personnel of both central and provincial offices. This practice has proved very beneficial as it motivates the staff to work with the utmost efficiency. Motivation like this gives them confidence and pride in their career and their unit, and they strive to work to the best of their ability.

Two-way communication, frequent get-togethers and acquaintanceships are essential elements of motivation. Two-way communication should be continuously practiced. Conferences and meetings are given a high priority. The essence and resolutions of meetings are followed up closely, minutes systematically compiled and publicized widely. There is a quarterly meeting of center chiefs, a meeting of section heads at an agreed time and an annual general conference – organized alternately by centers in different regions. The annual conference is an opportunity to demonstrate their work performances for analysis and evaluation, in order to improve working strategy for the following year.

In conclusion for the issue of motivation, Dr. Yutthana Sukhasamiti strongly confirms that health and sanitation activities have yielded one of the most valuable virtues to its participants for the rest of their lives. This virtue, which may be termed Health and Sanitation Developer's Spirit, consists of. "Happiness in giving, satisfaction in friendship, pursuance of knowledge and realization of everyone's value."

### **Community participation**

To launch a project, a potential village should first be considered. This practice is figuratively similar to students choosing to tackle casier mathematic questions first to gain confidence before attempting the more difficult ones. The selection, however, needs the consent of village leaders who call a meeting of villagers to explain the nature of the problems, their impact and tentative solutions.

The health officers then conduct a survey of the village, draft maps and nominate committee members who have natural leadership abilities, like to help others, and are respected and recognized by the villagers to a certain degree.

In the ensuing committee meeting, decisions are made on the operation plans. Explanations and question-answer sessions are conducted to satisfy the villagers before the systematic operations on village sanitation development and other related activities in schools and temples are put into operation.

The next steps are activities according to the fixed workplan such as latrine construction, waterworks, cleanliness and other work such as road building, fence building, and eradication of mosquito breeding areas, etc.

Training is regularly organized to disseminate and expand sanitation development work to the following groups: local leaders, village craftsmen, abbots, religious teachers, border patrol police, sub-district council committees and territory defence volunteers.

Provincial mobile units are formed by selecting two persons with sufficient experience and equipped them with the necessary vehicles and sanitation implements. They are dispatched to support health officers at various stations. These officers are mostly new graduates who have just joined the health development service. They help stir up inactive spots and turn them into more dynamic areas.

Health officers' field trainings is organized by temporarily posting officers in training courses to rural villages, in order to stimulate more achievements.

In the case of villages which are not yet organized in community development, it is necessary to encourage the villagers to systematically organize and start their own work and to manage it with a committee. The health officers stationed in the area act from regional centres are always ready to give support.

Teamwork is actually something the villagers have already been familiar with for a long time such as contributions in the construction of community's temple or the mobilization of villagers to help each other's work in paddy fields. However, they had limited experience to work as a team in direct development of community livelihood. The failure of cooperatives and similar activities were taken into consideration as precautionary matter.

Therefore, their inexperience in meeting, problems tackling them and in decision making needed to be given much attention. Knowledge and understanding of the advantage of teamwork had always been emphasized. Their mutual experience and success resulted in the satisfaction and confidence in their work.

The enhancement of knowledge by showing them the success of other villages health development work proved to be effective. The results were twofold: the host villages became more enthusiastic in their activities while the visiting villages perceived the effective methods.

Such a visit also built up a sense of competition among villages.

Competition between developing villages is another means of community participation. The contest proved effective. It is another motivation to compete for more good deeds.

Provisions to allocate a subsidy in conjunction with villagers' labours and materials in the construction of waterwells and waterworks was innovative and later proved suitable as the project aimed not to give anything for free without any effort from the villagers to create something by themselves in exchange. Through this method the villagers feel that the work is the result of their efforts and will maintain the facilities with good care.

In 1960, it was the first time that an allotment was made for the revolving fund in the building of latrines. The health officers in the area were responsible for the management of the fund and to remit the amount to the provincial health officers after work completion. The cyclical use of the fund enabled low-income villagers to have their own latrines and to pay back the purchase of some materials in instalments within a long period without too much trouble.

An issue worth mentioning here is the unsystematic control and auditing of the counterpart and revolving funds. The lack of proper procedures resulted in mismanagement of funds and corruptible acts of some relevant officials during a later period. It is recommended that in the future a good system be designed to prevent loopholes and malpractice by everyone concerned.

## CHAPTER V

### CHOICE OF TECHNOLOGY

The choice of latrine design should meet criteria as spelt out in Chapter IV. Experience in Thailand has shown that water seal latrines are well accepted. They can be kept clean and completely free of odours, and not attract or permit the breeding of flies. The price is affordable for the villagers. The cost of a superstructure and pit liners is the same as the pit privy and will depend upon the availability of local materials and the wishes of the householders. Although water is required after each use, this would not be a critical problem during the dry season. Furthermore, the promotion of latrine installation is designed as an integral part of rural water supply and sanitation programme where water will be supplied for both drinking and domestic use. The disadvantage is that this type of latrine cannot be used in freezing weather which is not applicable to Thailand. Prior to the introduction of the water seal latrine, pit privy and bucket latrine were in used. However, it was found that these types of latrines were far from satisfactory. The soil surroundings were always polluted because there was virtually no protection against the access of worm larvae to the ground surface. The breeding of flies was enormous, and there was access to flies, rodents and other animals uncovered or lightly covered faeces in the pits. The odour nuisance and unsightly conditions were common which were the causes preventing people using them.

It should be noted that Thailand's first water sealed latrine designer was Governor Sawadi Mahagayi, who introduced this type of latrine in 1924. During which time the Royal Government of Thailand in cooperation with the International Health Council of the Rockefeller Foundation was promoting latrine installation for the eradication of hookworms. It was an earth pit privy type with a round or square bore-hole tank and a squatting slab on top. Earth was dug out like the seepage type. It required only a bowl of water or two to flush the waste.

The most important principle of this type of latrine was that the soil would not be contaminated. Moreover, the parasites would be buried under the ground so they could not emerge. Since flies could bring cholera, typhoid to humans, therefore, latrine must be able to prevent flies from entering the pit. It must be sealed tightly. In addition, there should not be an odour problem. After field testing, the Governor observed that the bowl must be able to contain an amount of water, he therefore introduced a goose neck like the modern one to be attached below the bowl. When the excreta dropped down to the pit, it would be blocked by water which would also prevent flies from entering the pit. A pipe was connected to release air from the septic tank and to minimize bad odours.

The Governor continued his experiment which later became a success in the Sukhothai Province. He then informed the Department of Public Health that he had invented this

type of latrine and wondered whether or not it should be used for the public at large. It was the best type of latrine, he explained, because it could prevent flies and keep odour to a limit.

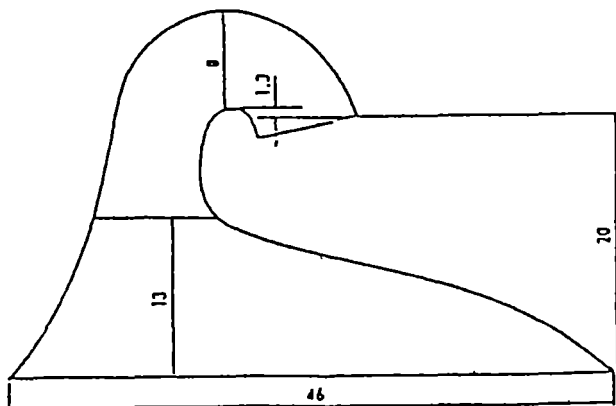
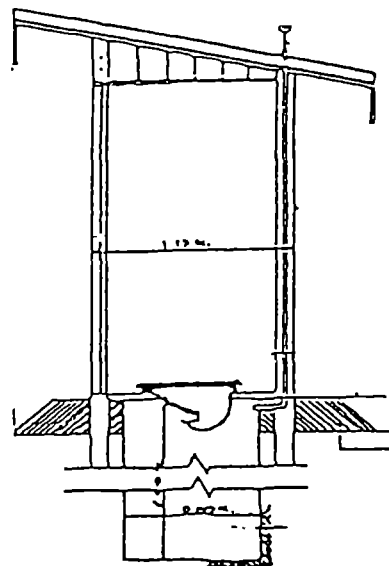
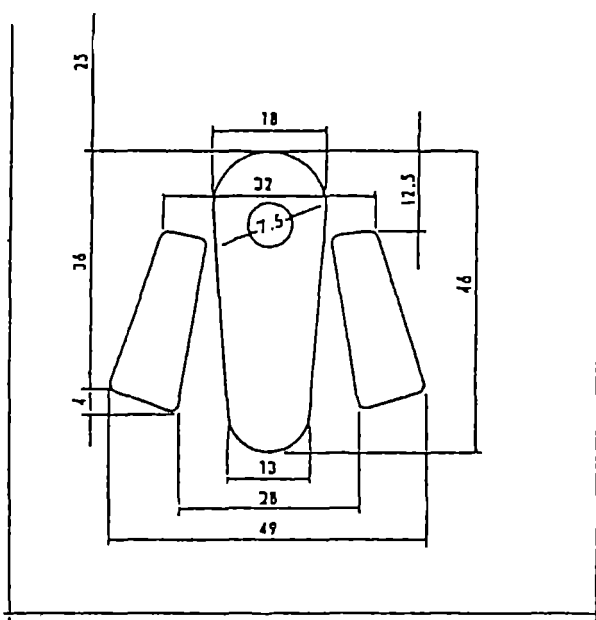
The then Director-General proposed that the invention be put to the advisory committee comprising of Chaokhun Boriraksa Vetchakarn and three Westerners, namely Dr. Kathew, who later became Phraya Ayuvejvichak, Bangkok's Public Health Adviser, Dr. Ira Ayre, the Provincial Public Health Adviser, and Mr. Bakerlin, the Chief Engineer.

The Westerners commented that the cement pipe, which was used for the privy bowl, was coarse and the excreta would easily stick and dry up. It was not as slippery as the imported ones. Another disadvantage was that the pit and septic tank latrines were bad for health because the excreta could seep down into the soil and after a period of time it would be very dirty. They did not agree on this type for public use. The committee suggested that this type of latrine required at least 36-square-feet of area if it was to be installed.

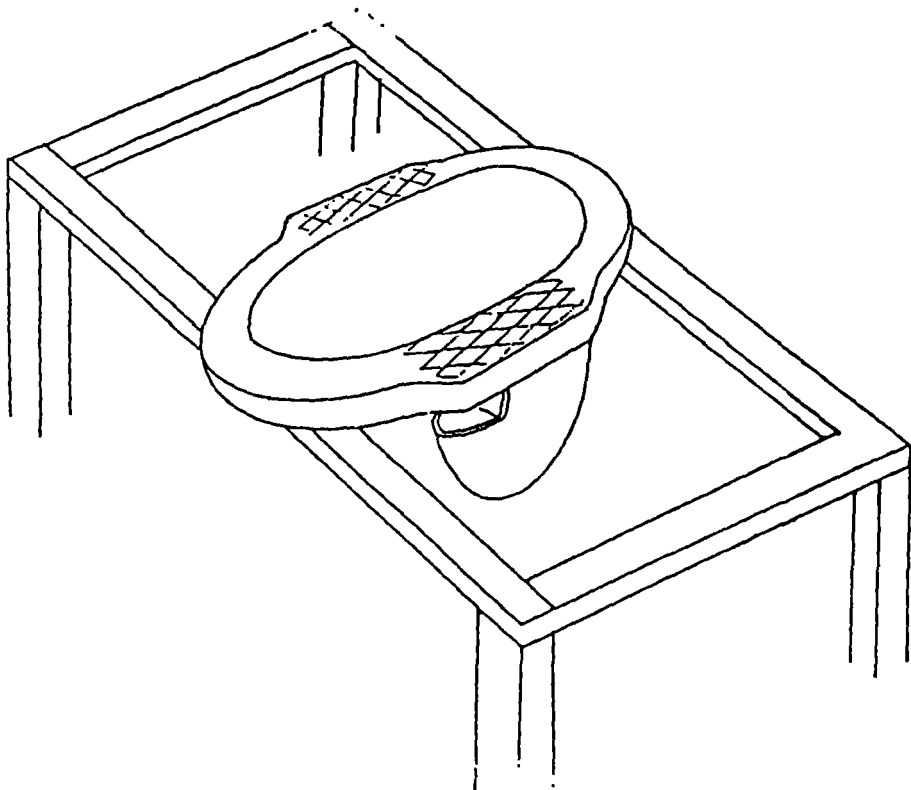
Subsequently the Chief of Provincial Public Health Office of Chantaburi showed interest in the design. He installed the water seal latrines in his province as a pilot testing and it later became very popular. At last it was brought back to be used in Bangkok.

### Water Seal Latrine

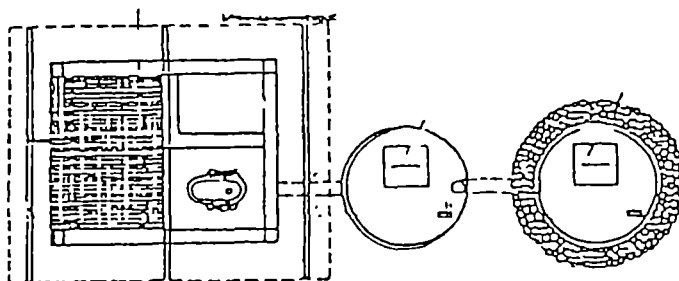
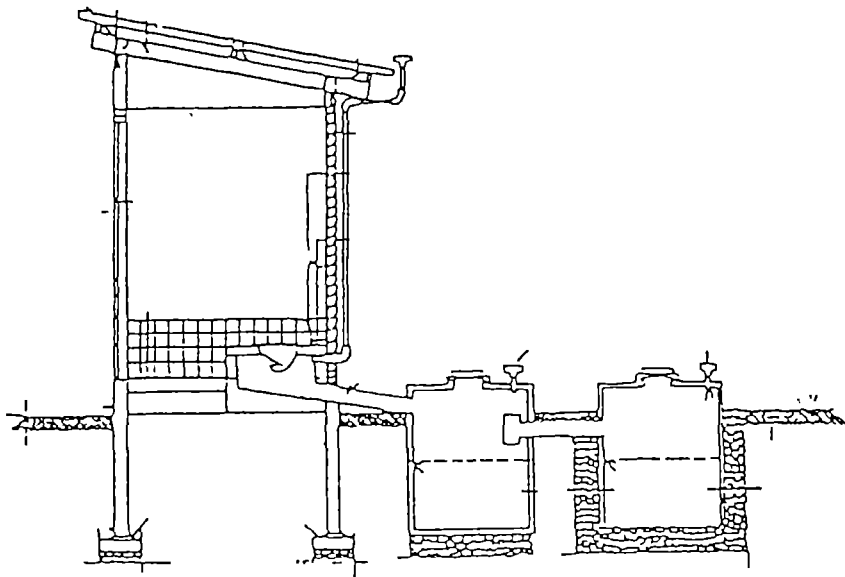
The water seal latrine consists of a bowl made of concrete or other durable material which is attached to a concrete slab. The lower part of the bowl is designed so that water will remain in the invested P shaped, S shaped trap, or gooseneck at all times, forming a water seal. A superstructure is used for privacy. The slab is located directly above the pit which is designed and built in the same manner as for ordinary pit privy.





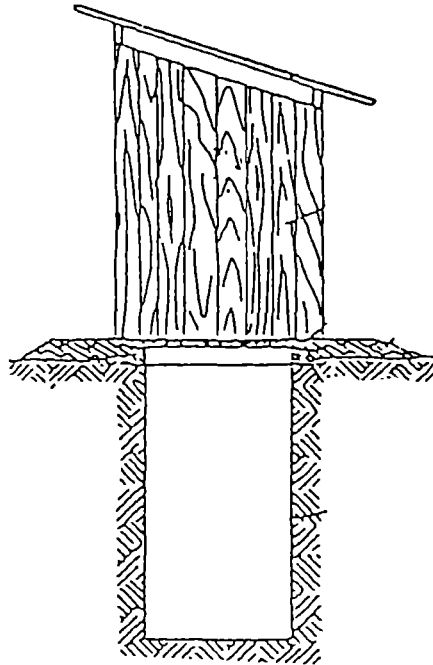


From 1967 the design was developed to separate excreta storage to be installed outside the latrine superstructure to facilitate the removal of the digested sludge. In 1977 the design was developed further to again separate the disposal pit into two tanks, the additional tank being used as a seepage tank which receives the overflow influent from the first tank and stores it to prevent seepage into the ground. This method prolonged the period of sludge removal.



## Pit Privy

The pit privy consists of a hand-dug hole in the ground covered with either a squatting plate or slab. A superstructure or house is then built around it.

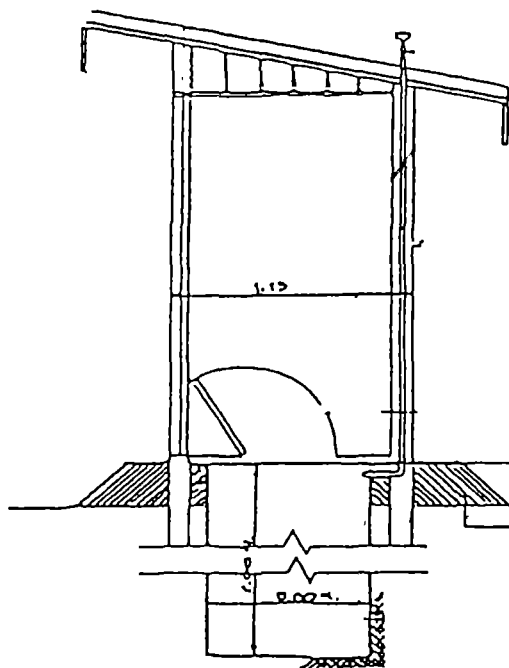


The function of the pit is to isolate and store human excreta in such a way that no harmful bacteria can be carried out or spread. The pit is either round or square with dimensions varying from 1.20 m (36") in diameter for a round pit and 1.06 m (42") for a square pit. The depth is usually about 2.50 m (8 ft.), but may vary from 1.80 m to 5.00 m (6 ft. to 16 ft). One of the pit advantages is its long life. The longer life the pit of privy will serve a family without being moved or rebuilt. The life of a privy depends on:— construction materials, number of latrine users, anal cleansing methods and amount of material used for such cleansing; and conditions of the pit which render the efficiency of bacterial decomposition. Detailed calculations of all components are similar to these presented in WHO Monograph Series No. 39, (Excreta Disposal for Rural Areas and Small Communities).

### Boon Sa-ard Pit Privy

Thai design pit privy is designed to prevent the problem of negligence of latrine users to cover the hole after use which would result in access of flies to the pit and failure in preventing the spread of diseases.

The Boon Sa-ard pit privy's door is designed to be pushed open from the outside. The hole cover is hinged to the floor and must be lifted open by the user and put to lean against the door in order to use the latrine (as shown in Fig. below). When the user closes the door after defecating, the cover is automatically pushed down over the opening. This self-closing cover is a method to prevent negligence in using latrines.



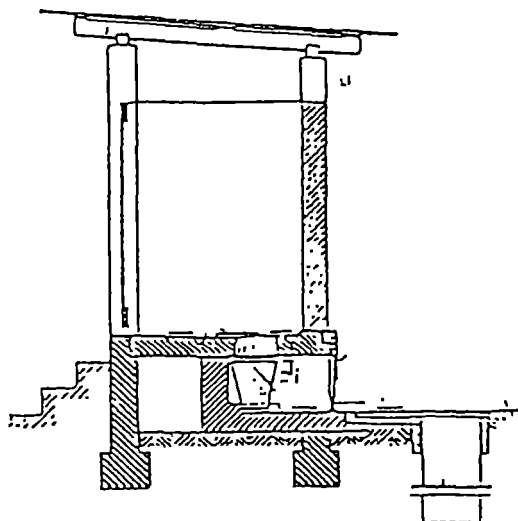
This type is no longer used due to difficulty in maintenance

### Bucket Pit Privy

This system of excreta disposal consists of a bucket into which excreta is deposited and which is removed for emptying and cleaning at frequent intervals.

This type of latrine comprises –

- Collection chamber, situated under the elevated floor or slab, built of impervious, durable materials such as bricks or concrete and it is designed to prevent flies and animals from entering. Good practice calls for proper ventilation of the chamber by means of a pipe vent carried to roof level of the superstructure. Distance between the bottom surface of the floor slab and the rim of the bucket must not exceed 2.5 cm.



- The superstructure is built in the same manner as for an ordinary pit privy, except that the floor is raised above the collecting chamber. In some countries it is designed in such a way as to separate solid faeces from urine and washing water, which otherwise would fill up the buckets quickly. Liquid wastes are directed by troughs either to an impervious catchpit, which is emptied periodically, or to a soakage trench.

Collection and conveyance of buckets should be made daily, although in some places they are made only once a week or longer. The collected pail should be sealed with a fly-tight lid and replaced by a clean and disinfected one.

The bucket latrine system was generally in use in the countryside or around the suburbs. It was in use in Thailand during the period before 1952 and owing to the enormous difficulties in operating this system and controlling the spread of diseases, it has since been abandoned.

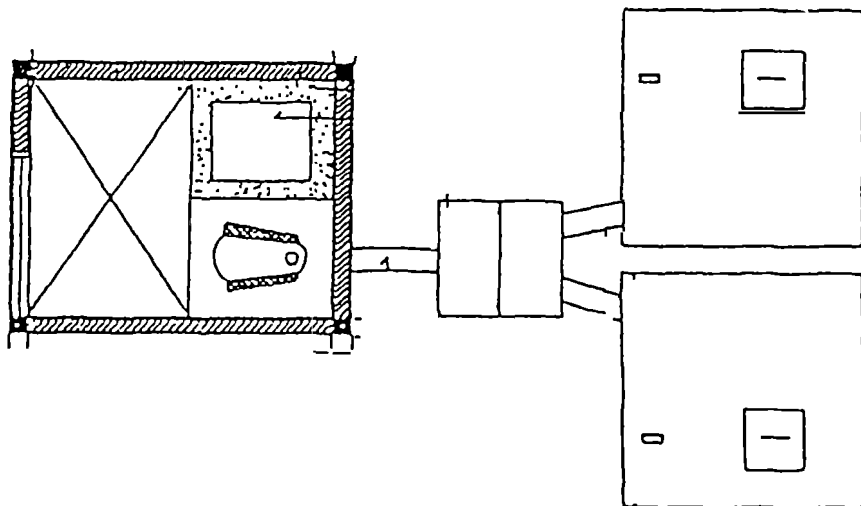
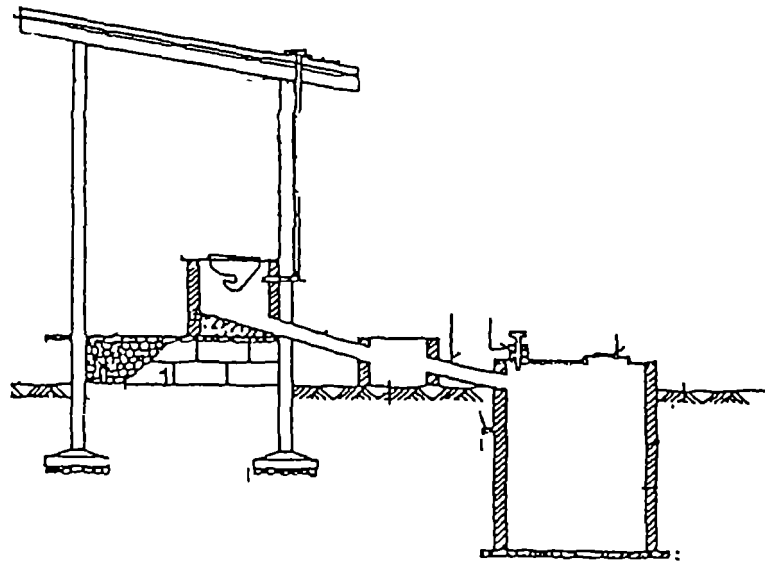
### **Two Seasonal Privy**

The Department of Health designed a two seasonal type latrine in 1959 to be used in a water shortage area during the dry season. It is a combination of pit privy and water seal latrine. This type of latrine has a removable squatting slab which can be taken away in the dry season during which it is used as an ordinary pit privy. During the rainy season the squatting slab is placed over the opening and then it can be used as a water-seal latrine. However, this is not very popular owing to the difficulties in removing the squatting slab in and out, once or twice a year.

### **Economical Water Seal Latrine**

In the development of latrines, however, it was found that some difficulties occurred in the removal of sludge for disposal from the ordinary water-seal latrine tank when it was full. The research discovered that after the waste had been decomposing for a period of 28 days, all harmful bacteria and parasitic ova were unable to survive due to temperature conditions and biological antagonisms prevailing during composting processes. The sludge, after 28 days, of decomposition, was found to be beneficial agricultural fertilizer. Results from the research have been adapted for the development of excreta disposal, from the design of seepage pits and water-seal latrines to economic latrines.

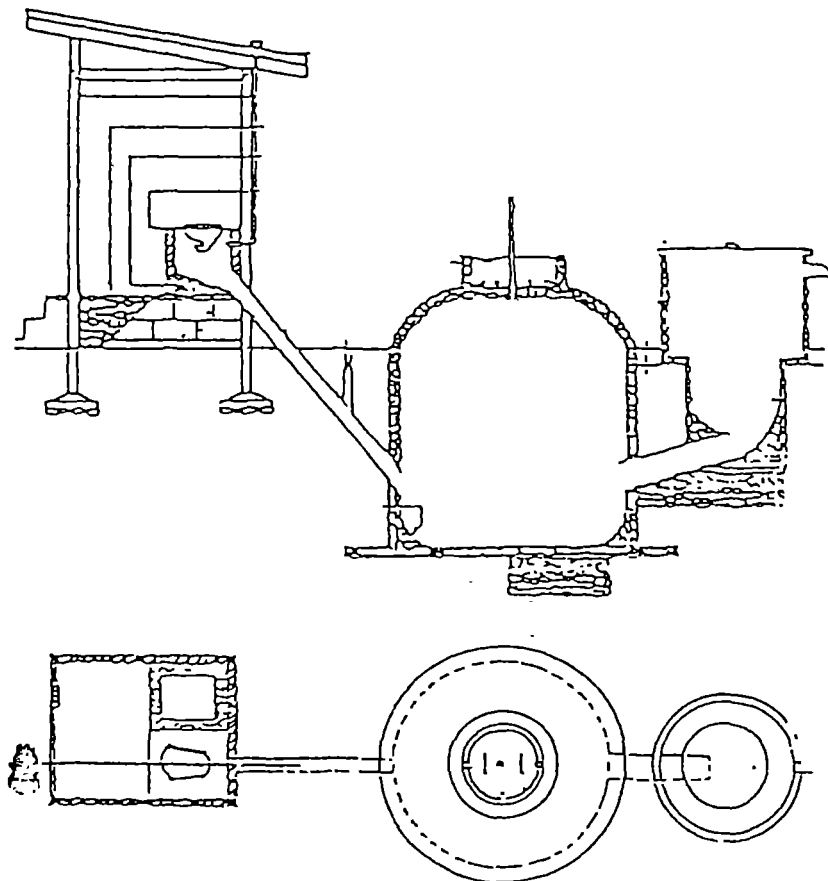
A family-size economical water seal latrine has two separate disposal tanks, both of which are designed to have the capacity to store the family's waste for at least 28 days. When the first tank is filled up, it is closed for a decomposition period of 28 days, before the sludge is removed to dry out and be used as fertilizer. When the second tank is full it will be closed and the first tank will be in use alternately.



The economical water seal latrine had been demonstrated to the people and promoted in the Fifth National Economic and Social Development Plan but was not popularly accepted. This might be because the people did not like to use human waste as fertilizer. However, this type of latrine is strongly recommended for communities favouring the use of excreta sludge as fertilizer.

### Bio-gas Tank

This type of latrine is designed to have a drain pipe connecting from the excreta receiving chamber to the decomposition tank made of durable materials, such as plastered brick masonry or concrete, in a round or rectangular shape. This tank is used to compost human waste as well other decomposable materials such as animal manure, food scraps and bits and pieces of vegetable and grass. The decomposition condition without oxygen in the tank yields bio-gas and organic fertilizer.



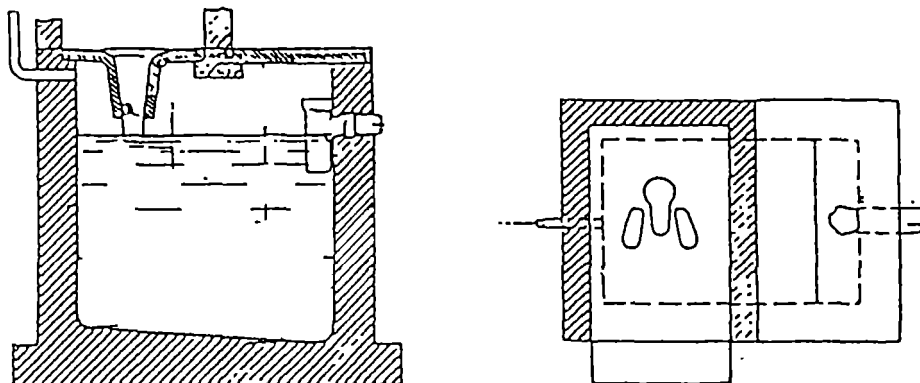
This latrine is suitable for rural communities where the people have domestic animals such as cattle, pigs and poultry. Apart from the disposal of human waste it helps in getting rid of animal manure effectively. The by-products of bio-gas and fertilizer can also economize the family's expenses.

The Department of Health has promoted this type of latrine from the final period of the Fourth National Economic and Social Development Plan and it was accepted among rural people to some extent. However, owing to its rather high investment it is still not widely used and some people also have a negative attitude towards utilizing bio-gas, and fertilizer from human and animal wastes.



### Aqua Privy

Aqua privy consists of a tank filled with water into which plunges a chute or drop-pipe hanging from the latrine floor. Faeces in the tank undergo anaerobic decomposition as in a septic tank. The decomposed sludge, which is reduced to about a quarter of the volume of the excreta deposited, accumulates in the tank and must be removed at intervals.



The function of the tank is to receive, store and digest the excreta. Its shape depends on local facilities and materials. Its size varies with the number of persons for whom it is designed and with the time interval allowed between sludge removal operations. The capacity of a family-size aqua privy should preferably be not less than one cubic metre (35 cu.ft), allowing for six years between cleaning operations. Tanks of aqua privies should not be very deep, especially in areas where ground water is high. The usual practice is to provide a water depth of about 1.0–1.5 m (39–60 in).

Materials commonly used for the construction of the tank include plain concrete, brick or stone masonry with plaster cover to ensure water-tightness. The tank's water level must always submerge the drop pipe to prevent access of flies and mosquitoes into the tank as well as limiting septic odours from digestion and contamination of ground water.

Since this type of latrine is permanent in nature, the floor should be made of a durable material such as concrete or hardwood. The slab surface should be provided with a small slope from the edges towards the hole to ensure drainage of cleaning and flushing water into the tank. The chute connecting with the floor is usually made of earthenware or vitrified clay pipe, with a diameter of 10–20 cm submerging in the water at a depth of 10 cm.

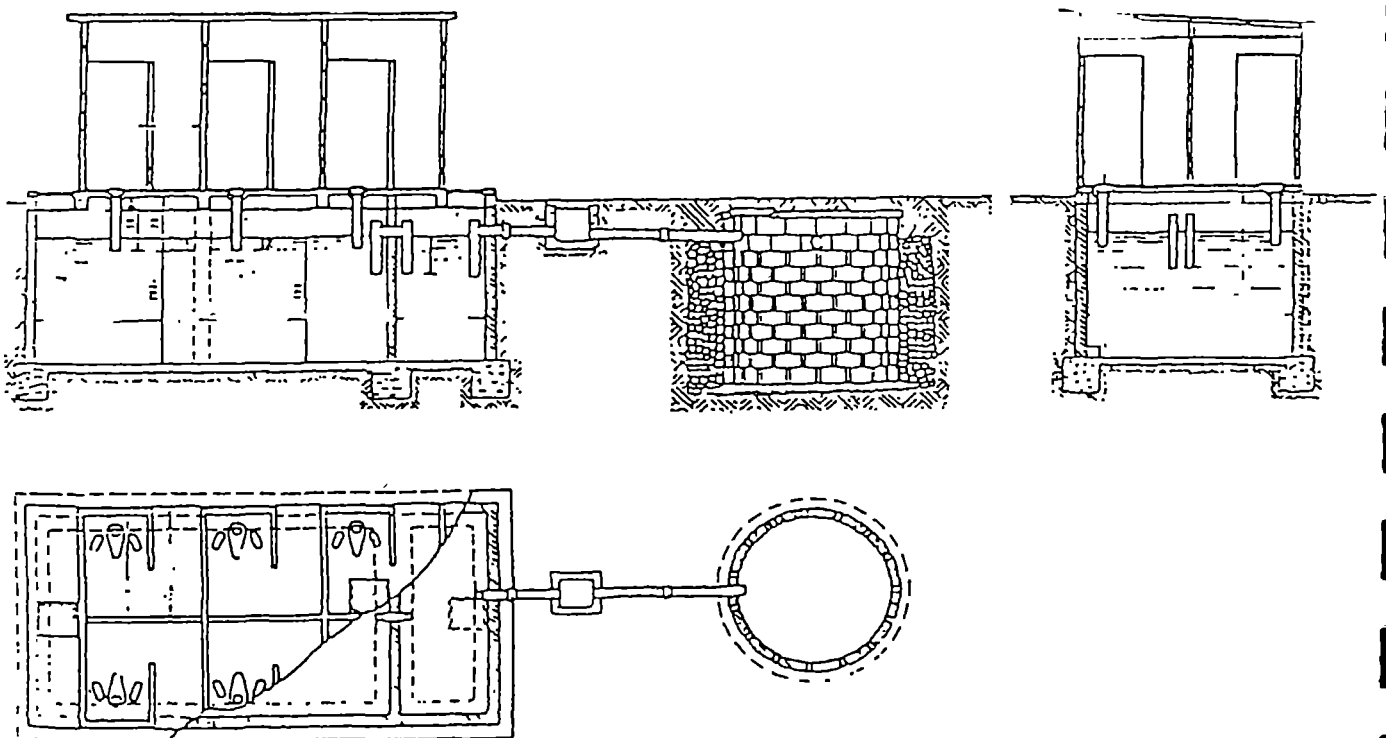
The superstructure for aqua privies are identical to those for pit privies as discussed earlier.

The vent pipe, connecting from under the floor, should be installed away from the scum which may choke it. Its upper end should be above the roof of the superstructure.

The aqua privy drains sewage from its tank at the same rate of water added into it. This effluent is septic in character and may also carry harmful bacteria and ova of parasitic worms. It must be disposed of correctly to prevent the spread of diseases. The methods of effluent disposal include seepage pit, surface irrigation and underground sand filter trenches

The first operation in starting the aqua privy is filling the tank with water up to the inverted level of the effluent pipe. Some decomposed sludge from another privy may be added in order to seed the water with the right type of bacteria and micro-organisms to carry out the decomposition process. After a period of decomposition the human waste deposited in the tank will be considerably reduced in volume. After about six to eight years operation, there will remain 40 or 50 per cent of sludge and the tank's water capacity and should then be removed. In areas where sticks, stones, leaves and coconut husks are used as cleansing agents the tank will be filled more rapidly. Provision should therefore be made in the design of an aqua privy for periodic sludge removal through a manhole. Such a manhole may be located either inside or outside the superstructure and is tightly covered to prevent the ingress of flies and mosquitoes. The removed sludge usually contains some undecomposed matter which is still offensive. It should be buried in shallow trenches about 40 cm. deep.

The aqua privy is in use in some areas in Thailand where water is seasonally scarce. In refugee camps along the border, aqua privies were built into units with several chambers next to each other. However, it was not very popular because of the problem of odours and the large volume of water at the start.



## CHAPTER VI

### TOWARDS HEALTH FOR ALL

Thailand has included latrine development in the National and Social Development Plan which was first embarked in 1961. Evaluation of the situation and results of the past 25 years of national development efforts indicate that Thailand's socio-economic system has experienced tremendous changes in terms of production and income structure, consumption pattern, social value, living standards and the way of life which has become more complex. As far as latrine development is concerned, the latrine installation shows a gradual increase. At the end of the Fifth Plan in 1986, Thailand had 3,711,000 latrines covering 50 per cent of rural population.

From Table 1, the average rate of increase during the First Plan was as high as 570% compared to the number of latrines installed in 1961. After that the rate kept on decreasing in the Second, Third and Fourth Plans to 39.84%, 17.40% and 5.48% respectively. At the end of the Fifth Plan it increased from 5.48% to 8.69%.

TABLE 1

5 Year Plan	Last year of 5-year Plan	No. of latrines	No. of increased latrines in 5 years	Rate of increase in 5 years (%)	Rate of increase in 1 year (%)
	(1961)	12,365			
1st	1966	365,161	352,796	2,853.18	570.60
2nd	1971	1,092,689	727,528	199.23	39.84
3rd	1976	2,043,329	950,640	87.00	17.40
4th	1981	2,603,660	560,331	27.42	5.48
5th	1986	3,735,574	1,131,914	43.47	8.69

TABLE 2

Year	Health Worker	No. of Latrine	Latrine increase	Increase Per H.W. Household	No. of Household	Latrine %	Latrine Coverage Increase/yr. %	Latrine Coverage/yr. 5 yrs. Period %
1960		6,513			3,831,176	0.17		
1961		12,365	5,852		3,864,062	0.32		
1962	1,665	33,166	20,801	12.49	3,995,903	0.83	0.51	
1963	1,740	67,326	34,160	19.63	4,130,429	1.63	0.80	
1964	1,947	151,005	83,679	42.97	4,265,677	3.54	1.91	1.56
1965	2,229	249,025	98,020	43.97	4,391,975	5.67	2.13	
1966	2,511	365,161	116,136	46.25	4,497,056	8.12	2.45	
1967	2,793	493,310	128,149	45.88	4,667,076	10.57	2.45	
1968	3,075	615,772	122,462	39.82	4,814,480	12.79	2.22	
1969	3,357	755,482	139,710	41.61	4,963,745	15.22	2.47	2.91
1970	3,639	955,200	199,718	54.88	4,754,602	20.09	4.87	
1971	3,921	1,092,789	137,489	35.06	4,824,233	22.65	2.56	
1972	4,277	1,256,085	163,396	38.20	4,914,260	25.56	2.91	
1973	4,621	1,461,032	204,947	44.35	5,175,458	28.23	2.67	
1974	4,966	1,741,007	279,975	56.37	5,395,125	32.27	4.04	2.59
1975	5,309	1,881,256	140,249	26.41	5,554,343	33.87	1.60	
1976	5,653	2,043,329	162,073	28.67	5,736,465	35.62	1.75	
1977	5,997	2,237,481	194,152	32.37	5,700,588	39.25	3.58	
1978	6,341	2,270,887	33,406	5.26	5,594,695	40.59	1.34	
1979	6,685	2,404,052	133,165	19.92	5,765,112	41.70	1.11	1.32
1980	7,029	2,531,185	127,133	18.09	5,915,365	42.79	1.09	
1981	7,373	2,603,660	72,475	9.82	6,158,136	42.28	-0.51	
1982	7,717	2,631,878	28,218	3.65	6,278,334	41.92	-0.36	
1983	8,061	2,795,129	163,251	20.25	6,278,367	44.52	2.60	
1984	8,405	3,018,451	223,322	26.57	6,701,711	45.04	0.52	1.77
1985	8,747	3,313,662	295,211	33.75	7,033,882	47.11	2.07	
1986	9,093	3,735,574	421,912	46.30	7,301,747	51.16	4.05	

Remarks : Average increase of latrine coverage per year from the year 1962-1986 is 2.03 per cent

From Table 2, the increase of latrine coverage during the planned periods is fluctuated, but it is within 0.51–4.87 per cent per year or an average for the Fifth Plan is 2.03. It is observed that the Second Plan has the highest increase rate, a 2.91 per cent increase during which the health and sanitation development was in full swing. If the rate of latrine coverage of 2.03 per cent per year is taken as a base, it will take about 24 years to implement the project to cover another 48.84 per cent of households. This means that the target of health for all by the year 2000 will have to be extended by another 10 years to 2010. Another hypothetical thought is that to achieve the 100% coverage by the year 2000, the rate of coverage must be increased by 3.48 per cent per year from 1986 until 2000 – or an increase of a twofold effort over what was done during the Fifth Plan.

The significant factor pushing the increase of latrines is public health personnel. Table 3 shows that the rate of increase of latrines per one health worker per year in each National Plan dropped remarkably. During the First, Second, Third and Fourth Plans, the rate of latrine per health worker was 28, 37, 33 and 15 respectively, while in the Fifth Plan it climbed up to 24.8 – a remarkable progress.

TABLE 3

Year	Increase of latrines in 5 years	No. of health personnel at end of Plan	5-year latrine increase per 1 health worker	1-year latrine increase per 1 health worker
1963-1966 (1st)	352,796	2,511	140.50	28.10
1967-1971 (2nd)	727,528	3,921	185.54	37.10
1972-1976 (3rd)	950,640	5,653	168.16	33.63
1978-1981 (4th)	560,331	7,373	75.99	15.19
1982-1986 (5th)	1,131,914	9,093	124.48	24.89

To achieve the target set for the year 2000, from Table 4, the ratio of latrine per health worker must be raised to 36–44 latrine per health worker from the year 1987–2000.

TABLE 4

## FORECASTING OF LATRINES WITHIN THE YEAR 2000

Year	No. of Health Worker (Provinces)	No. of Household	No. of Latrine	No. of Latrine Increase	Latrine Coverage %	Latrine/H.W.
1987	9,274	7,447,782	4,069,468	333,894	54.64	36.00
1988	9,460	7,596,737	4,415,223	345,755	58.12	36.54
1989	9,650	7,748,672	4,773,181	357,958	61.60	37.09
1990	9,842	7,903,645	5,143,692	370,510	65.08	37.64
1991	10,039	8,061,818	5,527,182	383,490	68.56	38.20
1992	10,240	8,222,953	5,923,815	396,632	72.04	38.73
1993	10,445	8,387,412	6,334,173	410,358	75.52	39.28
1994	10,654	8,555,160	6,758,576	424,402	79.00	39.83
1995	10,867	8,726,263	7,197,421	438,845	82.48	40.38
1996	11,084	8,900,788	7,651,117	453,696	85.96	40.93
1997	11,306	9,078,824	8,120,100	468,982	89.44	41.48
1998	11,532	9,260,380	8,604,745	484,644	92.92	42.02
1999	11,763	9,445,588	9,105,546	500,800	96.40	42.57
2000	11,998	9,634,500	9,634,500	528,954	100.00	44.08

*Assumptions* : 1) Rate of increase of health worker is + 2% per year.  
2) Rate of increase of household is + 2% per year.

In order to achieve health for all by the year 2000, another 48.84 per cent coverage or 5,898,926 latrines are required. Based on the expenses during the Fifth Plan, it is estimated that a budget of 465.5 million Baht is required for the amount of latrine in question. The current budget allocation for latrine installation is lower than the requirement. It is necessary for the Government to mobilize all available resources both internal and external assistance so as to achieve the target of health for all.

Below is Table 5 which shows the number of personnel, budget, allocation, number of latrines and latrine coverage. —

TABLE 5

Year	Budget Baht	No. of Latrines	Latrine coverage %
1959			
1960	2,212,750	6,513	0.17
1961	4,129,295	12,365	0.32
1962	5,906,800	33,166	0.83
1963	6,838,012	67,326	1.63
1964	7,948,070	151,005	3.54
1965	10,357,750	249,025	5.67
1966	12,702,580	365,161	8.12
1967	14,516,940	493,310	10.57
1968	16,491,000	615,772	12.79
1969	21,149,850	755,482	15.22
1970	27,141,060	955,200	20.09
1971	28,303,420	1,092,689	22.65
1972	29,222,900	1,256,085	25.56
1973	27,358,560	1,461,032	28.23
1974	24,500,000	1,741,007	32.27
1975	34,685,000	1,881,256	33.87
1976	40,261,000	2,043,329	35.62
1977	42,742,000	2,237,481	39.25
1978	45,048,000	2,270,887	39.25
1979	46,685,000	2,404,052	41.70
1980	51,859,000	2,531,185	42.79
1981	61,319,000	2,603,660	42.28
1982	72,066,000	2,631,878	41.92
1983	62,384,000	2,795,129	44.52
1984	64,350,000	3,018,451	45.04
1985	61,948,000	3,313,662	47.11
1986	62,465,000	3,735,574	51.16
	884,584,000		

Source : Sanitation Division, Department of Health.

Remarks 1) Budget allocation is for overall sanitation development. It is estimated that the allocation for latrine development is only 1/3 of the total fund = 294.84 million Baht or 78.92 Baht/1 latrine.  
2) During the year 1987-2000 the estimation of the budget should be for the following. - 5,898,926 x 78.92 = 465,543 million Baht for 14 years or 33.253 million Baht/year

It is evident that latrine installation has reversed relations with the mortality rate of gastro intestinal diseases which includes dysentary diarrhoea, typhoid, paratyphoid and gastroenteritis. The decrease of these diseases during each interval is shown in Table 6 below. -

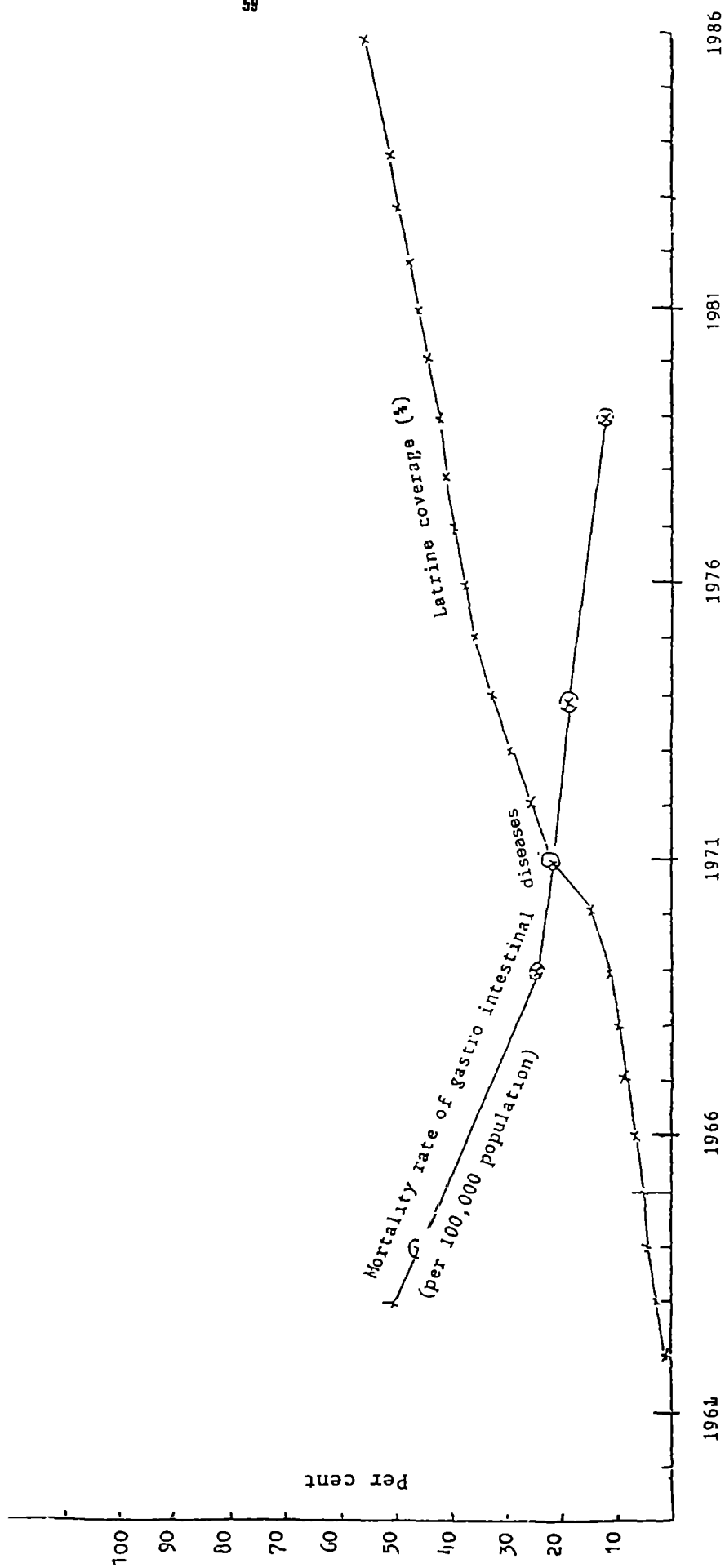
TABLE 6

Year	No. of mortality from gastro-intestinal diseases	Population (x 1,000)	Mortality rate per 100,000 population (from gastro-intestinal diseases)	Average mortality during each plan
1960	13,826			
1961	11,130			
1962	12,366	27,871	44.34	
1963	14,401	28,618	50.32	
1964	13,006	29,385	44.24	45.69
1965	10,432	30,824	33.84	
1966	17,677	31,700	55.73	
1967	11,024	32,680	33.73	
1968	10,776	33,690	31.98	
1969	9,707	34,740	27.94	26.85
1970	7,229	35,550	20.33	
1971	7,494	36,920	20.29	
1972	8,810	38,200	23.06	
1973	8,118	39,620	20.48	
1974	8,423	41,020	20.53	19.59
1975	7,904	42,100	18.77	
1976	6,541	43,214	15.13	
1977	6,455	44,338	14.55	
1978	7,151	45,320	15.77	
1979	5,654	46,140	12.25	11.82
1980	4,324	47,173	9.16	
1981	3,569	48,117	7.41	

An attempt has been made to compare morbidity rate but the variance of the annual reports were rather high. It is therefore not possible to show correlation between morbidity of gastro intestinal diseases and latrine coverage for the time being. However the results show that the higher the latrine coverage increase the lower the mortality rate of gastro intestinal diseases decrease. It is difficult to conclude that the decline in mortality rate is a result of the increase of latrine coverage only and directly. However, it is illustrated by plotting a graph to show that the latrine coverage has some influence over that rate of mortality. It is believed that the same will apply to the morbidity rate as well. However, no exact figure on morbidity is available to confirm this.



Latrine coverage VS Mortality rate of gastro intestinal diseases  
1960:1986



## **Towards Health for All**

Thailand has set a target that by the end of International Water Supply and Sanitation Decade in 1990, the latrine coverage will reach 75 per cent. By the year 2000 which is the target of Health for All, every household will have a latrine. In order to plan for appropriate direction and strategy to achieve the mentioned goal, the past experiences in both stagnation and successful periods are reviewed as follows:—

Latrine development is one of the examples to indicate that the operation at different periods can end up with success or failure. Factors influencing the different in results vary to a great extent. The most important factor is human's defecating behaviour especially that of the Thai people. It seems there should not be any difficulties in asking someone to change the habit of defecating in the open or in the bush or doing it in a small, surrounded shed which is called a "latrine". However, facts from long experience indicate that this change would not take place overnight. Rural people feel very embarrassed to do it in a small room in the same way that townspeople feel when they have to do it in an open space. The change of behaviour has to be done systematically with much stimulation to gain a permanent change. Those who worked to promote people to build and use latrines during 1917–1927 might not be aware, or were not prepared for all the necessary factors, such as the serious indoctrination of knowledge and belief, the follow-up practice to emphasize what should be done, the motivation, and so on. All of these certainly need to be budgeted and consistent with long-term follow-up activities by the "leaders of change". Health workers have rated these factors very important.

However, at present there are still not many studies and research in the change of rural people's excreting behaviour. In order to gain progress in the future, serious studies and research should be conducted to find out useful suggestions for the improvement of environmental sanitation.

It is revealed that the average rate of increase of latrine coverage in the Third Plan was not up to half the rate of the Second Plan, and the rate of the Fourth Plan was also not up to half of that of the Third Plan but the rate of the Fifth Plan was higher than the Fourth Plan. The question is what are the causes of these variations.

Looking at circumstances in each period of the Plans, it can be seen that the launching of the village health and sanitation project during that particular period helped boost activities and pushed the rate of increase of this period tremendously. During the Third Plan, the reorganization of the Ministry of Public Health in 1972 and 1974 caused much frustration among officials both in the central and provincial health administration. There were several changes and transfers of authority and positions. Many senior project officers were promoted or transferred to other units. Some of external assistance came to an end. However, the rate of

increase of latrines in this period was still higher than those of the Fourth and Fifth Plans.

The increased number of latrines in the Fourth Plan amounted to only a little more than 500,000 and the average rate of increase dropped to only 5.48 per cent per year, despite the launch of the Primary Health Care Project – a village-level operation with sanitation as one of its activities. Roles of health officers had radically changed to incorporate more other activities. The system of setting a minimum number of latrine increments per one health officer was abolished. The most significant was that several chiefs of sanitation work in provincial health offices had limited capability and knowledge, some even less than third- and second-grade health officers in the old days – a result of the introduction of the Classification of Position System in government service, especially in health service. Moreover, all third-grade health supervisors, who were selected from fourth-grade provincial officers for training in provincial health development supervision, were called back to regional centres or transferred to be district health officers awaiting further promotion. In conclusion, many able hands were lost from the work while new ones were not sufficiently trained to the level required. The reorganization called for a change in authority and responsibility of the Provincial Chief Health Officers. More work was transferred from the Permanent Secretary Office and Departments to Provincial Chiefs. Roles and relations between department-level units and provinces were also drastically changed. All of these had a strong influence over latrine development.

The increase of 1.1 million latrines, or an annual average of 8.69 per cent, in the Fifth Plan was evidence of self-adjustment in provincial-level sanitation work. The increase was also a result of more systematic operation in the sanitation project and strong support from several regional sanitation centres.

If the number of latrines remaining to be built all over the country amounts to 5,899 million up to the year 2000 as mentioned earlier, there will be a 100 per cent increase in 14 years. In order to achieve the target of 75 per cent which the country has set for Water Supply and Sanitation Decade by 1990, no less than 2.19 million latrines must be built. The average rate of increase must be 23.84 per cent within 4 years or 5.96 per cent annually which is 4.25 per cent per year higher than the Fifth Plan.

However it is believed that Thailand will achieve the target of International Water Supply and Sanitation Decade and the Health for All by the year 2000. The reasons to believe such a tendency are as follows. –

- (a) The Government has for a long time recognized the important of the rural people. Quality of Life improvement is being campaigned. The Quality of Life consists of 8 basic minimum needs and 32 indicators. A latrine is identified as one of the basic minimum needs and has been incorporated in the national campaign.

- (b) A latrine is important by itself. After a long period of advocacy and implementation, various parties are fully convinced that a sanitary latrine is an important means of controlling some diseases especially gastro intestinal infections which include dysentery, typhoid, cholera, and various types of parasitic worms.
- (c) Several government agencies have strongly given cooperation in the promotion for the people to have and use latrines, especially the Ministry of Interior through its various provincial governors. For example, Maha Sarakham Province launched a campaign to promote sanitary latrines in its entire area; Nakhon Sri Thammarat Province organized a campaign by asking the private sector to help promote the idea through posters, radio programmes and village public announcement. The effort paid off so quickly and satisfactorily that the production of latrine slabs could not meet the demand during that period. Krabi Province organized a contest and presented honorary plaques to villages having a 100% coverage of sanitary latrines, which has proved to be an effective means for stimulating other villages. Several provinces are now preparing similar campaigns.
- (d) Politicians directly participated in latrine development. Some Parliament members, who received funds for the development of their own constituencies, utilized part of the funds for latrine installation. There are many more Parliament members showing their interest. It is anticipated that they will soon join in latrine promotion.
- (e) It has been recognized by all sectors concerned with rural development that a village committee should be trained to be able to manage all available resources such as manpower and village development funds. In this regard, village health volunteers, village health communicators and village sanitation craftsmen, who are familiar with latrine installation, should be included in overall rural development. Furthermore, the villagers should be encouraged to utilize all the existing funds to develop their own villages to the maximum of their extent regardless of where the source of the funds comes from. It was recommended that the village committee be able to utilize the funds allocated from Poverty Allevation Project for all the identified needs. All of these will accelerate the installation of latrines. The mentioned approaches have been implemented in Maha Sarakham and Roi-Et Provinces.
- (f) It has been recognized that the social mobilization approach is a very important in preparing the community and public at large to understand and participate in sanitation, particularly latrine development which will achieve a good impact over health development in the long run. All strategies and working techniques which have already been developed and tried out will be beneficial to all future

programme implementation.

- (g) The private sector has joined in latrine promotion. A leading sanitary product company, has provided assistance by supplying low-cost white-glazed squatting slabs which were sold at Baht 110 per piece against normal Baht 180 – 200 at the market price. More than 60,000 slabs were sold in 1985. There are other sanitary products companies currently offering low-cost slabs to the provincial health offices. This commercial competition has been beneficial to the people and has made the white-glazed slabs very popular in the provinces. It is also another motivation which will increase the number of latrines in rural areas.
- (h) People who leave their rural villages to study or to work in large cities, in Bangkok or abroad such as in the Middle East learn the convenient, hygienic way in relieving the call of nature. Coming back to their home villages, they are embarrassed in the old "going to the bush" way of life and they urge the family to acquire a sanitary latrine. This new trend certainly helps increase the number of rural families using proper latrines.
- (i) More international organizations provided their assistance in improvements of sanitation in rural areas. An increase in aid grants and a trend to provide more aid in the future is anticipated. UNICEF has regularly given an annual budget for the promotion of the construction and utilization of latrines. The World Health Organization provided a budget to the Ministry of Public Health through the Village Self-help Project, part of which was to promote latrine installation. USAID provided a loan with low interest rate to the Ministry of Public Health to improve sanitation by helping people to build latrines. The Federal Republic of Germany has granted a budget to the Department of Health for the improvement of sanitation in the areas along the Thai-Kampuchean border.

## CHAPTER VII

### PROGRAMME GUIDES FOR LATRINE DEVELOPMENT

Based on the experiences from the past four decades, the following are suggested to be used as programme guides for latrine development.

(1) Policy

- (a) Consistently promote latrine development through political parties and national policy-makers.
- (b) Try to seek an opportunity to integrate or include latrine development in health programmes and overall rural development.
- (c) Promote the idea that sanitation is the key to improve the quality of life and helping to disseminate the idea whenever and wherever possible.
- (d) Support the decentralization of sanitation activities to the provinces and districts as much as possible. The national agency and other units should support the work by providing technology, finance, etc , instead of direct intervention.

(2) Terms of reference

- (a) It is necessary that prior to the implementation of any project, terms of reference must be agreed on each party's conditions, commitments, roles and responsibilities to ensure that the project will eventually be materialized.
- (b) Plan for the work in each period systematically and precisely. The work plans at provincial, district and sub-district levels should be laid out the implemented accordingly.
- (c) Select proper strategies and techniques, provide guidelines for officials at all levels to choose for various conditions and occasions.
- (d) Designate clearly and precisely roles of provincial authorities.

(3) Recruitment and Personnel Management

It is emphasized here that the project's personnel selection and development is another important strategy in order to mobilize the right men with the right qualifications for the job.

Unless the recruitment is properly carried out, it will be hard to attain the planned objectives because personnel are the key to success. Therefore, it is necessary that the staff be properly selected and developed to suit their work best. Following are the criteria which should be considered:—

Good men,	good systems,	the best
Good men,	bad systems,	the second best
Bad men,	good systems,	the third best
Bad men,	bad systems,	the worst

“Good men” mean people having conceptual, human and technical skills. These people are ingenious in thinking, amiable in human relation and competent in work performance. Even though it is almost impossible to find a person with all the qualifications as mentioned above, someone, somewhere, is still available with the most ideal qualifications.

Therefore it should aim to recruit good men as much as possible, in order to improve the project system to meet of a satisfactory level.

With proper personnel management, the project is ensured to carry on smoothly and has a better chance to reach its objectives. The following are recommended.

- (a) Adhere to democratic principles in administration and operation as well as in teamwork which aim specifically to achieve work objectives.
- (b) Set the standard minimum work achievement and quality for all responsible persons in all operational areas and villages, this standard should be agreed upon by Provincial Authority and the Ministry of Public Health.
- (c) The principle to seek affiliation, between the government and private sectors, which play roles in the areas of related work.
- (d) Promote joint working among people of various vocations and the whole community to create and develop ideas emphasizing the value in the development of the quality of life.
- (e) Encourage the personnel to take pride and have dignity in their work. Set up fair and equal chances of advancement for all concerned.

(4) Advocacy

- (a) The environmental sanitation project naturally needs cooperation from other

units both within the Department of Health and outside, such as the Department of Local Administration of the Ministry of Interior and its provincial governors and the Department which is responsible for external assistance. The promotion of good relations, understanding and cooperation with the other parties is considered to be one of the major driving factors for the project to reach its objectives. The manager of the environmental sanitation project should smoothly coordinate the work with their outstanding leadership characteristics, good human relations and sincerity. This will result in obtaining good cooperation from several units and persons. Other arrangements such as the forming of committees is not given much significance.

- (b) The technique to draw attention, understanding and cooperation by means of organizing conferences or seminar, for high ranking officials and policy makers is found to be very useful. It should aim to invite as high as a ranking officer as the Prime Minister to address the conference or seminar. Most of the cooperation from other agencies will be obtained through such a technique.

#### (5) Orientation

- (a) An orientation should be organized with an aim to map out project implementation plans, to produce materials, prepare equipment and supplies, and mobilize and train personnel to ensure that the project will get off the ground smoothly. One of the spin offs in conducting a workshop is that unity and understanding are developed among the project pioneers who come from various agencies. It renders a favourable working atmosphere since all of them feel that they are the owner of the project and will perform to their utmost ability.
- (b) Prior to their appointment, officials should be indoctrinated with sufficient theories and principles to face reality, where there will be several types of problems facing them – those of which they had never encountered in school. Real obstacles in rural situations, which health officials often encounter include, indolent local officials, villagers having bad attitudes towards officials, conflict among villagers themselves, equipment shortage at crucial times, etc. In follow-up, officials have to encounter and solve these problems with all their efforts, and in return they will gain higher efficiency and more confidence from such problem-solving experiences.
- (c) Prior to an orientation, manuals should be prepared for officials on the working techniques. Officials following up should have their manuals in follow-up work, technical design and construction. These manuals should be continuously compiled, updated and disseminated. Lower-level officials can also use these



manuals for self-improvement.

(6) Staff Training

(a) Develop knowledge and capability of officials from the national level down to district and sub-district levels to be in line with the real situations. Emphasis should be placed on quality and techniques in order to raise the level of knowledge and capability of these officials to enable them to train the villagers.

(b) Increase knowledge and experience of personnel by providing them with opportunities to further their studies or study.

tours abroad. In relation to study tours, the places of the visit should not too far developed in comparison with the project site. What the officials have seen should be suitably applicable to local health development work. It will also help in increasing self-confidence. These officials will apply their knowledge beneficial to the project and the villagers.

(c) Experience showed that the extra one and a half years curriculum for health workers not only enhances knowledge but also motivates them to perform better in order to be promoted.

(d) Promote medical and public health students to gain experience and have good attitudes towards sanitation work, and the introduction of sanitation education into school curriculum. This will help not only in staff training but also in building a good image of sanitation work.

(7) Organization strategy

(a) It is firmly believed that the project must be administered by the provincial and rural authorities for effective implementation and self-sustenance in the future. In the past when the provincial health authorities were not prepared, most of the operations were carried out by mobile units and there was no follow-up work for such activities. The project should emphasize the integration of work for the provinces, districts and villages and assume that they are project owners.

(b) The principle of community development – helping people to help themselves, with the government providing the knowledge and promotion should be introduced in the setting up of the organization.

(c) The provincial officials should be the core staff for carrying out the task while

the central administration carrying out should play a supporting role.

- (d) Establish regional centres for supporting provincial authorities and to assist in programme monitoring. These centres should be flexible enough to cope with any changes.

#### (8) Technology

In order to attain the project objective, the choice of technology is another important factor in programme design. The prevention strategy of gastro intestinal infections and intestinal parasites relies mainly on the building and using of latrines as well as provision for sufficient quantity and quality of water. It is, therefore, essential to choose an appropriate technical strategy which will be socially and economically accepted.

From a technical point of view, the choice of latrine design should meet the following recognized criteria.

- (a) The soil surface should not be contaminated.
- (b) There should be no contamination of surface and ground water.
- (c) Excreta should not be accessible to flies or animals.
- (d) There should be no odour or unsightly conditions.
- (e) The construction methodology should be simple and inexpensive and easy to maintain.

Details of various types of latrines are illustrated in Chapter V.

#### (9) Community participation

It has been recognized that community participation is the crucial factor for the success of latrine development. Below are the ways and means to promote community participation.

- (a) Regard sub-district councils and village committees as key to the success.
- (b) Village health volunteers and village health communicators must be regarded by all sanitation officers as target groups for promotion of latrine installation.
- (c) Stimulate, recognize and respect the people. Build an atmosphere of creative competition.

- (d) Dissemination of the concept that the latrine is one of the most important to illustrate habit, culture and tradition.
- (e) Public communications should be thoroughly and properly conducted between each target group, from those at policy-making level down to operation level and the villagers themselves. Newsletters and journals are also the means for communications among the health and sanitation development circles.
- (f) The project should give high priority to this issue and allocate a specific budget for this purpose from the project's commencement. During the planned period, this work should be carried out continuously and seriously.
- (g) The project should regard social mobilization and community participation as an important activity from the inception and should consistently be promoted. The motivation strategy for social mobilization is elaborated on Chapter IV.

(10) Financial management

- (a) The project should aim not to give anything free without any effort from the villagers. Provision of funds to be a counterpart of villagers' labour, and materials for installation of latrines is found to be workable and suitable for local circumstances. In this way the villagers will feel that the work is the result of their efforts and would maintain the facilities in good working order. This method will also help in accelerating latrine installation.
- (b) Wherever, and whenever, possible village development funds should be established in order to cycle the funds to the low income groups in order to enable them to have latrines and to repay by installments over a long period of time without much burden on them.
- (c) Revolving and counterpart funds should be properly managed and strengthened.
- (d) The project should realize the necessity of extra expenses of field workers and provide them with per diem, payable through the provincial/district/sub-district health offices. It is another motivation for the officials to go out to work in the villages.
- (e) The project should have adequate fund for casing form and mould for the latrine squatting slabs. This will help the project to progress more rapidly and smoothly.

- (f) Resources from Government, NGOs and villagers themselves should be mobilized for the development of environmental sanitation, particularly for latrine installation.
- (g) Acquired assistance from international organizations in the form of finance, and overseas training and study tours.
- (h) Involve financial institutions such as banks and other companies which are interested in social development particularly for the poor in programme development and implementation.

(11) Follow-up/Monitoring

- (a) Follow-up and monitoring is regarded as one of the most important parts. The project should not use the term "control" because health and sanitation development concepts and principles call for joint working with sympathy and satisfaction under the atmosphere of cooperation among all concerned. The term "follow-up" is more appropriate than work control and conforms better with local culture. Field visits should be jointly undertaken with the provincial officers for monitoring of project implementation at all levels.
- (b) Set the follow-up, supervisory systems to stimulate the operation consistently throughout the work period – especially field officials, members of sub-district councils and village committee members.
- (c) Aim at improving work quality in areas where quantity has been achieved
- (d) Regional-level units performing follow-up and supporting roles for the provincial and district level units, should be established to become sanitation data centres for planning, follow up and assessment in the regions, and to conduct studies and research emphasizing the application of appropriate technology in their localities.
- (e) Monitoring through regular consultations and sharing of experiences among the officials at national level and provincial/district level by means of workshops, field visits and correspondence.
- (f) After encountering actual field problems, a monthly meeting among themselves should be organized in order to exchange ideas and look for solutions to solve these problems. Inter-regional meetings among officials at the same level will help in strengthening recommendations to remedy bottlenecks and constraints more accurately and comprehensively.

- (g) Arrangements for an annual programme review.

(12) Evaluation

An evaluation should be undertaken with the major objectives as follows. —

- (a) To assess the achievement of project objectives.
- (b) To assess whether the degree of service provided is adequate.
- (c) To find out how service might be increased.
- (d) To provide feedback to planners on the validity of the original planning assumptions, particularly with regard to benefits.
- (e) To provide feedback on the appropriateness of the strategy in terms of resource allocation, selection of villages, choice of technology, in the light of its objectives and observed benefits.
- (f) To study the impact on the health of the communities in the target areas.

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