URBAN ECOLOGY AND DENGUE HEMORRHOGIC FEVER : A COMMUNITY STUDY IN BANGKOK

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URBAN ECOLOGY AND DENGUE HEMORRHOGIC FEVER : A COMMUNITY STUDY IN BANGKOK

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ABSTRACT

This qualitative research studies urban ecology as well as social condition, culture, economy, behaviors and daily routines related to spreading dengue hemorrhogic fever among local people in Amphawa Community. Research tools consist of Breteau Index, in-depth interviews, interviewing informants and structural observations. Furthermore, sample groups were selected from local people.

The results of the study show that there are several factors influencing dengue hemorrhogic fever in Amphawa Community. As for physical factor, a considerable number of houses were built close to each other. Many houses that are old and narrow were made from available materials that could not protect people from mosquitoes. In addition, there were a lot of rotten stuffs lying in the spaces between the houses, facilitating mosquito persistance. Vacant lands in the community were used for placing many things including garbage and useless containers that provide shelter for mosquitoes in rainy seasons. Furthermore, in dark bathrooms there were water containers or cement buckets for tap water that were not replenished regularly; therefore, they were good places for striped mosquito larvae in the community. Moreover, the social condition, economy, culture, ways of life and behaviors in daily routines, for instance relaxation, spare time activities, water use, house location and cleaning facilitate the life cycle of striped mosquitoes. Thereby, the community has a high risk of dengue hemorrhogic fever related to local need to live in an urban ecology which encourages striped mosquitoes.

Since most of the local people are poor, they moved into several communities in the city. Thus, the government should pay attention to the poverty problem of rural people in order to protect city migrants. Furthermore, the current problem of urban ecology should be dealt with in order to solve the problem of dengue hemorrhogic fever in urban areas.

KEYWORDS : THAILAND / URBAN ECOLOGY / DENGUE HEMORRHOGIC FEVER

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นิเวศวิทยาเมืองกับการเจ็บป่วยด้วยโรคไข้เลือดออกของชุมชนแห่งหนึ่งในกรุงเทพมหานคร
URBAN ECOLOGY AND DENGUE HEMORRHOGIC FEVER : A COMMUNITY STUDY IN BANGKOK

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ABSTRACT

การวิจัยเรื่องนี้เป็นการวิจัยเชิงคุณภาพ มีวัตถุประสงค์เพื่อศึกษาสภาพแวดล้อมทางนิเวศน์ของชุมชนแบบเมืองและสภาพสังคมวัฒนธรรม เศรษฐกิจ พฤติกรรมและชีวิตประจำวันที่มีความเชื่อมโยงกับการแพร่กระจายของโรคไข้เลือดออกของผู้ที่อยู่อาศัยในชุมชนวัดอัมพวา โดยการสำรวจด้วยวิธี Breteau Index การสัมภาษณ์แบบเจาะลึก การสัมภาษณ์ผู้รู้ และการสังเกตอย่างมีโครงสร้าง โดยมีกลุ่มตัวอย่างได้แก่คนในชุมชน

ผลการศึกษาพบว่าวัดอัมพวามีอุบัติการณ์ของไข้เลือดออกสูงมาก โดยมีปัจจัยทางด้านกายภาพของชุมชนที่มีลักษณะการตั้งบ้านเรือนการปลูกบ้านที่ปลูกชิดติดกันจำนวนมาก ความเก่าแก่ของสภาพบ้านเรือนที่ใช้วัสดุที่พอจะหาได้มาสร้างเป็นที่อยู่อาศัยไม่สามารถป้องกันยุงได้ สภาพภายในบ้านเรือนที่คับแคบ ช่วงห่างของบ้านแต่ละหลังที่เต็มไปด้วยสิ่งของต่างที่ชำรุดเป็นแหล่งที่เอื้อต่อการเกาะพักอาศัยและหากินของยุงลาย พื้นที่ว่างภายในชุมชนถูกใช้เป็นที่วางสิ่งของต่างๆ รวมถึงเป็นที่ทิ้งขยะ ภาชนะสิ่งของที่ไม่ใช้แล้ว ขยะเหล่านี้ทั้งเป็นแหล่งเกาะพักของยุงลายและเป็นแหล่งเพาะพันธุ์ยุงลายในฤดูฝน รวมถึงห้องน้ำที่มืดทึบมีภาชนะหรือบ่อซีเมนต์ที่รองรับน้ำไว้ใช้จากระบบประปาไม่สามารถที่จะจ่ายน้ำได้ตลอดเวลา ซึ่งเป็นแหล่งเพาะพันธุ์ลูกน้ำยุงลายที่สำคัญในชุมชน และจากสภาพสังคมเศรษฐกิจ วัฒนธรรม ตลอดจนถึงวิถีชีวิตพฤติกรรมในชีวิตประจำวัน เช่น ลักษณะการพักผ่อน การใช้เวลาว่าง การใช้น้ำ การจัดวางและการทำความสะอาดบ้านเรือนที่สอดคล้องหรือเอื้อกับวงจรชีวิตของยุงลาย ทำให้ชุมชนต้องมีความเสี่ยงต่อการเกิดไข้เลือดออก เนื่องจากมีความจำเป็นทางเศรษฐกิจต้องมาอาศัยอยู่ภายใต้นิเวศวิทยาเมืองและมีวิถีชีวิตที่สัมผัสยุงลายอยู่ตลอดเวลา

คนในชุมชนโดยมากเป็นคนยากจน เข้ามาอยู่อาศัยชุมชนต่างๆในเมืองด้วยความจำเป็นทางเศรษฐกิจ ดังนั้นรัฐบาลควรเอาใจใส่แก้ไขปัญหาความยากจนของคนในชนบท เป็นการป้องกันการการอพยพย้ายถิ่นเข้าสู่เมือง ในขณะเดียวกันต้องแก้ปัญหาสภาพนิเวศวิทยาเมืองที่เป็นอยู่ในปัจจุบันอย่างเป็นรูปธรรมและจริงจัง จึงจะเป็นการแก้ไขปัญหาโรคไข้เลือดออกในเขตเมืองได้อย่างตรงจุดและอย่างยั่งยืน

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CHAPTER I
INTRODUCTION

1.1 Background and Significance of the Problem

Hemorrhagic fever is a contagious disease caused by dengue viruses transmitted by Aedes aegypti mosquitoes. This disease arose in tropical area and near-tropical area of the world. (Holmes, E., Bartley, L., & Garnett, G. Krause, R., ed.:1998; Gubler, D.:1998) It is estimated that each year there are approximately 50-100 million people throughout the world that are affected by this disease. (Halstead, S.B.Gubler, D.J.& Kuno, G., eds.:1997; Monath, TP,1994) and it has been diffused rapidly for the past two decades. The primary cause is the increase of Aedes aegypti mosquitoes. (Gubler, D.J.Gubler, D.J. & Kuno, G., eds.:1997) It has been a new problem for big cities and the severity is inclined to increase due to the problem of rapidly increasing population, the increase of international commuters and the lack of efficient insect control. These problems contribute to the speedy dissemination of disease. (Page, R.D.M.& Holmes, E.C.:1998) Besides, it is also caused by environmental management resulting from the use of chemicals in controlling and preventing malaria and the change of mobilization of population of which these two factors bring about the insects' resistance to chemicals. (Greenberg, A.E., Ntumbanzondo, M., Ntula, N., Mawa, L., Howell, J., & Davachi, F.:1989; Loevinsohn, M.E.:1994; Lindsay,S.W.& Birley, M.H.:1996)

As for Thailand, the first report about hemorrhagic fever came out in 2501 B.E. in Bangkok-Thonburi. There were 2,706 patients and 296 deaths. After that the diffusion began from Bangkok to major provinces along high-ways e.g. Nakhon-sawan, Saraburi, Lopburi, and Nakhonratchasima; from municipalities to suburbs and there were reports of patients from every province throughout Thailand. In 2525 B.E. which was the first year of spread throughout the country, it was found that there were altogether 23,782 patients and 685 deaths. (Boonluan Phanthumjinda, 2526:25,175-183) and from

the record of epidemiology division in the past period of 30 years, it was found that in the first 10 years there was spread of hemorrhagic fever on alternate years; the second 10 years there was an acute spread in every 3 years; and in the last 10 years there was spread of two consecutive years plus one year free of spread. (Sumrong Khunavudh, 2540:1)

The age group with the highest sick rate was 5-9 years; subsequently was 10-14 years and lower than 5 years respectively. 1-2 % of the whole patients developed dengue shock syndrome and this rate increased from 1.0 % in 2525 B.E. to 2.0 % in 2531 B.E. (Department of Communicable Disease Control, Ministry of Public Health, 2532 :1,96-100)

In the year 2536 B.E., the report came out that there were altogether 67,017 cases of hemorrhagic fever patients tantamount to 114.8 sick rate per 100,000 population, an increase from 2535 B.E. of up to 612.0% considering the sick rate categorized according to age groups. The highest sick rate was found in the age group of 5-9 years (542.40 per 100,000 population) Subsequently was 10-14 years (334.80) 0-4 years (169.61) and 15 years or more (13.61) respectively. (Epidemiology Division, Ministry of Public Health, 2536:89) Besides, Epidemiology Division also received reports of 988 patients with shock syndrome, an equivalent of 1.5% within which there were 85 deaths or 8.6%

According to data in 2529-2535 B.E., it was found that most hemorrhagic fever patients were found in the north-eastern region or 40.0%; subsequently was central region 28.9%; northern region 18.6% and southern region 12.5% respectively. It can be said that hemorrhagic fever was much of a problem in central region with its second rank among other diseases in the country. (General Communicable Disease Control Division, Ministry of Public Health, 2536:5)

It is safely said that hemorrhagic fever is regarded as the crucial health problem of the country due to the continual spread of the disease until today. And as for the year 2540 and 2541 there were 169.13 sick rate nationwide and an increase to 211.42 per 100,000 population as compared to an average sick rate in 2537-2539 B.E. It was found that the sick rate was inclined to rise to 2.3 fold. The impact of the sickness causes death unless proper cure is applied in time which it was found that in the year 2540 B.E. the sick rate was at 0.25% and increased to 0.32% in 2541 B.E. The spread of the disease was found most pervasively in young patients of 5-14 years

and was up to 71% (Ministry of Public Health, 2543:1 cited in Saroj Marumdee, 2543:1)

From the 2543 B.E. report data summarizing the disease watch-out of the Epidemiology Division, Office of the Permanent Secretary for Public Health, it was found that the outbreak of hemorrhagic fever was mostly found inside the municipal region and sanitation district rather than outside the municipal region and sanitation district or in other words within the urban areas more than the suburbs. And from the history of the disease it was found that it broke out in the urban area before subsequently spread into the suburbs (Chawalit Thatsanasawang, 2532:343-344) As for Bangkok from 2541-2544 B.E. the sick rate was 176.37, 96.60, 92.25, 294.61 per 100,000 population respectively. (Disease Control Division, Health Office, Bangkok, 2543:7) a rate higher than what was determined by the Ministry of Public Health. Besides, hemorrhagic fever had always been a prime public health problem of Bangkok among the urban area communities.

According to the situation of the spread of hemorrhagic fever, it can be seen that the disease has still been a crucial health problem consistently for more than 40 years. However, it can be prevented by the prevention of mosquito bites and the control of the disease by demolishing the source of mosquito breeding which the Ministry of Public Health has consistently undertaken to control the disease; but the circumstance of the spread of the disease has not decreased up until now and in turn it has been found that the sick rate and the death rate is inclined to rise as mentioned above. Therefore, the most important thing is to implement the control and prevention of the disease by the capital method of correcting the origin of the spread of the disease, the eradication of common house mosquitoes which are the carriers of viruses which bring about the hemorrhagic fever to humans as well as the improvement of environment to get rid of the places for spawning and incubation of genus Culex. (the Ministry of Public Health, 2543:2) These things all occur from the deeds of human beings; therefore, to know the cause of mosquito breeds or the fact that those mosquitoes bite humans or the chances of being imposed to the risk of being infected by the disease, one has to realize the act of human beings by learning the experiences of human creation both physical and biological environment e.g. habitation, human relation, cultures that affect human behavior and the knowledge concerning the nature

of the disease; for example, disease itself, mosquitoes which are the carriers, etc., which is ecological study.

Ecologically, hemorrhagic fever is regarded as the disease which is there in the nature with common house mosquitoes as the carrier which brings about the cycle of natural infection. Human beings have our own way of living, maybe connected to nature, people or human creation. But the urbanization causes the change of physical and biological condition of the environment. There are numerous sources for mosquito breeding in towns. The accumulation of people is the best nutritious source for common house mosquitoes of which those changes occur from human deeds against nature with our living pattern and urban cultural values. The ongoing human behavior more or less boosts the cycle of the disease and contributes to the change of hemorrhagic fever ecology, making it easy to get in touch with the disease and the spread of hemorrhagic fever.

The review of literature in the context of urbanization leads to the discovery of it being another factor leading to the sickness problem of hemorrhagic fever because urbanization leads to the problem of overpopulation which brings about inefficient living. What comes after is that the surrounding area of some towns is full of refuse or rubbish from human hands. There are problems of the lack of infrastructure and public utility, housing problems, waste disposal, environmental problems, and fundamental service management problems. (Daranee Thawilphiphatkul, 2539) The most affected by this impact is the poor income-earners or the urban poor due to the deprivation of resources used to alleviate the impact from these problems by itself as those with higher income. From the study of the spreading characteristics of hemorrhagic fever in Myanmar, it was found that urban population suffered from the disease among the higher, moderate and lower classes differently – those who came from higher and middle classes underwent up to 3 fold lower rate of sickness than those who came from a lower class. (Thang U., 1975)

It was obvious that sickness from hemorrhagic fever related to various urban problems. Studies found that physical ecology of houses and communities was contributing factors of sickness from hemorrhagic fever e.g. condition of community location, population density per household or even the health and sanitation state within the home; these are all able to result in hemorrhagic fever. Studies also found

that there was the difference between the size of the family and the outbreak of hemorrhagic fever in the area of dense urbanization. Large families tended to suffer from the disease more than small families. (Suphorn Chunhawutiyanonda, 2532) and also people who lived in dim housings related to higher risk of sickness than those who lived in partially closed or absolutely open houses. (More S.D., 1986: 197-209) The construction of buildings which must be done most economically and worthily due to the high cost of land and unplanned mapping of the town makes the overall physical and biological environment of the town congested with disorderly constructed buildings with bad sanitation; or at times to know about the outbreak of the disease without a way of curing the environment owing to the spatial restrictions, rights problems or uncared for government obligations forces people to live in inappropriate places for living putting them in the risk of receiving the viruses of hemorrhagic fever. These things are the causes of the spread of hemorrhagic fever.

Furthermore, it was found that another important factor came from socio-ecological factor and urban way of life since urban people have different way of lives of competition for the sake of survival or for a higher social status or even for a desired target. A formal society without hospitality and kindness makes a different living behavior e.g. certain groups of people work at nighttime and sleep during the day, other groups rush out at dawn leaving children with old people or nurseries. These things contribute to the sickness from hemorrhagic fever. The sheer fact that families have to work and each has a different path leaves nobody at home. Shutting the houses at daytime and the lack of care for the prevention and control of the disease around the house or of the communities and especially the behavioral maintenance of water for later use of the population can be regarded as the most important factor leading to the spread of hemorrhagic fever, which from the study of Boonluan Phanthumjinda (1978) it was found that factors contributing to a wider spread of the fever were the need for water, the lack of consumptive water, the popular need for rain water, etc., making the people reserve the water in the jar or any containable utensil for later use, thus a source of mosquitoes breeding.

Therefore it can be seen that the lives of people living in urban areas and urban ecological factor should result directly in making a person be in touch with mosquitoes which are insects of hemorrhagic fever; thus leading to him being sick

with this disease. And from review of the literature it was found that nowadays in Thailand most studies dealt with quantitative research which studied statistical relation, there had not been qualitative research which studied hemorrhagic fever in an urban ecological context which comprised physical environmental factor and social environmental factor. There was a lack of cultural perspective or other context, a lack of bringing urban people's lives into consideration to explain the outbreak of the disease in an overall picture that related to each other which would explain the interrelation of encounters that led to a person's risk of receiving the disease and led to the disease being inclined to pass on to the person. And so in order to be able to explain the phenomena in a multi-faceted manner, the researcher is interested in studying the people's lives and urban ecology which related to the sickness from hemorrhagic fever in anthropological perspective so as to bring the result of the research into use to control hemorrhagic fever in a proper manner with the social and cultural context.

1.2 Research Questions

This research question is in what manner and how much does the ecological context and socio-cultural and economic way of life of the people living in urban communities relate with the chances or risks of the spread of hemorrhagic fever?

1. How does urban ecological environment relate to the spread of mosquitoes breeding sources and how much? And how does it cause the problem and obstacle in implementing the measures of controlling the carrier of the disease?

2. Do socio-economic condition, daily life behavior, earning a living, settlement as well as social relation of the people in communities relate to the risks of getting hemorrhagic fever and in what way?

3. What socio-cultural, behavioral and economic condition affects the emergence of ecological environment and way of life that run the risk of getting infected by that hemorrhagic fever disease?

1.3 Objectives

1. To study urban ecological environment which relates to the spread of mosquitoes breeding sources and causes the problem and obstacle in implementing the measures of controlling the carrier of the disease.

2. To study the socio-economic condition, daily life behavior, earning a living, settlement as well as social relation of the people in communities which relate to the risks of getting hemorrhagic fever.

3. To study socio-cultural, behavioral and economic condition which affects the emergence of ecological environment and way of life that run the risk of getting infected by that hemorrhagic fever disease.

1.4 Definition

Urban ecology means environment that is made up to be urban nature. It is categorized into 3 types : biophysical environment e.g. weather condition, geography, habitat, construction, building, etc. social environment e.g. family component, age role and responsibility, social institution, etc. and cultural environment e.g. norm, tradition, belief, symbol, value, values, sickness form explanation, etc.

Hemorrhagic fever preventive behavior means hemorrhagic fever preventive and control behavior in the house e.g. mosquitoes prevention behavior, chemicals spurt, fan blowing, overturning water utensils, etc. and community participatory behavior in controlling common house mosquitoes breeding sources e.g. community refuse disposal, etc.

Social relation means people's relation in the community both formal and informal which has an effect on the control of mosquitoes breeding sources and the risk of getting infected with hemorrhagic fever which comes from the connective condition of the population e.g. relativity, visiting, and neighborhood, helpfulness, etc.

Water usage behavior means behavior relating to the usage of water, water accumulation, water containment, water nature, or others which have an effect on the spread of mosquitoes.

Risks of getting hemorrhogic fever means a chance to receive dengue virus through striped mosquitoes leading them to have dengue hemorrhogic fever.

1.5 Anticipated Research Benefits

1. To know the urban ecological environment which relates to the spread of mosquitoes breeding sources and causes the problem and obstacle in implementing the measures of controlling the carrier of the disease.

2. To know the socio-economic condition, daily life behavior, earning a living, settlement as well as social relation of the people in communities which relate to the risks of getting hemorrhagic fever.

3. To know socio-cultural, behavioral and economic condition which affects the emergence of ecological environment and way of life that run the risk of getting infected by that hemorrhagic fever disease.

4. To serve as a guideline in setting out plans for those concerned in correcting the problem of hemorrhagic fever in accordance with the condition of socio-cultural and spatial context as well as to serve as a guideline in studying research in order to develop other qualitative research in the work of controlling hemorrhagic fever disease.

CHAPTER II
LITERATURE REVIEW

This research is a study of people's pattern of lives and urban ecology which relate to sickness from hemorrhagic fever of a community in Bangkok. The researcher has studied the concepts, theories as well as various relating and similar literature to form the research study guidelines as such.

1. concepts about ecology and the spread of hemorrhagic fever
2. ecology concepts and the outbreak of the disease
3. ecology and the outbreak of hemorrhagic fever
4. concepts about urbanization in developing countries
5. relationship between way of life and urban ecology and the outbreak of hemorrhagic fever

2.1 Concepts about Ecology and the Spread of Hemorrhagic Fever

2.1.1 Concepts about the spread of hemorrhagic fever

Hemorrhagic fever has the cause from viruses which are contacted by infected common house mosquito bites. Common house mosquitoes extend their breeds in still clean water, unlike the malaria-carrying mosquitoes which extend their breeds along the brooks, creeks, canals, marsh, etc. Common house mosquitoes prefer to live in the cities, in houses and areas like water containers, jars or any other water-carrying utensils made by humans. Hemorrhagic fever occurred mostly in Southeast Asia. It is contacted by Aedes aegypti which carries the disease from those infected to other normal human beings. Such disease often gives the patient fever, shake, headache, skin rash. Furthermore, it also includes other symptoms like fatigue, strengthlessness and inability to work in a normal occupational manner. It is found in the occurrence of hemorrhagic fever that it occurs in a low rate in infants; however, it

can be said that the infection of the disease threatens the health and sanitation of population especially those in childhood.

It appears that hemorrhagic fever has spread overseas and it is believed that the first outbreak occurred in 2323 B.E. in Philadelphia, U.S.A. (Boonluan Phanthumjinda, 2526:175) Hemorrhagic fever is discovered by a Japanese doctor named Kitano and a Russian doctor named Smorodinslev in 2487 B.E. while it was spreading in areas around Amar River which ran through Manjuria and Eastern Siberia. Later in June 2494 B.E. it spread again in Korea war peninsula, making the United States interested in the disease since it happened in the army of the Americans. Since then there had been additional reports from Europe, Russia, and Philippines. Hemorrhagic fever first occurred in

The Philippines	2497 B.E.
North Vietnam	2501 B.E.
South Vietnam	2503 B.E.
Singapore and Penang	2503 and 2505 B.E.
India	2506 B.E.
Cambodia	2504 B.E.

As for Thailand, previously it has been diagnosed that acute influenza of an unknown cause occurred in 2497 B.E. in pediatrics, Faculty of Medical Science and Siriraj Hospital called Influenza with Circulatory Collapse and Influenza with Thrombocytopenia. However, there was enough evidence to presume that hemorrhagic fever in childhood in Thailand had occurred long time ago but never did it manifest the symptom of sickness or death up to the degree that it had become the outbreak. Besides it was difficult to diagnose the disease as clinical entity since there was no laboratory to prove the virus then.

Until 2499 B.E. doctors observed clearly from the symptom of the disease that it was a clinical entity and named the disease for the pediatrics, Faculty of Medical Science and Siriraj Hospital as Acute Hemorrhagic Fever, judging by the symptom of the disease.

Later in 2501 B.E. the disease spread enormously for the first time in Bangkok while in Thonburi the disease appeared on and off invariably but mostly in

the rainy season. The University of Medical Science therefore had the chance to seriously research about it with the government of Thailand inviting Prof. Hammon of the University of Pittsburg in Boston, U.S.A. to research about the disease and named it Thai Hemorrhagic Fever.

Later on Doctor Masami Kitaoka of the Institute of Public Health, Japan was invited to do another research the result of which Prof. Hammon separated virus dengue from the patient and Aedes Egypti mosquitoes while Doctor Masami Kitaoka separated Virus Chikungunya.

In the outbreak in 2501 B.E. there were approximately 2,500 children who received treatment in the hospital and over 200 deaths causing alarm among the population and Thai public health. This disease spread every year in the rainy season after 2501 B.E. but never was it acute as this year.

Later in 2505 B.E. this disease spread largely again and occurred in children under 13. There were patients in Bangkok and Thonburi who received hospital treatment in 17 hospitals altogether 3,774 cases and 187 deaths tantamount to 99.7% of the whole patients and 4.7% deaths among the patients. Other than that there were patients from suburbs which numbered. (Chawalit Thatsanasawang, 2532:433-434)

Hemorrhagic fever is one important cause of children's deaths especially in countries of the tropical zone or their neighbors. (Halstead 1980) especially countries in the Caribbean Sea which insisted on the rate of hemorrhagic fever since 2528 B.E. and even with numerous reports of the disease in American continent especially in Brazil, Colombia, Mexico, and Puertorico, today it is discovered that there is an increase of patients of this disease one reason of which is the concern of health officials which makes it possible to discover the disease efficiently especially in big cities. (Gordon 1989)

As for Thailand hemorrhagic fever is found in children between the ages of 5-9 (Somphob Ahantharik, 2542:159-176) In adolescents and adults it can be found sporadically with insevere symptoms (Surakiet Achananupharb, 2531:271) The youngest patient is found at 7 months and the oldest at 32 years. (Jurairat Wattana, 2528:486-497) The spread is on alternate years or two-year intervals. (Kamnuan Ungchoosak, 2531:288)

The symptoms of hemorrhagic fever patients consist of 4 distinctive features : 1) abrupt high fever 2) skin bleeding 3) bulbous liver 4) shock from malfunction of blood circulatory system. Laboratory inspection which distinguishes the disease from other diseases is called high Hematocrit due to plasma infiltration from blood vessels bringing about the condition of blood concentration. (Prasert Thongcharoen, 2520:27)

When first receiving dengue disease, the patients adopt the symptoms like those of influenza mostly with no symptom of bleeding or any acute symptoms. Later on the second reception of disease which may be the same dengue disease or a different type of disease from the previous time, the patient may suffer from brittle veins and low bloodflake which contributes to plasma infiltrating from blood vessels and easy bleeding causing the state of shock. The latter infection of disease which causes such acute symptom tends to occur 6 months to 5 years after the first infection. Therefore, acute hemorrhagic fever is inclined to occur in children of 2-6 years rather than children of other ages.

The on-going process of epidemiology comprises 3 important joint factors :

1) Susceptible host

2) Agent

3) Vector

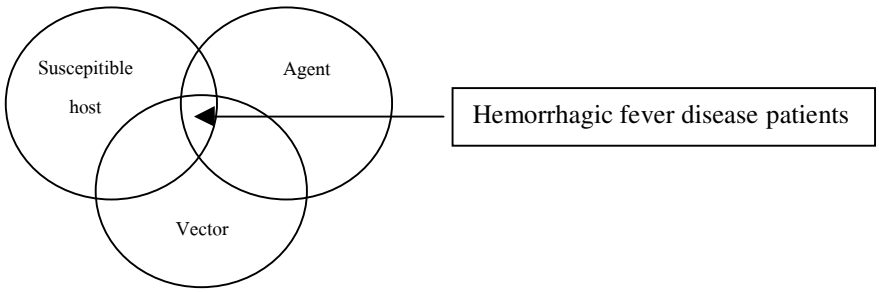


Figure 1 Shows the interrelated nature of the occurrence of hemorrhagic fever.

1) Susceptible hosts

are people of all ages, genders, and risk population i.e. people of 7 months to 15 years of age. The occurrence of hemorrhagic fever disease in 2541 B.E. proved that people of 15-19 years were inclined to get infected increasingly. Among patients

who sought treatment at children's hospital, the youngest was 50 days old. The white tended to have higher immunity than the black and Asians. The rate of occurrence of the disease between females and males was no difference significantly statistically but in terms of the acuteness of the disease, women suffered more severe symptoms and were subject to deaths more than men. The age group with initial times of spread was mostly between the ages of 2 and 6 and later of 5 and 9.

2) Agents

There are two types of agents : Dengue virus serotype 1,2,3,4 and Chikungunya. About 90-95% of hemorrhagic fever disease patients in Thailand are infected by Dengue virus; 5% are infected by Chikungunya virus. Another 5% are infected by both types of virus. Therefore, the disease is caused by the infection of Dengue virus which once entering into a human body after that person is bitten by an infected mosquito, 4-6 days are needed for the disease to grow before causing the symptoms. The virus is in the blood of the patient not more than 5 days after the sick symptoms take place. Such virus in the blood can be carried onto a new mosquito and it takes 8-14 days for the disease to develop inside that mosquito before it can transmit the disease to another person. After Dengue virus enters a mosquito, the disease will be in that particular mosquito for 52 days or the whole life span of that common house mosquito.

3) Vectors

3.1 Mosquitoes

Vectors of hemorrhagic fever disease in Thailand are Aedes aegypti and Aedes albopictus which are mosquitoes in Subfamily Culicinae. Both types of common house mosquitoes prefer to bite and suck human blood in the daytime (Diurnal Feeding) and search for its diet 2 times a day – before and after noon. The biting of A. aegypti mosquito depends on the temperature of each season; appropriate temperature is 28-35 degrees Celsius.

3.1.1 Aedes Aegypti Mosquitoes : Female mosquitoes like to suck human blood. (Anthropophillous) and prefer blood of an indoors person. (Endophillic) which is different from A. albopictus which prefers mammal blood. (Zoophilous) and prefers to bite an outdoors person. (Exophilic). A bred female A. Aegypti, a male's sperm is kept in Spermatica pore and a chemical called Matrone is

generated which is Polypepti which stimulates the development of spawn and stops the desire of repetitious mating. The male mosquito can breed up to 17 times but its sperm can infect a mosquito spawn at the first to the third time only. A female mosquito after 1-2 days of being born breeds with a male and afterwards sucks blood and 3-4 days after that starts to lay the first set of eggs. The cycle of blood-sucking and laying of eggs takes a minimum of 2-3 days. After blood-taking, a mosquito's egg is developed before being laid. The whole life of a mosquito allows more than 700 laid eggs in 62 days even with only one breeding. A female common house mosquito can live for approximately 60-102 days; a male with a rather short 4-30 days.

Rain water is often water that common house mosquitoes like to lay eggs on the most; therefore, their breeding sources are mostly along drinking jars and uncovered used water both inside and outside the house. Other than jars, there are other vulnerable utensils like cement well in the bathroom, ants-preventive cabinet saucer, tree pot saucer, vase, feet-washing bowl, car tire, earthen pot, drinking water utensil for pets, utensil fractured pieces e.g. broken jar, can, coconut shell, etc.

The result of the survey on breeding sources of common house mosquitoes in natural habitats and examples in the operational laboratory found that mosquito larva and common house mosquitoes can survive and develop into adulthood without being fed and common house mosquitoes' farthest distance from house was 10 meters. (Prakong, 2514 cited in Department of Medical Sciences, Ministry of Public Health, 2544) Survey of breeding sources of common house mosquitoes in Bangkok-Thonburi found that water containers which could possibly be mosquitoes' breeding sources were jars both indoors and outdoors 64%, ants-preventive saucers 18% and other utensils 18%. The average mean for water container per household was 5 and 20% with larva and mosquitoes the whole year. Larva and mosquitoes in water containers in the second half of the year outnumbered those in the first half of the year except ants-preventive saucers which could be found throughout the year with 63.5% while common house mosquitoes could be found in jars 30-35% (Prakong and Boonluan, 2519 cited in Department of Medical Science, Ministry of Public Health, 2544)

3.1.2 Aedes Albopictus Mosquitoes : prefer animal blood to human blood (Zoophious) blood outside of house rather than inside (Exophilic) and

could transmit dengue disease as well as A.aegypti. But with animal blood-sucking habit and roaming instinct, the problem of hemorrhagic fever disease can be prevented. This kind of mosquitoes can be found in areas with bushes and trees in rubber groves, orchards, etc. Breeding sources are outside of home e.g. bracts of coconut, banana, lily, caladium (Araceae), rubber liquid saucer, hollow of trees, coconut shells, water-contained bamboo shoot, etc. As for most breeding sources in schools, it was found that they were of cement wells in bathrooms and vases of betel vines with general life-cycle similar to that of A.aegypti mosquitoes.

3.2 Biting behavior

Generally genus Culex or common mosquitoes roam for food during the day, bite more in the morning than in the afternoon. But if during the day they do not suck blood or suck inadequately, they may roam for more blood at twilight if there is enough light in that room or that area. However, they still bite the whole day. Some reports indicate that the best time for them to roam for food is 9.00-11.00 hrs. and 13.00-14.30 hrs. Other reports indicate differently, say, 6.00-7.00 hrs. and 17.00-18.00 hrs. But all these, it depends on what season the study is conducted and also it is found that common house mosquitoes like to bite people inside the house while common yard mosquitoes like to bite people outside the house; only a few come in and bite inside. Genus Culex don't like sunlight and strong wind; therefore, they roam for food not far from their breeding sources. They basically fly not farther than 50 meters each time. (Department of Communicable Disease Control, Ministry of Public Health, 2545 : 32)

In the winter the maximum biting frequency which happens in the afternoon happens faster than in the rainy and hot seasons supposedly because there is the change in the period of time during the day. The minimum biting rate is in January and maximum in March which is related to the discovery of the abundance of hemorrhagic fever disease in March and the spreading phenomena in May up until September. After the hike in biting rate for 2 months and the discovery that the eaten blood comprises both old and new blood, it is shown that common house mosquitoes suck many times (Multiple feeding) before it reaches the cycle of egg production; making it possible for mosquitoes to spread the virus and at the same time male mosquitoes can cling onto human beings as well as female mosquitoes which

manifests that human beings can attract mosquitoes of both genders probably by visible factors like sunlight, darkness or chemical factor, etc. Common house mosquitoes start to suck blood after it evolves from larva approximately 36 hours and later breed and lay eggs 96 days after turning into mosquitoes. (Yasuno & Tonn, 1970) and in the year 2519 B.E. it was reported that the average biting rate in the vicinity of Bangkok-Thonburi was 4.8-7 mosquitoes per person per hour. (Prakong and Boonluan, 2519)

The study of biting behavior of Ae.Aegypti, Ae. Albopictus and Ae. Scutellaris in Nonthaburi found that Ae. Aepypti prefers to bite indoors while Ae. Albopictus and Ae. Scutellaris like to bite outdoors. The most preferred victims are humans. The inspection of blood by Preciptin test found that Ae. Aegypti eat human blood 94%; Ae. Albopictus 78% and Ae. Scutellaris 74%. As for other types of victims like dogs and cats (Phan-urai, 1970) it was found correspondingly with the study at Samui island that the biting habit of Ae. Aegypti is that of endophagic while Ae. Albopictus is that of exophagic. (Gould et. al., 1970) Genus Culex which bites humans and is caught inside the house is common house mosquito 75% and common yard mosquito 25% while genus culex which bites humans and is caught outside the house is common yard mosquito 99%. (Thavara et. al., 2001)

Genus Culex likes to bite people who wear dark-colored clothes rather than light-colored ones, especially red, black, blue and green.

3.3 Laying eggs behavior

Factors relating to the laying of eggs of Genus Culex are many; for instance, physical attributes and surface humidity as well as water quality in the utensil. Genus Culex likes to lay eggs on wet surface rather than on the water surface itself; on bumpy surface rather than smooth surface. Studies found that Genus Culex lays eggs on water surface 10-20% (Usawadee et. al., unpublished) The color intensity of the water and living beings in the water has an influence on attracting mosquitoes to lay eggs; however, how many eggs will mosquitoes lay in the utensils depends on the physical characteristics of the utensil surface. It is discovered that Genus Culex likes to lay eggs in dark-colored water utensils without distinction among green, red and brown. (Williams & Delong, 1961)

Genus Culex tends to lay eggs before sunset. The water condition preferred by it is rather lucid whether it is clean or not e.g. water with leaves, water in the car tyres, etc. Eggs can be in dry weather for several months. From dissecting the oval of the mosquito, it is discovered that throughout its life, Genus Culex lay eggs 2-4 times, the number of eggs approximately 100 each time; therefore, throughout its lifespan it can lay about 200-400 eggs.

The result of the study of egg production of Genus Culex in rainy season, winter and summer by the technique of Mark-Release-Recapture, it is found that in dry winter the duration of egg production is longer than other seasons. Generally duration of egg production (Gonotrophic) is between 2.5-3.5 in all three seasons. In rainy season and hot season one-day mosquito suck blood 68.1% and 59.1% but in winter it is less than 41.6%. Also it is found that blood-sucking is no relevant to breeding but to egg-laying that is egg-laying happens 3 days after the blood is eaten depending on the weather. In rainy season the duration from becoming mosquito and egg-laying is 81 hours which is shorter than in winter and summer (93 hours.)

After the first laying of eggs Genus Culex starts its sucking for the second time. The study found it lay eggs and eat new blood in summer the most which is different from in winter where it is rather rare to find Genus Culex eat blood for the second time. The duration of the two laying is about 3 days. Blood-sucking and laying of eggs is controlled by Circadian system which functions similarly to biological clock which works inside the body of the mosquito. This system is stimulated by external environment e.g. the change of day to night and the mosquito's physical factor i.e. hormone. (Pant & Yasuno, 1970a)

Studies of Genus Culex's habitat in Bangkok found that during the day it basically hang around clinging objects. Less than 10% cling on walls. Female mosquitoes are near male in numbers. Besides it is found that Genus Culex population before 14.30 hrs. is 4.5 times the number of it after 14.30 hrs. (Pant & Yasuno, 1970b) The result of the study of female Genus Culex's habitat in Rayong province found that it clings onto hanging clothes 66.5%, mosquito net and rope 15.7% line or rod and electric wire 5.5% furniture 4.4% utensils 2.6% wall 2.5% and other materials 2.8% (Somkiat and Bunyong, 2529)

3.4 Flying range and flying speed

Mosquito's flying range is restricted by internal factor of the mosquito e.g. muscle growth, diet, age, breed and environment like sunlight, wind, temperature, etc. Reports show that common house mosquitoes cannot fly long distance, approximately 30-400 meters. Common yard mosquitoes fly farther, up to 600 meters within 10 days.

In calm weather of approximate velocity of 30-40 cm./second, an undigested Genus Culex flies with the velocity of approximately 50-100 cm./second. Average flying speed equals 50 cm./second. Male mosquitoes fly faster than female. Highest speed is 150 cm./second. (Christophers, 1960)

Insight on the bio-habit of Genus Culex makes us aware that it is inappropriate to control it by spurting chemicals with sediments onto drainage pipes but ought to be applied to its habitat inside the house and should be in the daytime when it flies for food. In eradicating mosquito larva and mosquitoes, it is also advisable not to concentrate on the sources of dirty water or drainage pipes any longer because chances of being their breeding source are scarce. Important breeding source is contained utensils around the house.

It is known that common mosquitoes have their breeding source generally in almost every household. They are the carrier of dengue disease. Laboratory results found that common house and common yard mosquitoes are able to transmit dengue virus from mother to child (Transovarian transmission) It is therefore undoubted as to why hemorrhagic fever remains a prime problem of public health. (Department of Medical Sciences, Ministry of Public Health, 2544:17)

3.5 Survey on Genus Culex

The survey on Genus Culex has the objective of knowing whether that area has mosquitoes and how much is the density of mosquito population. Besides, the survey let us know how geographically dispersed it is. It also informs us of the capital habitat of larva which entomological data derived from the survey can be considered to know the risk factors of the spread of hemorrhagic fever disease in the area in order to inspect the durability of mosquitoes towards the used insecticide. Moreover, the data are useful in monitoring the working performance, disease control efficiency appraisal and supporting the planning of operation, of usage of proper insecticide, etc.

It also serves as the information to support the consideration of disease control to correspond to each area problem.

3.6 Breeding source and density

Measurement of mosquito larva and common mosquitoes density has always been conventional method. In the survey, samples of larva has been collected from its habitat which wastes the time and is difficult to implement. WHO/ARU which is Aedes Research Unit of WHO has therefore figured out a new method to measure the density of mosquitoes called Single-larva method. This is by collecting samples of larva from its breeding source each for each utensil, making it less time-consuming for the survey and better work efficiency.

In 2509-2510 B.E. a mosquito larva and common mosquitoes habitat survey was conducted in 14 areas in each seasonal period in order to study the relationship between mosquito population and the occurrence of hemorrhagic fever. WHO/ARU has divided common mosquito habitats into 6 categories.

Contained utensils inside the house

1. water-contained pot inside the house
2. ants-preventive cabinet saucer
3. other water-contained utensils e.g. concrete well in the bathroom, flower vase, plant pot saucer, water bottle, fridge and air-conditioner tray, etc.

Contained utensils outside the house

1. water-contained pot outside the house
2. other water-contained source e.g. water-filled concrete well for washing feet, recycled oil bucket, can, fractured jar, fractured cup, pot, spiritual house vase, trough, gutter, car tire boat, rubber cup, etc.
3. natural utensils e.g. hollow of a tree, coconut shell, leaf core, fruit peel, bamboo shoot

Survey on the density of common mosquitoes can be done in various ways in every phase of life cycle from the survey of their abundance, survey on eggs, survey on larva, survey on mosquitoes on their middle stage. To choose which phase of survey of the mosquitoes life cycle and which method depends on the objective of the

survey. Generally it should be a simple way without costs and convenient in operation.

From single-larva method survey and gather data for calculation to find the number of larva and mosquitoes in 100 households and compare the data in each area and in each season, it is found that the number of breeding sources differs significantly when area varies. But data are slightly different when season differs. It is found that the number of breeding sources increases slightly when it changes from winter to summer and decreases when it changes from rainy season to winter. However, the spread of hemorrhagic fever cannot be explained only that it occurs from the increase of Genus Culex in rainy season since there are other relevant factors.

3.7 Larva and mosquitoes survey index

3.7.1 House Index or Premise Index (HI) means house percentage of larva discovered by the survey in result analysis. HI>10 is considered area highly risky of hemorrhagic fever disease while area with low risk HI would be lower than 1

3.7.2 Container Index or Receptacle Index (CI) means number of utensils by percentage of larva discovered by the survey. House Index and Container Index was first used by Corner & Monrae in 2466 B.E.

3.7.3 Breteau Index (BI) means number of utensils discovered with larva by the survey in 100 houses. This figure was presented by Breteau in 2497 B.E.

Among the three indexes, Chan summarized that Breteau Index was the best index because it let us know the density of Genus Culex relevant to the number of houses since it included House Index and Container Index. In general analysis BI > 50 and was considered high risk area while BI < 5 was considered low risk area.

However, these indexes indicate only the frequency of discovery; the exact number of larva was not known.

3.7.4 Laval Density Index means number of larva discovered by the survey per house presented by Chan (1985) This index corresponds with House Index and Breteau Index but not with Container Index, making Chan ponder that Container Index should not be used when watching over Genus Culex.

3.7.5 Stegomyia Index means number of utensils discovered with larva by the survey per 1,000 population presented by Bang et. al. (1981) which related number of utensils with number of population which was a disadvantage in epidemiology but in practice uncertain information was usually obtained by this method.

3.7.6 Larvitrap Density Index means number of larva discovered by the survey in larvitrap which was made of black condensed milk can punched near its lid covered by a cloth to filter egg or larva. In this survey, half of the water was filled into larvitrap and it was laid in proper places around the house. Larva and mosquitoes in their middle stage were inspected every week. This method was useful for surveying larva and mosquitoes in areas with low mosquito density.

3.7.7 Stegomyia Larval Density Index means number of larva per 1,000 population. This figure indicates the relationship between mosquito population and human population. (Department of Medical Sciences, Ministry of Public Health, 2544:19-20)

2.1.2 Epidemiology of Hemorrhagic Fever Disease

1) Occurrence of the disease

Studies of the trend of sickness rate reported in 2531-2542 B.E. found that the sickness rate was inclined to increase constantly despite the fact that in 2533-2535 B.E. it was inclined to decrease. On the whole, it was the problem of the whole country's public health only that the problem reduced in its severity.

As for the inclination of the death rate, the data in the same period found that it was less inclined only gradually which showed that the death toll did not decrease distinctively. Some years it might increase but compared to the population in that year which skyrocketed, it seemed that the death rate had decreased.

The same data revealed that death rate inclination from the past to present had obviously and variably decreased from approximately 10% in 2501 to 3% in 2513 B.E. and to 0.2 in 2542 which showed that public health development had respectively been better until patients who was diagnosed of this disease received treatment in time; able to reduce or prevent death compared to the constantly increasing number of patients. Another thing was that the general public paid interest to the sickness, able

to get the sick to receive treatment in time as well. Nevertheless, this disease still was the prime problem which deserved management by the public health even though the trend of sick rate was still high. The trend of death rate had not changed much and the severity of the problem started to decrease. Besides, hemorrhagic fever disease remained a public health problem of various countries in Southeast Asia.

2) Dispersion of the disease

2.1) individually

Hemorrhagic fever disease occurs both in female and in male. Chances are equal. Patient reports from 2529-2535 B.E. found that most patients were in 5-9 age groups equal to 45.2% Subsequently was 10-14 years 25.1% and 0-4 years 19.4% respectively. The disease was found especially less in patients of 15 year or so age group – only 10.3%

2.2) time

Patient reports from 2529-2542 B.E. found that each year there was only one time of spread (PEAK); therefore, it can be said that this disease is seasonally variable. (Seasonal Variation) with patients found from May of each year and the most would be found in July of each year. After that the figure would decrease till October and decrease respectively until February of the following year.

2.3) place

Patient reports from 2529-2542 B.E. found most hemorrhagic fever disease patients in northeastern part equivalent to 40.1% Subsequently was central region 28.9% northern region 18.6% and southern region 12.5% respectively.

There are reports of patients both in the urban area and suburban area whereas the suburban area number of patients rises probably because urban characteristics has expanded into the suburb until semi-urban societies develop prevalently. Besides, it is found that in the urban area there are constant reports of patients throughout the year while suburban area reports of sickness are high particularly from May to November.

As for the present, there are no strategies in terms of immunity which can control hemorrhagic fever disease; therefore, there are merely techniques of preventing and controlling by controlling the source of the disease i.e. spurting of insecticide, controlling of breeding sources to minimize the number of Aedes aegypti or other methods like usage of chemicals to cover the net, which because of the failure

of such implementation, public health administrators have turned to look at the house and community environment to instill the sense of understanding of the control of disease.

2.2 Ecology Concepts and the Outbreak of the Disease

2.2.1 Ecology Study with Cultural and Biological Significant Features

For the past decades, medical anthropologists have tended to pay attention on social and cultural factors which have an effect on medical science and public health by neglecting absolutely the ecological factor. Until early 2500s many academicians in this field have turned their interest more on biological factor e.g. Alland, Livingstone, Wiesenfeld, Dunn, McCrakan (Alland, 1966, 1970; Livingstone, 1958; Wiesenfeld, 1967; Dunn, 1968; McCrakan, 1971 Cited in Benja Yoddumnoen et.al., 2529: 19-24) and many others.

According to this concept, ecological characteristics are directly related to the outbreak of the disease which is considered dependent variable – the study of how biological factor, cultural pressure and environment have an impact on the outbreak of the disease. What are some of the independent variables (like socio-cultural characteristics, perception and insight into the cause and effect of the occurrence of the disease in that particular community) and how do they impact on the health and sanitation of the people. Anthropologists call this kind of study differently e.g. dynamics of health status, ecology, medical ecology, epidemiology, social epidemiology, etc. Alland, 1966 defined this kind of study "ecological study that utilizes cultural and biological significant features as calculative measures" the study of which relates to the occurrence of the disease has been neglected for a long time both in research and anthropological theory. (Scotch, 1963)

McCrakan expanded the meaning of ecology to a wider degree by putting an emphasis on cultural conditioning e.g. the problem of why more people turn to drink milk. McCrakan attempted to explain that the reason why people did not drink milk was not only that of cultural factor (consumptive habit), but also bio-cultural factor; therefore, the fact that more people turn to drink milk, bio-cultural factor played quite a large role. Studies of lactase deficiency in many ethnic groups to prove this

assumption, McCrakan found that lactase deficiency was a prevalent condition found in previous society before people learned to rear animals and to milk. And when changes of eating pattern occurred by an increase in the consumption of flour and sugar to reduce the rate of lactase deficiency in general, this in turn resulted in certain cultures and behavioral practices that helped certain people in the society develop a body that endured lactase deficiency. To put it in a clearer perspective, McCrakan's study supported the concept that the fact that a community's population learned to produce and drink milk for a long time resulted from high rate of lactase deficiency which was the study of cultural evolution and traditional practices with related to (or had an impact on) population's biological features and utilized ecological study with biological and cultural features as indicators.

2.2.2 Ecology and Infectious Diseases

Anthropological research work concerning infectious diseases relating to ecology tends to emphasize and focus on agent and host under ecological system. It can be said that at present there is an attempt to do an anthropological research by focusing on infectious diseases in order to reduce the gap and turn to look at the outbreak of diseases in a wholly manner. The focus on such research on contagious diseases by using anthropological research work has 4 objectives : 1) Infectious diseases coexist with human beings invariably as choices of biology and characteristics of the outbreak of diseases in each breed 2) The dispersal of infectious diseases relates to human behavior as a result of ecology because the disease evolves as part of the ecological system. 3) Infectious diseases reflect the suffering and death of human beings which is inherited and such suffering should be analyzed from perspectives in different degrees including ecologically. 4) Medical anthropologists should apply medical biological research study on the expectation that it can control infectious diseases and provide health services efficiently; however, such research study should not be restricted to only one perspective.

As for the first research study concerning infectious diseases and is of anthropological research seems to be that of May which is relating to the ecological of human disease which attempts to combine environmental issues both physical and socio-cultural in order to be used to study the problems arising from infectious

diseases. May has developed a model from physical environment, the outbreak of the disease. Human beings who are the host of the disease have cultural behavior, this concept of which shows that human beings cannot adjust ourselves to the environment; for example, research study on the contact of Malaria in Northern Vietnam which results from environment and culture.

May's research work results in those who attempt to study and research in the same manner like Audy who is a practitioner on human behavior and environmental factor relating to the spread of Scrub typhus disease by explaining that this disease occurs physically, chemically, infectiously, psychologically or social arousers which counteract with individual adjustment or adjustment of population toward environment. Apart from what is said above, it is found that Dunn is another person who develops the concept of Causal assemblages which bring together factors of environmental complicity, host biology, and host behavior to be studied about the outbreak of the disease or the control of dispersal of the disease especially in the study about Aborigines in Malaysia which Dunn has shown that both environmental factors (altitude, temperature, soil, behavior of animal scavengers) and human behavioral factors (earning-a-living, types of houses, community change) relate to and have an effect on parasite infection rate.

Dubos' study which deals with new technological impact on ecology both in agriculture, manufacture, or medicine; on unbalanced ecological system particularly the study of Hughes and Hunter which indicates that the construction of dams, land fill-up, construction of roads, resettlement in a third world country are all part of the reasons which bring about the spread of infectious diseases rather than other factors.

Harkness and Super's is another person who has developed the concept by creating a model from anthropological, psychological, bio-ecological theories with theoretical concepts and perspectives that human beings and environment are interactive systems which enables us to see the advantages of the relationship between physical and social characteristics of households which relate to the building of household's ecological pattern and result in the dispersal of the disease. The study of household's ecological system toward the outbreak of infectious diseases, Coreil J., Whiteford L. and Salazar D. have developed a paradigm to explain the relationship between household's ecology and the outbreak of infectious diseases which consists of

3 behaviors that relate to the occurrence of the diseases i.e. risk behavior, transmission behavior, and risk protection and have applied 3 household's environmental characteristics into the consideration : biophysical environment, social environment, and culturally constructed environment as shown in figure 2.

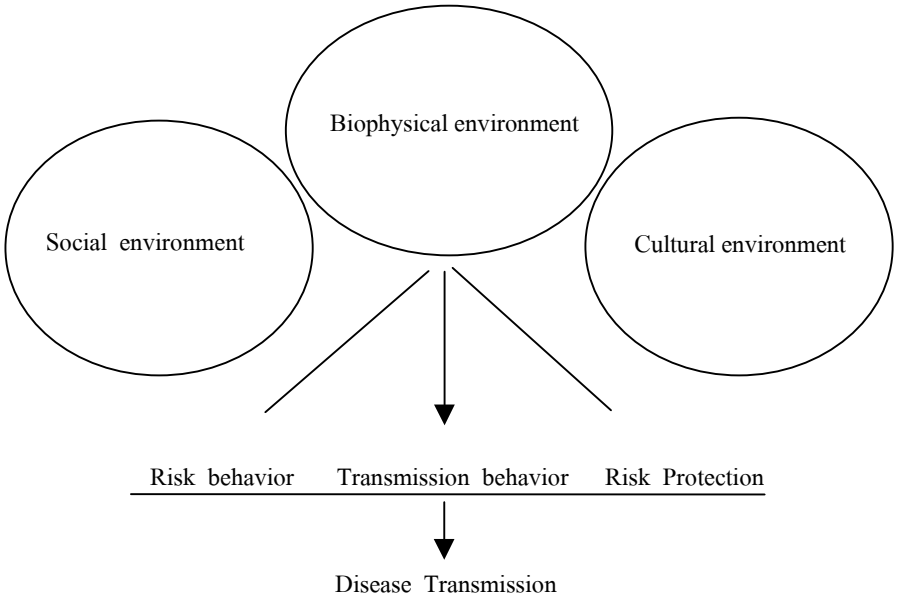


Figure 2 Household ecology of disease transmission

Within such paradigm, there are variables which are components of each environment as such.

1. **Biophysical Environment**
   - weather
   - disease and host
   - plant and animal
   - habitat and living beings
   - use of space
   - accumulation and containment of water
   - maintenance and disposal of waste
2. **Social Environment**
   - size of household
   - elements of household

- roles of genders and age groups
- resources
- household activities
- house chores
- relation toward external society

3. Culturally Constructed Environment

- local beliefs (sickness, ecology, entomology)
- symbols and definition
- values
- technology

The three environments can be explained as such.

1. Biophysical Environment

Biophysical environment comprises elements such as weather (temperature, population density) nature of disease, host, and host's habitat (rats, insects, pets) plants and animals, habitat and living beings (construction of houses, pens and stables) use of space (yard, neighborhood's area) usage of water and containment (size of pots, lid) maintenance and disposal of waste (toilet, rubbish can, babies' excrement)

2. Social Environment

Social Environment comprises structural characteristics and household management which affects health and sickness e.g. family's elements (parents, children) genders and roles of age groups (responsibilities, income) housing management (cooking, cleaning, child-rearing) and activities associating with a larger society outside of household (community's host control project, government service provision, employment pattern, social condition and economy)

3. Culturally Constructed Environment

Culturally constructed environments are beliefs, symbols, values of households toward behavior including patterns of ethnic science e.g. explanation of pattern of sickness, ethnoecology, ethnoentomology. In ethnic ecological research, anthropologists have emphasized on physical and biological environment of cultures especially ethnic science knowledge relating to the usage of plants and animals and agriculture. However, ethnoecology also includes perception of risks toward the

occurrence of disease which relates to environment. With human ecological system and cultural elements, we can look at ecological system as experience through human habitats brought about by social construction by insight in the fundamentals of physical and biological environment. Besides, it also includes human concepts of invisible ethnic ecological system such as spirits, powerful plants, sacred places and perception in natural component like air which has danger and benefit to human bodies. Moreover, there are components which are main topics of ethnoecology involved that is entomology and the local understanding toward the nature of insects like natural habitats including knowledge about mosquitoes, pattern of breed spread and the role of the spread of diseases. From what is stated above, culturally constructed environment also includes symbolic components (status symbols, symbols of beliefs and religious rites,) value system components (value attached to health, wealth, and education) as well as technological components (utensils or containers, cleaning equipment, insects dispelling equipment.)

Each above stated variable has an impact on the problem of each infectious disease differently, say, diarrhea. What's important according to the paradigm is the understanding of the contagiousness of the disease, sanitation of the food and waste disposal. For hemorrhagic fever disease, the containment of water for consumption is regarded as a basic important factor which brings about the spread of the disease.

2.3 Ecology and the Outbreak of Hemorrhagic Fever Disease

As mentioned above about the study of ecology in different perspectives e.g. biophysical ecology, social ecology and cultural ecology, there is a need to explain ecology and the outbreak of hemorrhagic fever disease as such.

2.3.1 Hemorrhagic Fever Disease and Biophysical Ecology (Biophysical Environment)

Hemorrhagic Fever Disease is considered a disease from household and community ecology. Such study of ecology mostly concerns components of biophysical environment of the house or community like type of house, temperature degree, use of house or community space, containment of water, waste water disposal

and conditions of mosquito breeding, etc. by putting these factors into analysis to find the relationship and to consider the risks, the nature of infectiousness of hemorrhagic fever disease; that is are there any activities that support the mosquito breeding source within the house and prompt members of the household to have a touch of the disease. It is obvious that the ecological factor of the house or community results in the breeding source of mosquitoes and causing risk of sickness by hemorrhagic fever disease as mentioned above which are the use of water, containment of water, and waste water disposal. Such habitual nature varies according to the type of house such as a house with many households may serve as a good example for us to see the nature of living in the community. Examples are that within each house there is running water pipe and drainage pipe which connect to community's waste water disposal system; but running water system and drainage water pipe are unable to be used for their being out of order and the joint connections of running water system often cause contamination and so unclean for drinking, which forces inhabitants to buy water from other systems to consume instead. However, it is found that poor people are unable to have access to the community's running water system particularly immigrants into the community. This group of people are coerced to use water for consumption by waiting for the rain or depending on the public faucet nearby.

Furthermore, since the government's running water system fails to efficiently facilitate the public probably due to the problem of fluctuating electricity or of problematic equipment, the people are forced to keep their own water for consumption within the household; therefore the activities of accumulating water for consumption are one of the things they do in their daily lives. Their utensils for keeping water may be with or without lids and especially those households which keep water inside the house are particularly subject to the risks of being the breeding source of larva and mosquitoes within their own houses. Moreover, it is found that the house's ecological problem is another factor affecting people living in the house to be risky to get in touch with the disease of hemorrhagic fever such as the construction of the house, the house's absence of mosquito nets or window screens and the house with open air space which allows mosquitoes freedom to fly inside the house including the community itself or the house with damp and dark configuration which most welcomes common mosquitoes to stay. These things allow people to subject to the

risks of being in touch with Aedes aegypti which are carriers of the disease. Furthermore, the fact that some households resort to electric fans or chemical sprays to prevent themselves from mosquito bites, such technique also has restrictions which restricts its popularity because it costs money and the chemicals spoil the ecology of the house by polluting the atmosphere as well as other restrictions from trying to reduce the mosquitoes' density.

Apart from the above, the physical characteristics of the house, living quarters, and environment surrounding the house which consists of items, rubbish, utensils, professional equipment laying outdoors or water containers like pails or buckets for mixing concrete in construction work, unused articles, or holes on the surface of the ground which can absorb or contain water can be good breeding sources of mosquitoes.

2.3.2 Hemorrhagic Fever Disease and Social Ecology (Social Environment)

Studies of social environment toward the outbreak of hemorrhagic fever disease emphasize on components of families, employment pattern, house chores distribution especially the usage of water, genders and roles of age groups, sickness care-taking, and attitudes toward participation in community's hemorrhagic fever disease prevention project. The emphasis on these factors are due to their being factors of risky behavior directly subject to the spread of the disease and the disease preventive behavior in the household especially the activities relating to the usage of water are determined by the family's components, roles of genders, and the family's resources which in developing countries females take the responsibilities of house chores, child-rearing even though both males and females are supposed to look for water to be used, males are assigned to look for water for cleaning of the bodies which requires a large amount of water and it is a heavy burden whereas females and children are responsible for water for cooking. These are division of labor characterized by the sturdiness of the body and the size of water containment utensils. Drinking water is kept in small utensils with lids which is the duty of females. Water for general use is kept in large utensils without lids and without normal inspection, thus mosquitoes lay eggs on these large utensils which are outside the living quarters. In the daytime most males go outside to work leaving females and children at home to

take care of the house and to cook; they spend more time inside the house and so are more prone to mosquito bites than the males. In the same manner females who work outside and children who go to school are less prone to the disease than females and children who stay home. Apart from that, children living with their relatives or guardians in suburban area or outside town and at times come to visit their parents in town are less prone or exposed to the disease.

Furthermore, considering the size of the house, such issue affects the amount of water contained for use inside the house. The more the number of people, the more water is kept for use in cooking and cleaning and so results in the more breeding source of mosquitoes. Houses with many households are more exposed to the disease from the breeding or multiplication of mosquitoes from water containment utensils. Therefore, the size and structure of the households are one reason for the chances to get infected by hemorrhagic fever disease.

Perception toward social environment in a village scale or a larger scale is another significant factor which has an impact on the spread of hemorrhagic fever especially the attitude that the prevention of the disease is a service supposedly provided by the government; therefore, in certain places there is an absence of cooperation among community members toward problem-solving. Citizens view it as a responsibility of the government or those concerned to deal with the problem. Such problem leads to non-action of environment outside the household.

2.3.3 Cultural Ecology (Cultural Environment)

Studies of cultures and hemorrhagic fever disease emphasize on ethnomedical model especially patterns of hospitalization of hemorrhagic fever, ethnoecology of hemorrhagic fever disease and host, attitudes, perception toward prevention and control of the disease. These things directly affect domestic risk behavior, dispersal of disease behavior and prevention. It is found that patterns of dispersal of hemorrhagic fever disease mingle with ethnomedicine and western medicine in local areas complicatedly. This is because the government has launched campaign giving knowledge, information and health education to the community such as in Villa Francisca in Dominican Republic, the population has perception that the contagiousness of hemorrhagic fever disease arises from touch with larva, mosquito

bites, and the disease itself and that children are the most inclined to get infected. Besides, the population still cannot distinguish the symptoms of hemorrhagic fever disease from malaria distinctively. People's perception of the symptoms of the disease is fever, acute headache, muscle pain, dietary system disorder, which without proper care especially in children or the weak can cause death. Moreover, such community has alternatives in curing this hemorrhagic fever such as self care-taking, medicine, special diet, or hospitalization with professionals.

In cultural ecology, factors relating to perception of the nature of the disease are clearly factors affecting the occurrence of the disease which we assume that mosquitoes multiply in garbage cans or dirty places and lead larva into the water. The birth of each type of mosquitoes is no difference. Moreover, type of water also relate to the spread of mosquitoes with the perception that only clean and pure water can be drunk and cooked. Clean water is kept in small utensils with lids since the amount is less than water used for cleaning and the importance is put on water for household consumption rather than other types of water; therefore, it allows the expansion of mosquitoes. As for the prevention from hemorrhagic fever disease or dengue, prevention and control of the disease such as the matter of water or mosquitoes, the population has an attitude that they themselves, their families, and the community cannot solve the problem. Contamination of the environment is above their ability to manage and it is the government's duty to control the mosquitoes.

2.4 Concepts of Urbanization in Developing Countries

Hawley (1981, cited in Daranee Thawilphiphatkul, 2539 B.E.) utilized the techniques of anthropologists in the study of the process and pattern of human beings' adaptation toward the environment in explaining that community is one pattern of human adaptation and urban community is an important pattern that human beings have developed since human adaptation can be achieved on the condition that there is division of labor among members or reorganization; therefore, adaptation is considered a success of the group. How human beings in any particular place can adjust themselves to survive well in an environment according to anthropologists depends on the relationship of 4 factors so-called Ecological Complex that are

population, organization, environment, technology on the assumption that while population set up or develop organization equals to the increase of chances that they will survive in that environment. Organization here means the whole interdependent system among population that makes them exist as units or a group. By looking at it as anthropologists do, Haley (1981 cited in Daranee Thawilphiphatkul, 2539 B.E.) has defined urbanization as movement from simplicity and localization to sophisticated system and expansion into urbanization.

An important phenomenon of urbanization which arises generally in developing countries is over-urbanization. The crucial reason for this phenomenon is the migration of population from the suburbs into urban areas due to the "push" factor from the suburbs rather than the "pull" factor. The outcome of over-urbanization blocks development since the desire for the government to invest in economic and social infrastructure has increased rapidly more than other kinds of investment. Besides, over-urbanization also causes slums.

Therefore, urbanization especially in developing countries leads to problems of overpopulation. The result is a large number of poor income-earners in urban areas. Certain urban areas are full of refuse or thrown-away items by human hands. Moreover, as urban areas expand, there is a desire to have complicated reorganization to serve increasing population's needs. But developing countries tend not to be able to reorganize due to several factors important ones of which are the lack of budget, knowledge, capacity, including technology. As the old organization fails to work efficiently, difficulty and problems whether they be economic or social follow such as traffic problem, problem of the lack of infrastructure and public utility in town, housing problem, mental problem of urban people, environmental problem, etc. as occurring in major cities of developing countries. Even though everybody in urban areas is affected by these problems, the most affected is the poor income-earners in town because they do not have enough resources to solve or alleviate the impacts of these problems by themselves as the higher income-earners. And since the poor people in town are a large proportion of the population in cities of developing countries, the problem of urban poverty has become a prime problem of cities and of developing countries. Understanding in the causes of urban poverty and physical,

economic, and social conditions faced by the urban poor enables the government to better plan its policy to solve urban poverty.

These urban poor when living in town have tried to adjust undeveloped and unutilized land into resettlement habilitation but due to the type of land into which they resettle, status of land occupation and poor income families, there occurs a lot of sub-standard habitation. Habitation has been built with undurable materials and has poor environment. Houses and communities rise up with conditions that general people cannot imagine could be used as people's habitats. The important issue is the invented environment since every household in town including poor families must perform their activities to survive and improve their families' well-being. These activities include activities involving maintenance of environment created by human beings and natural environment, water and fuel provision, gardening, waste disposal, and maintenance of household environment as best possible. Management of housing and environment is usually not good enough since poor people have insufficient resources to invest in handling with their housing and environment. Besides, time is another important restraint for members in the families. As for management of basic facilities in each urban area, there exists the difference which can be found that in every poor community, accessibility of resources is least especially possession of water for use, facilities of public health and disposal service, diseases concerning environment occurring from air and water. In all compact communities of Asia, waste water flow directly into polluted river, both in big and small cities. Running water is inadequate for rising demand. Garbage is not properly handled causing stench or stinking houses and living areas endangered to the health of people living in them. This is however caused by the insufficient degree of garbage management in poor communities due to the lack of sanitation equipment, endangering habitants and the environment. Households without management of garbage are inclined to dispose of their rubbish in vacant spaces within the community which is a source of various diseases and sends off unpleasant and annoying smell to the public as happening with the lives in Bangkok.

2.5 Relationship between way of life and urban ecology and the outbreak of hemorrhagic fever disease

The phenomenal relationship between urbanization and the outbreak of hemorrhagic fever disease is high. Gathering of data concerning hemorrhagic fever disease of the Ministry of Public Health so far has found that population in the municipality has similar rate of sickness from hemorrhagic fever disease with that of population outside the municipality or over in certain years, which considering the causes of urbanization found that it should be caused by both the state that population has a time-constraint way of life as well as the migration of population from the suburbs into town. (Davis, 1965) This is due to the expansion of population in the suburbs which is caused by public health advancement, making birth rate higher than death rate. Such rate of increase does not correspond with the economic development and prompt the migration of population into big cities, especially this migration is the prime cause that contributes to the fast growth of town and the rise of slums. One has defined "slum" as dilapidated area or the condition of habitation or living compound in the city which comprises dilapidated buildings, messy and dirty area, living congestion, substandard sanitation to the level that no ordinary peaceful living can be made possible, which is unsafe in terms of health and sanitation. (Siriluksana Kaewsongyos, 2533 B.E.) At the same time the nature of living of the population who are prime population of the city has an effect on the occurrence of hemorrhagic fever disease since there is congested settlement which makes it easy for the disease to occur and difficult to control or prevent. The relationship between people in the city as well as the acquaintance is little. This includes the fact that people in the urban society have to live their lives among confusion, among people of different occupation with different degrees and levels of civilized and uncivilized lives which are variedly complicated the relationship of which can be explained as such.

2.5.1 Population

It is found that population in urban area mostly are of different economic statuses especially the population living in slums almost all of which have bad

economic status, meager and unstable income which reflects on the sense of inferiority in themselves making them disappointed, discouraged in fighting with their lives to reach success. Individuals lack purpose of life. The fact that people in congested areas or slums are discouraged, lack energy and ambition is in itself an obstacle of self development, prolonging their poverty. (Laquian, 1696: 17-32) Therefore, it is obvious that this corresponds to the study of Oscar Lewis. (Oscar Lewis, cited in Pornwisit Worawan. M.L., 2533:13) which conducted his study in slums and found that the poor living in congested areas have very low social organization that is if they congregate, it usually is of "temporary" manner only. Children lack care and guidance from their parents. Families often have females as leaders. Competition among siblings in order to get love and possessions go on with severity. Individually perceived, it is found that poor people are of the feelings that they themselves are "peripheral," helpless and of inferiority complex. From such characteristics, people living in the community should be affected by hemorrhagic fever disease as well. Moreover, it is found that within the urban nature, people living in it differ in their economic condition and social class of which such difference is one of the causes of the spread of the disease as illustrated in the study of Thang U. (1975:276-283) conducted on the nature of the spread of hemorrhagic fever disease in Myanmar in 1973-1974 by studying 405 children under 10 years from high, medium and low social and economic classes from Mandaley and Moulmein. The study is also done on 914 children under 5 years from Rang-goon. The result of the study found that in urban areas there is different rate of sickness from hemorrhagic fever among high, middle and low levels of people – people from high and middle classes suffer from hemorrhagic fever 3 folds lower than those who come from lower class. Research work shows that different classes and economic statuses affect different rates of sickness from hemorrhagic fever.

2.5.2 urban physical environment

Bangkokians' housings since World War II until the present (2489-2539 B.E.) for the past 50 years have various shapes and styles as a result of western architectural influences. During 2525 B.E., middle-sized groups of houses were farer from the center of town to the vacant spaces in the north, northeastern around

Bangkaen, Bangsue, and the town's eastern part which expands to around Talingchan, Nongkaem, and Bangkunthien (Phudsadee Thipthus and Manop Phongsathat, 2525: 408) They have become the living places of middle-class people or middle-income groups of people. They come in different patterns ranging from duplex or single house in middle-sized groups of houses and concrete buildings which are composed of living compounds or residences and commercial buildings. As for the year 2532 B.E. which the world was facing the problem of high price of fuels, rising prices of land, there existed common houses for living comprising a number of rooms and units in the same building in adjacent areas to the town community whereas in the centre of Bangkok, there emerged a set of buildings or modern "condominium" in the middle of town which have security system, swimming pool, gymnasium, house-cleaning service, and laundry service by washing machines. Considering the living places of Bangkokians, one finds that there is a great variety which another group of people i.e. the poor or so-called "slums people" who choose thing living places in the town by renting a small area of land to construct their houses, the renting of cheap houses or the intrusion to build a moderate house or so-called "just enough for burying one's head in the pillow" on a vacant piece of land when living people tend to increase becomes the cause of congestion and the condition of slums in the end.

Urban physical environment is usually not very good since urban households have to do activities to survive; therefore, there is no improvement of the condition of the houses and natural environment. Unplanned or unmapped constructions and towns lead to urban areas which are full of rubbish and waste from human hands especially congested areas where there are more people than normal. Such areas have certain characteristics which contribute to the occurrence of hemorrhagic fever disease : 1) disorderly compact buildings without empty space and no convenient entrances and exits 2) locations of the buildings are dirty, messy and are hiding places for mosquitoes which are the sources of diseases 3) buildings are old, damaged and dilapidated because of old age and long use, not corresponding to the principles of construction and modern sanitation and therefore not suitable for living e.g. no proper ventilation, no lighting or no system of waste disposal and improper drainage of water

It can be seen from urban physical environment characteristics that if a disease exists in a community, it can spread very rapidly into the community

especially hemorrhagic fever disease with Genus Culex as carrier and the water utensils inside the house or around the house as the breeding source of larva and common mosquitoes e.g. pots outside the house, water utensils outside the house, pots inside the house, cabinet saucer, other water utensils around the house e.g. coconut shells (Boonluan Phanthumjinda, 2526 : 163-175) Therefore, the population in urban condition with unsanitary environment have to look for places to live with no choices as well as look for equipment and materials to build their living places like planks, thick paper to be used as shelter (Akin Rapheephat et.al.,2535 : 173-175) The conditions of such houses are conducive to the outbreak of hemorrhagic fever disease because such houses are non-preventive to common mosquitoes to enter into the house even though the mosquitoes' habits tend to let themselves fly around the neighboring houses. But if there are patients living in the areas where mosquitoes are out as carrier, the people in such adjacent houses can contact the disease and get infected by hemorrhagic fever disease, which corresponds to the words of Saranya Uransilp (2534: 13-14) which said human good environment is that which makes them strong and healthy, energetic, adroit, psychologically sound, secure, without concern, which makes life hopeful and worth living. Unsound environment causes a different result i.e. worsen health e.g. creates sickness, annoyance, discouragement, worry and distress inside the minds as well as creates danger and insecurity in the lives and possessions.

Furthermore, the habitual characteristics of throwing rubbish in around the house or in urban community makes it possible another breeding source for larvae and mosquitoes because it is impossible to dispose of garbage efficiently by urban environment, making refuse prevalent everywhere; or the fact that there is empty space in town where there is no use or care-taking of land making it an invaded area of rubbish thrown. This corresponds with the study of Weeraphand Suphanchaimart et.al. (2536 : 80-81) which studied urban environment and found that environmental problems of congested urban areas of the municipality of Khonkaen Province and areas around houses of most people have garbage scattering around and the people dispose of their rubbish by resorting to the municipal garbage truck service for only 60%; even research work of Wilailuksana Ratanapienthamma (2527) which studied the satisfaction of people living in urban areas around Soi Sinumnguen towards Phuennakorn Project also found that inhabitants were less satisfied with garbage

disposal, which reflected the problem of urban garbage disposal especially areas where people were congested; or the study of Saowakhon Sudsawasdi et. al (2534) which studied the impact of problem-solving of housing problems of the urban poor by providing with new houses; however, it was found that the new community even though they feel their new living places are better, but still daily problems of garbage disposal existed due to undue preparation of the matter which the garbage thrown in this community possibly becomes rain absorber and the source of larvae and mosquitoes. This corresponds with the study of Boonluan Phanthumjinda (2526:163-175) which found that garbage or cast-away items around the house such as old cans, car tires, etc. are important sources of larvae and mosquitoes around the house.

Since land in urban areas are high in price, there are many people who can afford to buy land but can't afford to have buildings or houses constructed on it in large space, construction of houses and buildings like rented houses are usually done on limited space. The intrusion into governmental space until it has become a slum happens. Generally, houses are constructed in clusters, no vacant space and little space for relaxation or socialization especially those houses with adjacent or annexed roofs. Such characteristics becomes an availability for mosquitoes to look for food in larger areas of the houses with each house in that particular space. Besides, occurring changes whether they be the use of land, population, economy and society all have impact on the changes of lives and quality of lives of urban people. In terms of housing and neighborhood, members in the community tend to relax their social relationship of people in the vicinity including economic conditions which constrain and make everyone focus on his or her own work more than the society at large especially people in the neighborhood, care and maintenance of the environment other than his or her own house which is scarce in itself is the case. Participation in protecting the community's environment is even less. This happens together with unreachable or insufficient care from the part of the government. Poor community's environment e.g. certain area with contained water has become the breeding source of mosquitoes as well as the cause for other diseases.

2.5.3 Ways of Lives and Urban Behavior

"Ways of Lives" means behavior and what people in a group produce by learning from one another and share among themselves; or it can be said that ways of lives of a particular group of people are all "tradition". The whole ways of lives are culture and when determined by the dimension of time and era, it is found that "ways of lives" of a particular group of people are ever-changing, unstable in every epoch. As for this thesis, an area in Bangkok is determined as an area of study.

Ways of lives in an urban society - Bangkok are different with ways of lives of suburban people in general. Urban people own their ways of lives with patterns to hold on to. There is a life organized into sections with primarily time restrictions. Communication in an urban society is in a wider scope than people in a suburban society. Relationship between people in an urban society as well as acquaintance is rather small even within members in the same family. Socialization or interaction between two urban people has more principles or criteria than suburban people. That urban people have such ways of lives or such behavior because they have to live amid confusion and among people in all walks of lives rather than people in the suburbs who live on agricultural occupation (Jumphol Nimphanich, 2538 cited in Suriya Weerawongse et. al., 2539:1-3)

That urban societies are composed of a number of people part of which migrated from the suburbs into town due to the lack of surviving factors. Such migration forces immigrants to adjust themselves from previous social conditions which they are acquainted to the lives in the suburbs to the struggling lives in town. To survive in urban cities, inhabitants have to fight to survive amid confusion and disorder of the cities, providing the people with different social and economic conditions such as in the writings of Akin Raphiphat et. al. (2535 : 173-175) refers to the people living in Klongtoey area that people in this area mostly are farmers from the central region. Subsequently are the northeastern people and the poor in Bangkok who are expelled from their land from other areas. People in congested community thus have similar social and economic conditions. They mostly are hired laborers in general tasks such as carrying heavy objects, carpentry, concrete or cement mixing, construction working, peddling, household handicrafts, hired driving, and general hiring in the vicinity. It can be concluded that urban people's economic picture is a

variety of occupations. They work hard and they are both of unskilled labor in an informal sector and professional occupations like nurses. The proportion of working people on average in each household is relatively high. Most people work outside their homes and try to spend little time in their daily traveling, which corresponds to the study of Chidchom Watcharanet (2522) which studied the family responsibilities of women for commercial banks in Bangkok especially in aspects of time and found that the time spent working outside the home when compared to the time spent for house chores is very different, showing that at present women living in town mostly dedicate their time working outside. Work inside the home is paid with little attention. This is probably because there are house chores helpers who are servants or in the case of some families, relatives who help look after house chores and cooking. Studies of Chakkrit Noranitrphadungkarn (2518) which studied the lives of those living in government flats in Dindaeng-Huaykwang found that the population living in the flats work outside both on holidays and normal working days. On holidays these people relax in their dwelling places to save money because outing means more expenditure which is unnecessary and which may cause burden to the family.

Adjustment from physical changes and the severe traffic problem, that Bangkokians have to face traffic problems when they commute to work or send their children to schools force them to adjust themselves and their time to solve the problem. Survey found that Bangkokians' adjustment is to change course in their traveling, get up earlier, shift up and sometimes down the commuting time, changing vehicles, changing their working hours and the last resort is to move their houses or change jobs. This changing of houses to get closer to their working places may be one cause which forces the economically disadvantaged to move themselves to live in an inappropriate living place e.g. to hire rooms in a slum or a cheap rented house with poor sanitation in town to save costs. Or if they have to work night shifts and have little time to sleep during the day which is the time mosquitoes fly for food, without good protection of the mosquitoes like sleeping in mosquito nets or screens, it is conducive for a person to be exposed to the risks of getting infected by hemorrhagic fever disease or even other health problems or other diseases easily.

As clearly seen from the lives of people in urban areas as in the example e.g. no time to attend to house chores especially care-taking of the breeding sources of

mosquitoes, relaxation inside the house on non-working days or the fact that people have different occupations, these factors relate to the sickness from hemorrhagic fever disease as such.

2.5.3.1 Water Using Behavior

From the condition of the community with houses congestion in the city especially in areas around slums, it is found that mostly the governmental public utilities cannot reach the community because the residents are mostly those who invaded private land or deserted governmental land. The installation of public utilities like running water system has to be approved by the landlord making the residents lack water for consumption even though most slums are in the centre of Bangkok or are mostly situated in the center of town which deserves to get service from the government especially drinking water, running water adequately. However, from data survey of slums (Pranee Phanomroengchai, 2532:83-84) in Bangkok it appears that from 33% of the households in slums connect running water from the inhabitants' meter. 7% buy water for consumption and 3% use rain water. That they don't have running water meter of themselves are due to their lack of confidence or security in the land and are unsure of how long they can stay in the land. The second reason is because the landlord does not allow running water to pass through the land especially in invaded community. The third reason is the landlord is afraid of losing their benefits from selling water and the fourth reason is the residents are poor income-earners, installation of running water meter is too costly for them to bear the brunt; therefore, it corresponds to the study of Wilailuksana Rattanapienthamma (2527) those who live in the cities around the Blue Lines have a lot of problems about drinking water and water for use. Therefore, it can be concluded in a broad picture that that innumerable urban people who have problems about using running water should result in the use of water in an overall picture. The majority of population should keep or contain their water in utensils for use. This, however, is just the reason for the breeding source of larvae and mosquitoes, which corresponds to the study of Rosenbaum J., et. al. (1995) which studied the community's participation in preventing and controlling hemorrhagic fever disease in Trinidad and Tobago. The study found that the important issue of the problem is the lack of clean running water leading to the breeding source of a large number of larvae and mosquitoes. This study

indicated that there is a need to have strategic planning in implementing basic environmental sanitation in the community to control and prevent hemorrhagic fever disease. Moreover, it corresponds with the study of Audy (1972) which conducted its study along Ivory Coast and found that the population keep a lot of pots to contain water which contributes to the increase of breeding source of larvae and mosquitoes which corresponds with the study of Rudnick (cited in Suphorn Chunhawutiyanonda, 2532:20) which studied the ecology about hemorrhagic fever disease in Malaysia and found that that the population contains water for use or reserve water for use and the pattern of service of drinking water and running water is the most important factor for the breeding of common mosquitoes in causing the spread of hemorrhagic fever. Or the study of Mehar (1978) which is on the spread of hemorrhagic fever in Malaysia also found that the absence of running water service for the suburban people causes them to keep water in the pots, which is the most important factor for the increase of the breeding source of mosquitoes and the contagiousness of hemorrhagic fever in the suburbs. And the anthropological study of Whiteford L. M., (1997) which is conducted anthropological ecologically of hemorrhagic fever in the issue of urban culture of Dominican Republic and found that the most important thing of the outbreak of hemorrhagic fever disease comes from the containment of water for consumption as well.

The fact that most people have to earn a living and from the urban condition with congested traffic problem and time-consuming commutation, working places are far from homes, one has to leave home early to go to work and comes back late in the evening, cleaning and taking care of the house is therefore difficult even though shortage of water is not the problem for whose who do not live in slums e.g. groups of houses or clusters, townhouses, condominiums, flats, rented houses. But the fact that leaving for work during the day and locking up the house without time to clean water utensils around the area of the house makes water in the bathroom or water for other uses inside the house become mosquito breeding sources since water is still, clean and undisturbed especially when owners of the house do not live in the house for several days. When larvae broods or incubates into adulthood, it then leaves to feed itself around the house. If the mosquitoes have hemorrhagic fever disease and lay eggs, the adult brooded will also have the disease in itself. Inhabitants in the house would be

subject to the risks of receiving hemorrhagic fever disease. And in the case that there are dengue patients in these areas, it becomes the problem of controlling the disease because of the smoke spurting. Visits and guidance of the officials monitoring the disease have to be done during the day but the owners of the houses are not at home so the work cannot be accomplished, which is the cause of the spread of the disease.

2.5.3.2 Child-rearing Behavior

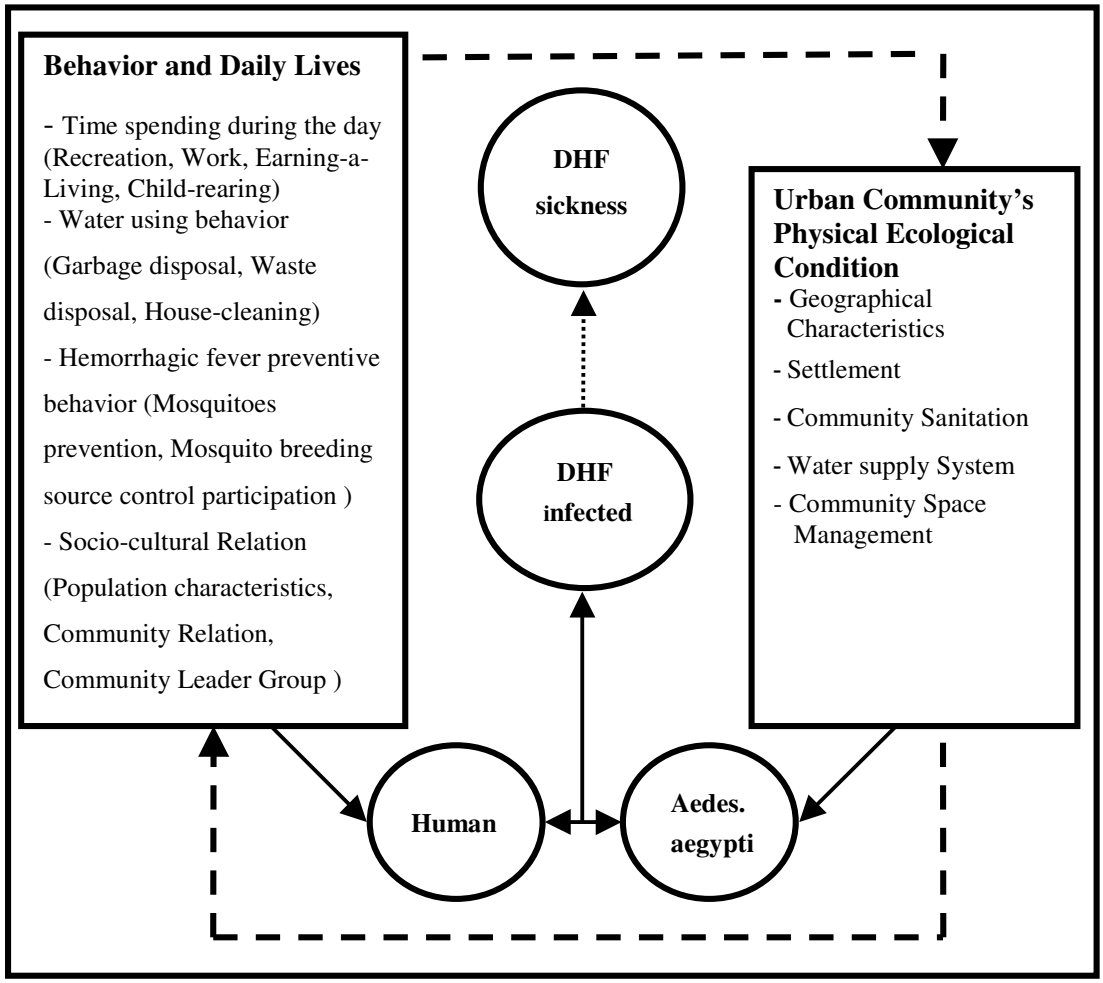
From the ways of lives of urban inhabitants and most have to struggle in their occupations outside the house. Part of them forces mothers to abandon their children with the elderly at home or sometimes hire a helper or baby-sitter to help out. Such behavior ought to result in the children's health because the children are abandoned to live with grandmother or baby-sitter in the daytime, if the care-taker does not pay good enough attention to the children, they should be subject to high risks of getting infected by hemorrhagic fever disease. This is due to the characteristics of common mosquitoes that search their food during the day and the people's behavior that does not heed their health, which corresponds with the study of Rosenbaum J., et. al. (1995) which studied community's participation in preventing and controlling hemorrhagic fever disease by conducting a survey in Trinidad and Tobago and found that the important problem in the house is that the people only attend to the problem of harassment by mosquitoes or that of being bitten by mosquitoes in the night; therefore, that child-rearer does not have appropriate measures to prevent children from mosquitoes, neglect of children during the day includes urban community's condition which contributes to the spread of common mosquitoes. These things should result in the outbreak of illnesses by hemorrhagic fever disease in urban areas and if the disease happens, it can diffuse very rapidly as well.

Furthermore, the behavior of sending children to nurseries or kindergartens where groups of children in the community gather in large numbers during the day and which are the group subjected to risks of getting infected the most, this is a cause for the location of disease diffusion. If in the community or school the there is physical environment that contributes to the spread of the disease or there are no preventive or control measures, this would contribute to a normal child getting infected by the disease from the bite transmitted from another bitten and infected child in the same venue or school.

Review of studies and research can be concluded that most research relating to hemorrhagic fever disease most probably is conducted by quantitative method with weaknesses and restrictions in understanding the complicatedness of society and the cultural definition. As for the qualitative research on hemorrhagic fever disease, it is scarcely found in Thailand which both the quantitative and qualitative research indicates that the population still holds an opinion that they cannot control their environment to bring about safety solely by their own effort. They have to resort to government's support. (Whiteford L.M., 1997) Furthermore, they also think that the important problem in the house the people only care about the harassment from mosquitoes or the problem of being bitten at night. (Rosenbaum J., et. al., 1995) or some groups have formed accurate scientific knowledge but their preventive behavior does not correspond to the existing knowledge due to the social and economic characteristics of themselves. (Uraiwan Kanoengsukkasem et. al., 2529) which such characteristics relate to the urbanization process which results in slums due to the migration into big cities to work. Some communities have poor sanitation, throwing rubbish everywhere on vacant space. Having the community's environment with abundant houses and with poor sanitation equipped with ways of lives of people who have to enter to live in inappropriate places due to poverty. The necessity to work outside the house, leaving children with the elderly. The lack of running water service for the population, they have to keep water in pots for future use. (Rosenbaum J., et. al., 1995) Leaving the house during the day without anybody's attention, the lack of time to protect the environment of the houses or community is the most important factor of the increase of the breeding source of common mosquitoes and the contagiousness of hemorrhagic fever.

Therefore, it is proposed here the concepts of thesis by anthropological ecology concepts of the outbreak of hemorrhagic fever in the context of urbanization of Bangkok. This is by studying the ways of lives of people in their daily lives which are exposed to the chances of getting infected by hemorrhagic fever from common mosquitoes and by studying the community's physical environment which contributes to the multiplicity of common mosquitoes which relate as such.

2.6 Conceptional framework



CHAPTER III
MATERIALS AND METHODS

Bangkok Metropolis is a mega city is where most people especially suburban people view as a developed city and dream of coming to settle due to the desire to find comfort from all aspects of development whether they be economic, education, mass transportation, and many others as if Bangkok were Thailand. The development of Bangkok started from its foundation as the capital of Rattanakosin Period until the Reign of King Rama 4 and 5. The metropolis expanded to the north; there was construction of Sra-pathum palace and Dusit Palace. This period was one which Thailand received the most western influence; there was development of land transportation system; digging of klongs or canals was stopped and construction of roads and streets began. Besides development of streets, electric tramways and automobiles started to take shape in this period. Moreover, there was development of public utilities like running water, electricity, postal service, etc. and the development continued until today. Bangkok has become an independent city as other countries' capitals and has encountered several problems as other general cities from the side-effects of development schemes which focus on capitals so as to grow as much as other developed countries. This creates another dimension which has changed distinctively i.e. unequal distribution of growth in regional areas, which causes migration of population from every region to settle in Bangkok even though mostly it's informal immigration – immigration without transferring names from house registration form in the suburbs with the hope of coming to "dig gold" in this capital. As a result, Bangkok has its population density much more than what appears in the actual citizen registration, causing its population to live congestedly and competitively in every way. The lives and relationship of people living in urban societies generally take the forms and shapes of independent and struggling lives, no decent relationship toward one another. People do not know one another and lack trust in one another as a Thai saying goes, "doesn't know one's life story and background" every unit of land

has value and price and has been utilized to its highest worth of the landlord both as habitats and as a place to earn a living till there's no space left. There are big buildings, ranging from group houses, commercial buildings, single houses, rented houses to slums, under the bridge, beside tramway, causing subsequent social problems. Furthermore, there are still problems of illnesses caused by the fact that a large number of people gather together in a limited space, which hemorrhagic fever disease is one problem discovered constantly in such high occurrence in the urban community.

The researcher has searched statistics from Disease Control Division, Sanitation Office, Bangkok and has found that Bangkok has an annual occurrence of hemorrhagic fever and this has continued consistently almost every month and has increased immensely in July, August, and September of every year. This study the researcher chose an area of study specifically – Wat Amphawa Community, Ban Chang Lo Sub-district, Bangkok-noi District. Statistics revealed that the area with highest occurrence rate of the disease is Chatuchak District, Bang-sue, Dindaeng, and Bangkok-noi with 259, 216, 209, and 117 cases respectively. (Data from January to August, 2545 B.E.) which is within responsibility area of Carrier Control Division, Talingchan and Carrier Control Division, Koobon. The researcher has tracked additionally data of hemorrhagic fever disease occurrence of both agencies above and has found that the nature of the occurrence in various areas was of diffused nature, no forming of groups; however, in Amphawa community, the nature of the occurrence of hemorrhagic fever disease was of a grouped and condensed group more than other communities of altogether 15 cases.

The search for information about hemorrhagic fever disease of Bangkok in governmental agencies went on with difficulty since these agencies lack information both from indiscreet report gathering system or no gathering at all and the existing information is not relevant to the desire of the researcher. Each agency works as it is assigned but with not much coordination. The researcher has therefore traveled to many agencies in order to get information. These trips take a lot of time since each agency is far apart and the researcher has no vehicle to facilitate the task. Some agencies are far from the community and not many people know of them and the researcher had to go on many buses.

Wat Amphawa community is an urban community with congested settlement. The characteristics of the houses and buildings indicate the living statuses which are different among people. It is located between two main streets i.e. Isarapharb and Charansanitwongse with a passing and connecting lane between the two. There are approximately 400 households and about 5625 population. The area annexed to Charansanitwongse is the area in the front part of the community. The houses connecting to the street are mainly group houses or commercial buildings and are the residents of people who have good economic background. Further into the lane, the characteristics is single houses made of concrete and wood and old wooden houses with some area surrounding the house; these houses are constructed singly which may be regarded as some rich people's compound. Next to it is temple and school. The innermost part of the lane which may be regarded as the poor's compound is houses or residents of the inner people with dilapidated condition constructed with undurable materials. They are of small houses sticking to one another. Perhaps some others may not be called houses even and should otherwise called "some space to bury one's head in or just a place to stay" e.g. certain houses are of long rectangular boxes like matchbox with low roofs and separated into rooms of 5X7 meters for rent; one room for one family. Some houses are made of planks, rotten and feeble. Others are made up of plywood or of just some available materials. The population is varied in nature ranging from well-to-do to impoverished. This area may be called slums.

As for pattern of this study is qualitative research, a case study and a descriptive study in order to try to understand the ecological context and ways of lives in socio-cultural and economic aspects of the inhabitants in urban community which relate to the opportunities and the risks of the outbreak of hemorrhagic fever disease of a community in Bangkok. Such study contributes to the understanding of sickness from hemorrhagic fever disease. The reasons for such qualitative research is due to the fact that most quantitative research study has weakness and restriction in understanding the sophistication and giving of cultural definition since studies about lives and ecology resulting in the sickness and spread of hemorrhagic fever disease are subject to the difficulty of getting accurate answers from survey with questionnaires and those who provide information may just follow the questionnaires and omit the truth in other numerous contexts.

Qualitative studies conducted by the researcher this time is a method which helps in the understanding of such information because it helps the observant to see the phenomena clearly. Such research helps in the understanding of context of the problem in a well-rounded and profound manner. Besides, it also has the purpose of finding cultural knowledge in the perspective of researcher in each group which is different from the perspective of the researcher.

The researcher utilized mainly field research studies with the particular process of anthropology i.e. the survey of information about the aboundance of common mosquitoes or Genus Culex by counting the number of utensils which find larvae or what is called in medical term as Breteau Index (BI) In-depth Interview, Key Informant Interview, and Structured Observations. With data-gathering of such varied methods to scrutinize the derived information to make sure of its correctness and completion as much as possible, the processes of data-gathering in this study are as follows respectively.

The first method : Breteau Index (BI)
The second method : Key Informant Interview
The third method : In-depth Interview
The last method : Structured Observations

In the process of reaching informants in order to gather data, the researcher utilized the method of observations in the community during the day, approaching, getting involved, talking or socializing with groups of people e.g. people in the food shops, sleepers in temple compound, undertaker, Luang Pu Pan's student who in front of the sala chitchatting in free time, or even the community's officials who serve as parking fee collector inside the temple, members of the household who interviewed with village volunteer as leader, some community committee members whom the researcher was recommended to interview which the duration of entering into the community was from early morning until twilight in order to get the most of the community's lives. The researcher didn't stay in the community, one reason was because of the insecurity of security and safety since it was the time of government's severe drug suppression. There was a lot of extraordinary killing. By inquiring people in the community, the researcher found that the area was an area at risk and there was

news on various media often times.

This study was conducted while the Ministry of Public Health was issuing strict policy of the disease prevention and control. The request for cooperation consequently went on with great difficulty from the part of public health agencies within the area. It was possible they did not want the research to be conducted within the area in charge with the reason that in the responsible area there were very few hemorrhagic fever disease patients. However, when the researcher expressed the desire to do the research in the area, the officials in charge asked the researcher to make a documental requests to the Office of Bangkok Metropolis to ask for permission from the high-ranking authorities first.

The community's area of study is regarded as very spacious. When dividing the area according to physical and socio-economic characteristics, it is found that most studies' data-gathering is done in poverty area beginning from the middle of the lane of both sides to the end of the lane attaching Isarapharb Street. There was concentrated settlement with the temple and school as centers and stores and food shops scattering around the temple area since the area was of the majority of people and can be approached for study, interview, observation of the house whereas the area from the front of the lane from Charansanitwongse most of it were single houses with compounds and fences and the houses were closed during the day so the study could not be done.

3.1 Public Health Volunteer : the Key to Success

The researcher entered into the area by making appointments with Chairman of Public Health Volunteer at the Center for Community Fundamental Public Health (CCFPH.) The researcher introduced himself and was warmly welcomed by 2 public health volunteers who performed their work. One volunteer was the owner of the office of CCFPH named Noo aged 40 or so. The other was Tia aged 50. Both Tia and Noo were plump, short-haired. Yet another was Chairman of Public Health Volunteer for the village named Noi aged 50 or so. She called herself "Aunty Noi." Aunty Noi was in this community from birth. Her house was situated 40 meters behind CCFPH. Aunty Noi was talkative and adroit while Noo the owner of the house was less colloquial. Aunty Noi told the researcher that *"The Public Health Service Center*

coordinatingly called to tell that there would be a student to collect data." Aunty Noi informed the researcher roughly of the history of the community and introduced the researcher to another two volunteers. The researcher spent the first week entering the community and introduced himself to public health volunteers, the leader and members of the community as well as talked to vendors in the vicinity. He tried to make himself known to many people to acquaint himself until members and volunteers feel at ease and acquainted before beginning his process of collecting information.

This study, throughout the period of area study the researcher depended on the help of a guide all the time because he could not approach for interview by himself even though he had acquainted himself with the community for some degree due to the lack of trust from the state of being an urban community. Also because the researcher did not spend much time in the community and had to walk in and out of the area which may cause some misunderstanding as to the community's safety in terms of lives and possessions since the community has drug problems which is well-known throughout the area. Using public health volunteers who are more known to the community and are trusted to a certain degree as leader or guide for the researcher to go and talk to informants is a way of reducing distrust and increasing safety for both sides, which may result in the reliability of the obtained information.

3.2 The first method : survey on larvae and Genus Culex : indicator of chances to get sick from hemorrhagic fever

The survey on the aboundance of Genus Culex by Breteau Index (BI) by counting the number of utensils containing larvae and common mosquitoes in 100 households, which makes it possible to see the tendency of the chances of members of the household to get in touch with common mosquitoes and to know of the utensils or articles which are the breeding sources of larvae and common mosquitoes in the community by randomly survey and count utensils which are the breeding sources of larvae and common mosquitoes inside the house and around the house of 100 households agreeing to be surveyed. It was a random check on the whole area of the community. This survey on larvae and common mosquitoes was purposed to guarantee statistically as fundamental data to assure whether this community had the chances to

get infected by the disease and how many chances there were before collection of other aspects of the data took place. Apart from that, it was also a guideline for selecting households to be interviewed afterwards.

The survey on larvae and common mosquitoes was given reinforcement by Ajarn Suwich Thammapalo, head of hemorrhagic fever group, Department of Disease Control, Ministry of Public Health, who ordered the officials in the department to perform the survey by having Ajarn Dr. Siwiga as leader of the survey team. Apart from surveying on larvae, samples of larvae were also collected with reasonable cooperation from the survey officials as a result of one activity within the responsibility of the agency.

The researcher and the public health volunteer group prepared the area by making public relations with the community's broadcasting tower informing the survey of larvae and common mosquitoes for various households to know in advance. The public health official team entered each house to do the survey on larvae and common mosquitoes on different spots potentially being the sources of larvae and common mosquitoes.

The survey went on successfully. The whole team returned to cross check on the data. The problem found was the inability to survey the whole area equally due to the inability to enter some closed houses which were mostly single houses and the houses which the owners were absent leaving only assistants and did not allow entrance. Therefore, the survey was on houses in the congested vicinity of the temple and the area behind the lane which was the business and commercial neighborhood of the community e.g. stores, hairdressers, food shops, etc. which may be regarded as poverty area but the residents of the majority of the community. During the day there were on-going activities with interactions of people in the community; therefore, the survey team could easily gain cooperation to enter into the houses.

3.3 The second method : key informant interview

This key informant interview in an anthropological perspective is regarded as a good source of data since these people relate an have well-rounded knowledge about the above-mentioned thing of the target group that the researcher wants to study which

will help the researcher to better understand the social phenomena. The researcher collected data concerning the background/habit/tradition/characteristics of the population/community group/community leader/inter-community relationship/use of vacant area in the community/and politics about the control of hemorrhagic fever. The researcher knows the community problem which the researcher has collected by interviewing about 5 knowledgeable people in the community.

The data acquired from interviews of informants therefore were data from two monks who did the research on the history and background of the community and the committee of the village who were regarded as representatives of the community leaders, the elderly who lived in the community for a long time and had seen changes within and the middle-aged villagers who represented general people. The picture of the community was therefore that of various perspectives combined for perfection.

3.4 The third method : In-depth interview

The researcher utilized this in-depth interview as the main method of accumulating data and analyzing them because this method enabled the researcher to question deeply various issues from the informants and also enabled him to observe the informants' reaction during the interviews. The researcher conducted in-depth interviews with households with utensils with larvae and common mosquitoes which gave data of ways of lives and behavior as well as various activities in each day that contributed to the breeding of larvae and the risks to get in tough with common house mosquitoes of altogether 20 households.

The standard of selecting key informants and household to get in-depth interviews is time. It means that it should be considered if they have enough time for the interviews that take 1-2 hours and their occupations are not considered. The families in which there were some patients having dengue hemorrhagic fever are members having various occupations are required. Furthermore, they must allow me to observe inside their houses. To choose informants for interview, the researcher was recommended by Aunty Noi as to who should be interviewed. After informing the objectives to Aunty Noi that the researcher would like to interview the person who knew the background, tradition, socio-economic condition, the government of this

community. Interview. The problem found was the inability to contact those knowledgeable informants or due to the large amount of work, the informants were unable to give interviews so they suggested the interviews be turned to other people or even postponement or cancellation of appointments in the middle of the course, which makes it time-consuming to find new informants. The researcher was kept waiting for a long time before getting the required data with Aunty Noi as the assistant who facilitated the researcher to meet those informants every time. That is a limitation in this thesis which cannot determine the required sample groups.

The survey of larvae and common house mosquitoes undertaken previously revealed that the index about the breeding source and larvae and common mosquitoes were higher than previously prescribed even though there were restrictions concerning single houses or block buildings which could not be surveyed and were obstacles of interviews. These houses though with complexes but the areas were not vast and were situated not far from areas where houses were built in a compact manner therefore were a risk to get infected by hemorrhagic fever in every household, which makes this community at high risk for hemorrhagic fever therefore every household was able to give information in depth. The researcher had Aunty Noi undertake the selection of households to be interviewed by choosing only those with ample time for interviews especially those who lived at home or worked at home during the day. Many occupations were chosen from or those with different conditions of houses were selected e.g. block buildings, rented rooms, rented houses, single houses, etc. or households with history of hemorrhagic fever; however, households which were interviewed were mostly those located in poverty areas, only a few were block buildings, rented houses or single houses which reflected on varied actual picture.

3.5 Last method: structured observation

Structured observation is a method used to collect data in combination to observe desired details. The method provides a pre-designed observation form for collecting data about interior and exterior condition of dwellings, water consumption, water containers, mosquito prevention equipment and population density in each household. Such observation was conducted in 20 households that consented to give

me their information. Besides, structured observation was employed to study physical condition of the community.

Structured observation was conducted in association with surveying other data such as condition of areas in the community and Aedes mosquito larvae to obtain data about environment, population density, mosquito breeding sources and use of spaces in the community. In addition, there was an observation during in-depth interview in each household in association with taking photos indicating settlement pattern, positioning of articles or mosquito breeding sources around the households in order to obtain details about their lifestyle and behavior. It was found that the households weren't willing to have me take the photos if they perceived that I would like to collect pictures of dilapidated and messy household condition.

3.6 Researcher image—stranger: unreliable person

A characteristic of relationship of people in Bangkok, which is not different from that in big cities is being "strangers" to one another, thus causing unreliability and refusal to give cooperation to other people due to the fear that they will be deceived. The phenomenon is commonly found in almost all big cities in the world. Pa Noi (Auntie Noi) is a well-known person in the community and she had close relations with a lot of people in the community. Pa Noi said to the people, "I've brought the university student to collect data. Later, he will interview you." The people gave her a good response. Accordingly, during the first time of field data collection, I had to depend on health volunteers to lead me to carry out a survey of condition in the community as well as to introduce me to people in the community.

A week later when I began to be better accustomed to the volunteers, I asked Pa Noi to take me to walk around Wat Amphawa Community to see its condition. Once when I walked with her to see general condition of the community, I tried to walk near a group of women, talking about their earning for their living and going back to Esarn (Northern part of Thailand, their homeland). When I approached them, their noise gradually turned into silence then I tried to give them a friendly smile. Pa Noi said to the group of women, "He is a student and would like to collect data here." A 30-year woman asked, "What kind of data?" Pa Noi said, "About Dengue virus. He'll write a

thesis". All women in the group looked at me and asked me where I lived and studied and where my hometown was and so many questions. This is a characteristic of provincial people—they always ask and talk about personal information with other people to create familiarity, thus making them know their information, including kinship and other personal information. I then benefited of being a provincial man to create familiarity with them with frequent smiling, which became my characteristic. I responded them willingly, openly and sincerely. Accordingly, I received their better response. Such characteristic is different from that of people in the capital city, who don't care about any other's information and view that asking personal information is an interference of others' private stuff. However, in the community, there are always students from Mahidol University, Siriraj Campus carrying out their field studies, then people here didn't show much of their surprise of my appearance. What they were surprised at was only my old age, wearing no university student uniform and frequent visiting of the community. They often asked me in details.

I followed Pa Noi to carry out a survey on the community's condition in the area for which Pa Noi was responsible. Many days later, people around there began to view me friendly. They smiled to me and greeted me with intimacy. For example, when I went to a grocery shop, its female shopkeeper asked, "What are you doing today? Many days ago, you came here. I saw you carrying your bag with Pa Noi in front of the temple." However, such intimacy only occurred in the group of people that Pa Noi had close relations with, in the areas where there were a lot of people living and had interaction with one another. The area which I couldn't access were the areas in which there were dwellings encircled by a fence with no interaction with other people in the community, which was in the middle of the lane and upstream to Chatunsanitwong Road, of which houses were usually closed during midday.

3.7 Familiarity: Flow of help

Each day, after separating Pa Noi, I usually sat in front of a joss house of Luang Pu Pan or Luang Por To Phromarangsri in front of the temple. One day, there was an old man in a yellow T-shirt and long pants and wearing rather old shoes, sitting beside me. He greeted me as if we had known with each other before. He knew that I

came in the community to collect data. He said to me, “I’ve seen you sit here for many days. I wondered then I asked a fruit seller in front of the temple who you are.” Then he said kindly, “If you would like to know any information, ask me because I’ve lived in the community for a long time.”

After talking with Pa Noi for about 2 weeks, I then knew brief history of the community, but not enough detailed. The man told me about its history and relationship of people in the community at length. The man, whose name was known after as “Derm” introduced me to the temple abbot and asked for permission to meet a monk studying in Master degree, named Luang Pee Wisut. He collected series of history of the community in details.

Luang Pee ‘Wisut’ talked about the history of the community after finishing his lunch. Apart from suggesting other documents relating the community, he introduced me to Pra Sommai, whom most monks called “Tan Lung Sommai”. He was a Bachelor student in Ratchabaj Institute in Bangkok. I interviewed him almost 1 hour.

3.8 Pre-interview: asking for consent and creating reliability

My data collection was easier after Pa Noi took me to see many places. Then I began to interview 4 households, some of which Pa Noi used to take officers from Department of Communicable Disease to visit to survey mosquito larvae. Pa Noi said to me, “After the officers carried out the survey, they said they would do it again. It is better for you to interview them because you will recheck it.” I interviewed 1 household per day. The first 3 households gave me a good operation for the interview, with serving me a glass of water and turning on an electric fan to ventilate for me, unlike the 4^{th} household in which the owner seemed unwilling to be interviewed. During the interview, he sometimes got up to do his activities in his house although before interviewing, I built reliability with him and asked for his consent before collecting data because I would like him to tell his information openly. I then tried to create more familiarity with him, trying to make the interview like a natural conversation. Finally, the interview ended smoothly.

After following Pa Noi for 3 weeks, I changed my guide to be Pa Tia because Pa Noi was busy with her personal stuff and public work and I also would like to expand

my area of my data collection. Pa Tia had been a health volunteer for almost 10 years. She was a native of Wat Amphwa Community after newly marrying because her husband was a government officer at Naval Dockyard Department. She was 62 years old and was living with her unmarried daughter, aged 37 in her own house. Pa Tia said her husband had died since her daughter was young because of some wrong understanding. Her daughter was working as an assistant in a dental clinic not far from Bang Khae.

Pa Tia took me to look around residential area under her responsibility, not far from her house. In fact, Pa Noi had taken me to survey the area. However, I didn't object her because I thought I could grasp the opportunity to create better familiarity with her and to collect additional data about environment in the community. Besides, this could make people around there get accustomed to me.

During data collection in Pa Tia's area, I had more chance to talk and share my ideas with some Wat Amphawa Community's committee members, such as, Narong and Chat. Narong was a young committee member of the village. He was 37 years old. He was a public relation of the community and officer collecting parking fee in front of the temple but he always hired Miss Oy to do this for him. Narong and I talked with each other about community development and evolution since the early time he could recall until that time. Narong said to me before we got apart, "I'm pleased to give you interview about implementation on controlling Dengue virus in the community. Tell me if you would like to interview me." We exchanged our phone number. But when I called him to ask for the interview or contacted him via Miss Oy, he was never present to see me.

As for Chart, from talking, I found that he was a community committee member but he always worked at night and slept at midday because he was working as a member of Thai Rescue Team. He was 43 years old, with a 5-year-old child. His wife was working at Judge Advocate General's Department. He said, "When I hear from other members via communication radio that there is an accident or fire incident anywhere in the area of my responsibility, I will leave to help them." In part of community development, such as activities in the temple or activities that other organizations held in the community, for example, free hair cut service, he would have involvement in them.

3.9 Lacking a guide: Difficult relationship building

In Pa Tia's area, data collection was carried out for the 5th and 6th case and stopped when health volunteers had long-period missions. That is, they had to have a study trip about herbs in Prachin Buri province and attend a meeting at Muang Thong Thani, organized by the Ministry of Health. Then I had to interview other cases alone without guiding from any health volunteers as usual.

Interviewing during the period was very difficult. I had to introduce myself to the people outside their house and showed my student ID card so that they relied on me and allowed me to interview them. As for the the 8th case, I asked the 7th case to help me introduce me to him.

After that, I had to stop collecting data for a while because of 2 reasons:

First, it was during Songkarn Holiday, the time when people migrating from other parts of Thailand, mostly from Esarn went back to their hometown and the time when native people of the community went to other provinces.

Second, I had to transcribe the interviews to consider issues and verify if the obtained data was in accordance with the research questions or not, what additional data needed to be collected and what were other missing important issues in research questions. However, due to being accustomed to the community after working there for a certain period, during Songkran Holiday, I visited the community. And I found that the condition in which there were a lot of vehicles and people become less lively. Some houses were closed and some food shops had a closing notice.

I resumed data collection on 17 April 2002. After collecting data in Pa Tia's area for a certain period, I then collect data from Pa Chit's area. Pa Chit, 56 years, was a dark tall woman with long hair. She rented her dwellings to people migrating from rural areas, who worked in Bangkok, including vendors of fruit, grilled chicken and Thai sausages. Pa Chit was also the one who had lived there for a long period of time. She had a 2-strorey house made from brick with tile floor at the ground. She was living with her husband who worked in construction contract. She had 2 sons. The elder one was studying law in the last year in Ramkhamhaeng University and the younger one was studying in political science in the 2nd year in Thammasart University. She said she had been a health volunteer for 5 years. After I asked her to take me to

walk around her area to collect data on general condition so that I obtained enough details, she told me she would go to Ratchaburi for 2 days for do her affair. On the following day, I asked Pa Chit to indicate me the houses that she used to take doctors from the Ministry of Health to visit to carry out a survey on mosquito larvae. Then she took me to see the houses. When she met the people she was well familiar with, she would say to them, "Later, the young man will interview you. Please help him." After that, she had been absent for 2 days. During her absence, I had a conversation with the dwellers living in Pa Chit's rental dwellings around her own house. The area was interesting that there were people in many houses who used to be ill from Dengue virus the year before or many years before. Then I interviewed 7 cases. During data collection, when Pa Chit was free, she would yield to call people in my target group for the interview.

After I finished collecting data in Pa Chit's area, I hadn't been in the community for almost half a month because I had to transcribe previous interviews. I resumed my data collection in the area of responsibility of Pee Nuanla (Pee—honorific and kinship term, meaning elder sister or brother), 49 years. The area of her responsibility was 2 kilometers away from Amphawa Temple in the northwest. The area was further than any other area. She had been living with her husband and 3 children for almost 20 years. Her house was situated on her own land. It was a 2-storey-house, of which its gate was not old or new. The interior of the house was occupied with furniture, books, shoes and other items in orderly arrangement. However, when I went in her toilet, I found that in her cement tank, there were 10 mosquito larvae.

In collecting data in Pee Nuanla's area, I used the same methods as used in other areas, that is studying environment of the area in details by walking with Pee Nuanla so that I could collect all the 20 cases.

After I collected the 20 cases, I revised the obtained data in my rental room in front of Mahidol University for almost 1 week and found that it was enough to write my thesis. However, I still lacked the clearness of Wat Amphawa's history then I went there again to find additional data. I said good bye to the health volunteers before leaving there to write my research findings.

CHAPTER IV
RESULTS

4.1 Geography and history of the community

Wat Amphawa Community is one of the ancient communities in Bangkok Noi District. Previously, it was a small community that was believed that its local people migrated from Ayuthaya. Houses in that period were often built in Thai style with high cellars and triangular end of roofs. Buddhist temple halls and pagodas in Amphawa Temple can still be found at present. Furthermore, Amphawa Temple is regarded as an ancient place worth worshipping that was presumably built in late Ayuthaya Period. As sacred objects to be respected, there were a main Buddha statue with 4- cubit lap and Uthong-style face as well as 4 bronze images of the Buddha in Sukhothai Period, but 3 of them were left at present. According to historical evidences, Amphawa Temple was established in1668 in Sukhothai Period; however, it was not found who built it. In addition, the royal boundary was given to Amphawa Temple in 1673.

In the past, this community was surrounded by canals - Kraton Canal in the north or the front of the temple, Tewada Canal in the south and another canal in the east as well. Due to the landscape of the community that is surrounded by the canals and has a lot of ditches, the occupation of the local people is orchard gardening, for instance banana gardens, mango gardens and flower gardens, such as gerbera gardens. The original famous occupation of this community is burning glutinous rice in bamboo slips. Living nearby the river, the local people who burn it bring the bamboo slips from the north of the community and float them along the river. Thus, they become famous Suan Anan Glutinous Rice in bamboo slips at present.

Because of the landscape, most people use the canals as a way to communicate between the community and other communities, for instance to Mon Canal, Bangkok Noi Canal, Bangkok Yai Canal, Dongmoonlek Temple, Yangsuttharam Temple, Ban Khamin and Chao Praya River. Therefore, they can travel along the canals to other

places, such as Bang Sai Kai, Dao Khanong or Nakhon Chaisri District in Nakhon Pratom Province.

According to the previous national development, all parts of the country were developed; therefore, considerable canals were filled up to build roads. Thus, the communication was changed from canals to be roads. Furthermore, Chao Khun Rabiap, ex-abbot of Amphawa Temple, was a developer who managed houses of those who live in the temple's land as well as leased the land to build buildings, so the landscape was changed to be the community with crowded accommodations as present.

Nowadays, Wat Amphawa Community is located between Soi Jaransanitwong 22 and 24, Ban Chang Lo, Bangkok Noi, Bangkok.

Territory:	North:	Next to Dongmoonlek Temple
	South:	Next to Songtewada Canal
	East:	Next to Navy Station and Chinoros School, Isaraphap Road
	West:	Next to Yok Heng Furniture Shop and Jaransanitwong Road

Amphawa Community is 300 meters far from Jaransanitwong Road. Its entrance is a small one-way road. At the beginning of the road, houses with wide area where trees were planted are found. Most houses were made of cement and the fences are closed all the time as if nobody was home in the daytime. In addition, there are huge blocks for living next to the road and some of them sell goods which are not attractive, such as wooden sculptures. It is obvious that automobiles can be found more than people and in the middle of the alley; big blocks with several storey were built next to the others. Most of them are used as accommodations instead of shops. Besides, there are narrow passages towards many old wooden houses behind the blocks. More people can be seen here and in some passages, there are groups of motorcycle men taking passengers to the starting point and the end of the alley. Behind this area, Amphawa School which is not far from the temple can be found. There are a lot of people working and many shops sell goods used in routine life, for instance grocery shops, food shops, supermarkets, push-carts as well as food and

flower kiosks, etc. Inside the temples, many cars of local people were parked since they do not have their own place to park their cars. The government officials of the community at the gate of the temple are responsible for looking after them. The temple has a wide area and considerable all-purpose buildings. In addition, there is a shrine of Somdej Phuttajarn (To) located near the fence, and in front of the temple, there is a gate next to the street. In front of the gate, there are flower kiosks outside the fence. Behind the shrine, a child care center of the community which is a one-storey concrete building is located. Around the temple is the market area where many people work.

There are 2 alleys on two sides of the roads similar to the intersection at the corner of the temple. In the alley near the eastern fence of the temple, the public health center of the community which is on the first floor of Nu's two-storey block is located 50 meters away from the fence and a small green notice which is not noticeable was placed over the door of the house. Inside the alley, there are a lot of accommodations. On the other hand, another alley has a passage towards the community as well and the local people regularly use it to communicate. Thus, the two mentioned alleys can be linked with other communities nearby.

Except for blocks, rowed houses and tenement houses next to the road, general houses were built in a small wooden-house style with one storey. In the same area, some of them were separated into small houses to let and some of them have low old zinc roofs. Generally, the size of rooms in the houses is 3x4 meters. Some of them are wooden whereas some of them were built in half-wood and half-cement style. Furthermore, some of them were built with materials found in the community. Most of them have one window and the grounds were paved with old wood and lifted a bit higher from the ground to prevent the flood and some of them were paved with cement. As for the houses in which many families live, one family lives in one room. In addition, each house has concrete pathways but some of them use long planks as pathways because they are located on lowland and some water is held in the areas of the houses; however, most of them are wooden houses that were built more than 30 years ago.

Wat Amphawa Community is located on lowland nearby the river; therefore, sometimes it is easily flooded. The cellars of several houses are filled with slosh that is black, smells bad and many mosquitoes stay there as the sausage seller said, "The

cellar of the house is filled with slush and sometimes mosquitoes lay eggs in plastic boxes that are filled with water. So, there are a lot of mosquitoes and garbage, especially because of the ebb that push the garbage into our houses." In this community, the concrete pathway was paralleled with the canal draining polluted water which used to be the useful public canal, but at present, it is filled with polluted water drained from many houses. Furthermore, it is filled with plastic bags, old round bamboo baskets, polluted stuffs and garbage as Chalor complained, "Most of the garbage are plastic bags that flow along the canal, and they were stuck in front of our houses. Sometimes, we had to shovel them by ourselves." In addition, there are cages for pets, such as chicken on the pathways and in the house areas. Furthermore, a lot of trashes are cluttered in front of many houses.

According to the survey of community committee, it is found that the population of this community is 5,625 and there are around 400 accommodations and 700 families. Most of the populations are Buddhists and the next in rank are Christians.

The occupations of local people are governmental officers and merchants, for example grocery shops, food shops and fruit shops whereas the occupations of those who migrated from other provinces – mostly from the northeast- are workers and food sellers, such as meatballs, fruits, noodles, sausages, etc. Approximately, the average income of the local people is 60,000 baht per head per year. Those who migrated from other provinces will send money back to their parents, families, children, wives or husbands in their hometowns. In contrast, they will keep a small amount of money for paying the rental fees and for themselves. This group of people has not stayed in this community for a long time -around a few years since they often move to better work places.

4.2 The density of the accommodations in the community

Nowadays, Wat Amphawa Community has been considerably changed. It used to have a canal in the middle of the temple for traveling by boats, but this canal was filled up and the concrete road was built for traveling by cars. It is regarded as the center of traveling to trade or work in other places, for instance Wong Wian Yai, Sanam Luang or Bang Kae. Furthermore, many aspects of fundamental structures were

developed; therefore, more people migrate into this community, especially the tenement houses in this community are cheap, thus many houses were built for living and working as Tia said,

"The reason why this community is attractive is because it is as a by-pass – there are by-passes through other places. It is not a closed community. You can go to Jaransanitwong, Bang Kae, Issaraphap Road, Ban Khaek, Wong Wian Yai and Saphan Phut. Moreover, the rental fees are chap; therefore, those who stay here can take a short time to go to work because there are good ways of communication."

Furthermore, due to expensive lands in the city, landlords or tenants built small houses with small areas by means of cheap and not durable materials; therefore, many houses were built next to the others all over the community. Most of them are old wooden houses whereas some of them are made of concrete similar to rowed houses and can be found nearby the road. The rooms on the first floor are used as workplaces, such as shops, beauty salons, restaurants. It was found that two leased buildings with a few storeys were divided into tenements, but some of them are still not rented because the rental fees are expensive.

The houses as stated above are located around Amphawa Temple on 39 Rai of leased land and the temple's land stretching to the end of the alley on Issaraphap Road as well as the picture of many people working in this area can be seen. Most of the houses at the starting point of the alley on Jaransanitwong Road are big single houses with considerable areas which were built by means of durable materials, but a few people working in this area can be found in the daytime.

4.3 Interior generality of the houses

As for the interior generality of most houses, there are a lot of furniture, refrigerators, beds, washing machines and others placed inside the houses; thus, the houses are cramped, dark, and stuffy as well as a little space left for moving inside them – mostly, only the space in front of the television is left in order to relax and lie down or have meals. Some of them were modified by means of plywood or weak

wood that were easily built to be small bedrooms for members in the houses. Furthermore, it is found that inside the houses there are clothes-lines including old wardrobes for used and unused clothes. Thus, space is hardly left inside the houses or tenement houses since it is filled with many things. Moreover, it was noticeable that houses were seldom cleaned because several stuffs placed and hung were covered with dusts and spider webs.

As for the ventilation and light in the houses, it is found that the ventilation is not good since there are no windows or only one window in the house; therefore, there is not enough light which is important in the houses. Some houses do not have mosquito nets. Although some do, their mosquito nets are ragged and cannot protect them from mosquitoes.

As for the bathrooms, it is found that most houses have narrow and dark bathrooms. Furthermore, some houses use the electric light bulbs with low watt for lighting. Several bathrooms have lack of good ventilation and there are plastic containers for bathes and toilets. In the two-storey houses, the bathrooms are usually located under the stairs on the first floor.

As for the houses with the kitchens inside, they apply the space inside the houses, such as the back of the houses, the front of the bathrooms to be the kitchens that do not have good ventilation; however, some houses provide a proper place for the kitchens. Generally, there is a lot of kitchenware and wooden clothes-lines hung all over the walls that are a good place for mosquitoes to stay. Furthermore, there are a lot of members in some houses; therefore, it is crowded and they have to cook outside the houses since there is not enough space inside the houses, for instance Tia has rented the second floor of a wooden house for a long time while another family has rented the first floor. She has modified the place near the window outside the house to be a small kitchen because there is no balcony on the second floor and it is a small room.

4.4 The density of the population inside the houses

According to living condition and house style, many houses are small and narrow as well as there are a lot of members in each house – mostly a father, a mother and a few children. In several houses, a lot of members live together as extended

families, such as brothers or sisters' families. Thus, it is very crowded inside each house due to the poverty. They cannot move to other places because they cannot afford rental fees or other expenses, such as utilities; therefore, they live together in order to save the expenses of public utility.

Chalo said, "my children do not want to move because they have to pay the rental fee. Although this house is too narrow to live, it is better to save the expense and we can also share the expense."

Furthermore, some owners of the houses lease some rooms in their houses – single room or several rooms to earn more money. Some families rent a house together with other families to save the rental fee that is expensive if they live alone.

Phanthipha said, "nowadays, there are a lot of poor and it is very crowded, especially in tenement houses. Those who come from other provinces usually rent a house together. In some houses or rooms, they cannot cook. If they want to do it, they have to light in front of the rooms, but the rooms are very small and crowded."

4.5 Water system

As for the water system of Amphawa Community, although this community is located at the center of Bangkok, water cannot be supplied all the time - little water is supplied in some parts of the days, such as at around 10-11 o'clock in the evenings or on weekends when most people come back home.

Tia said, "Although water is supplied, it is not supplied upstairs at night. We have to catch water downstairs. On weekends, little water is supplied, but many people want to use it. I do not care whether it is supplied or not because I can keep some water in 5-6 earthen jars. If water smells bad, I will boil it. I have a lot of earthen jars, so if someone wants to use it for cooking, he/she will come to me, but if they want some water, they have to get it by themselves."

4.6 The management of vacant lands in the community

As mentioned above, if the vacant lands in the community are analyzed, it shows that there is almost no space especially in the house areas for people to relax since there are constructions in almost every meter of the area that were built next to others crowdedly. If there is a space, it is used for placing occupational instruments, such as push-carts, old crates and machines. As for public areas, it is found that the big vacant lands in Amphawa Community that are used for many activities or exercising are only in the temple and school. Thus, not so many people use this place for exercising in the evenings as Aranya said:

"In this community, the place for exercising is only in the temple. Groups of people come here to exercise in the mornings and evenings and they join exercising club. However, not so many people come here because they probably do not have time since they have to work."

Phanthipha said, "In the temple, there is a sport courtyard for people to dance and exercise. If I am free in the afternoon, I will go there to play badminton. The place for exercising or relaxing in this community is only in the temple because there is almost no space anywhere else."

Due to lack of vacant lands in the community, a little space near the road, alleys, pathways and the canal is used for placing garbage- both dry and wet garbage as well as used containers, such as plastic bags. Furthermore, it is also used for placing big things of the houses nearby, such as cages because they cannot keep such things in their houses. For the houses built among other houses and far from the public area, they will place the garbage, such as bottles and plastic bags if there is a little space between the houses.

4.7 The relationship in the community

Generally, Amphawa Community has quite a wide area and provides several

places for recreation, for instance Elderly Club of Amphawa Temple, Aerobic Club, Amphawa Youth Center and badminton courts of Amphawa Temple. In addition, local people in this community pay a lot respect to Luang Pu Paen. All of these seem to lead to the unity of local people in the community. In contrast, since it is a community in a big city where many people migrated, the local people in this community live individually and have a little interpersonal relationship as well as they have lack of sympathy for one another as in the past. Furthermore, the economic change leads to the new society of competition; therefore, the local people do not collaborate with one another. If they do, they must get something in return as an undertaker said:

"Previously, people were kind to one another since the society was similar to one in other provinces where people helped one another. Nowadays, the society has been changed to be materialism – people are selfish and do not help others because they have to work for themselves. They do not even go to the temple. If they get something in return, they will help or come. Thus, it becomes the society of exchange."

In addition, there is hidden political fight in this community - the local people like different political parties. However, it is found that political candidates mostly live outside the community.

Monk Somchai said, "The candidates do not come from this community. I do not know where they come from, but they offered themselves as candidates here, such as Ong-at Klamphaiboon comes from the south. All members in local political parties know one another, but when the election was held, they did not join the same political party- some joined Prachakorn Thai Political Party and some joined Thai Rak Thai Political Party. Thus, they competed in campaigning."

As for the collaboration in the community, it was found that local people did not pay attention to the collaboration of development. They all claimed that they did not have time since they had to work in order to earn money for their families.

Phanthipha said, “The reason why we do not collaborate is because we are poor and have to work due to a lot of expenses.”

Aranya said, “I have never participated in any activities because I have to sew only at home.”

4.8 Leading groups in the community

There are many organizations in Amphawa Community officially and unofficially as follows:

1. The Committee of Amphawa Community is a medium organization to coordinate between the local people and governmental sectors or private organizations related to the community.
2. The Public Health Volunteers was established in 1999 in order to inform the local people in the community about fundamental health and coordinate between the 30th health service center, Jao Am Temple and the local people. There are 7 volunteers who take turn at this center to provide medical supplies, blood pressure measurement, first aid and advices about public health information as assigned from 16.00-18.00 on Monday-Friday.
3. The Civil Volunteers for Protecting Danger was established in 1996. They play an important role in the community to help members of Wat Amphawa Community and other people in aspects of accidents and public hazards.
4. The Disciples of Luang Pu Paen was assembled by the local people to arrange activities on several important days of Amphawa Community, for instance Songkran Festival which is an annual festival of Amphawa Temple and Chidren Day Festival. The Disciples of Luang Pu Paen cooperate with some of the committees of the community to take care of the temple’s area. In addition, it is obvious that the Disciples of Luang Pu Paen is an organization that works more closely with the local people in several activities than other organizations that was established by the local people.
5. Child Developmental Center of Amphawa Temple is located in Amphawa School. There are 3 officers: the head of the youth center, the leader of physical education activities and a janitor. The main activity of this center

is to take care of children before entering schools and prepare them before studying in primary schools.

6. Saving Group of Amphawa Temple was established on May 5, 2001 due to the economic crisis at that time.

According to the study, it is found that although Amphawa Community consists of many groups or clubs, a little population joins them. Furthermore, all groups aim at doing activities according to their purposes. Although there are several organizations in Amphawa Community, the leaders of each organization do not collaborate with one another to control and prevent hemorrhagic fever. Only the leaders who are the Public Health Volunteers take care of this issue. Due to crowded community, a lot of accommodations and population including a few Public Health Volunteers, the campaign of controlling and preventing the decease is narrowly limited to only intimate acquaintances as Tia, a Public Health Volunteer said "only intimate acquaintances were engaged in the campaign. I do not want to give an advice to others." Therefore, not so many people were benefited by the mentioned campaign.

4.9 Traditions in the community

One thing that help the local people in the community be harmonious is the respect to the statue of Luang Pu Paen. The worshiping ceremony of Luang Pu Paen is annually held on April 13 by the local people in this community. In the sacrificial ceremony, pigs' head, food and several sacrifices will be sacrificed for worshiping. After that, the statue of Lung Pu Paen will be paraded from 10 o'clock along Issaraphap Road and into Jaransanitwong 22 so that people nearby can worship it. Luang Pu Paen are considerably respected by local people in Ban Chang Lo, thus the parade of Luang Pu Paen Statue is regarded as behavioral expression of the local people in the community. Namely, they are satisfied and pleasant to pay respect to what they worship that is the expression concerning belief and worshiping ceremony. Generally, the ceremony is concerned with entertainment, belief and respect to the statue. In addition, a rattan ball match is held in the ceremony of Luang Pu Paen every year. If the match is not held, the local people believe that there will be a lot of

obstacles and problems, for example it will rain so much that the ceremony cannot be held since they believe that Luang Pu Paen's favorite sport is the rattan ball.

The worshiping ceremony arranged by the local people can lead to the local identity, for instance the parade of Luang Pu Paen Statue and the rattan ball match lead to the local tradition of Amphawa Community related to the local people's ways of life. When it is time to organize the tradition and ceremony, the community must do it otherwise something is missing in their ways of life. Thus, this is the knowledge of the ancestors of the local people in Amphawa Community who were good at inviting people to join such a good and useful activity for the community and used Luang Pu Paen as a medium symbol to construct the unity in Amphawa Community.

4.10 Behaviors and routine lives of people in the society of the big city

Since Amphawa Community is an ancient community and has a long history, a lot of people who have various occupations gathering here. Thus, there are various behaviors and routine lives of people in the society of the big city, for instance government officers, employees, students, merchants, unemployed people and those who work at home that can be shown as follows:

4.10.1 Watthana: a driver of Office of the Food and Medicine Commission

Watthana is a 42-year-old fat short tanned man and always wears neat hair style. His hometown is in Ratchaburi Province, but he has lived in this community for around 30 years. Watthana's wooden house has one storey and is ruined; therefore it can not be seen clearly what color his house is, but it can presumably be light green. His house is located nearby the alley that is not quite far from the temple. Inside the house, there are a small living room, a bedroom and a small kitchen in front of the bathroom at the back of the house. The windows of the kitchen are next to the draining canal of the community and it becomes the place of garbage from his house. He lives with his wife and his sick elderly mother who is 81 years old at present. He does not have any children because he is sterile whereas his wife is a widow who has a child; however, her child does not live with them now.

Watthana is a driver of Office of the Food and Medicine Commission, Ministry of Public Health. When I interviewed him, he did not go to work since it was a holiday; therefore he helped his wife sell desserts. His wife's sideline is selling homemade desserts, for instance sticky rice with black beans and sweet potato in syrup. A part of the kitchen was separated to be a shop.

Everyday, Watthana and his wife get up at around 6 o'clock. After that he takes a bath and prepares medicine for his mother at midday. Then, he leaves for work at around 7.15 and he arrives at his office at about 8.30. Normally, he works in the ministry all day except when his wife asks him to buy something; he will buy it on Lotus Department Store nearby the ministry. After finishing his work, he reaches home at around 6.30. Then, he has dinner and he sometimes drinks alcohol alone. After that he watches television and goes to bed at around 10 o'clock. If he has to work outside his office, such as arresting pharmacists, he will come home at around 2 o'clock. His routine will be as mentioned above all year, so he has never gone out because he does not want to waste his money and is concerned about his mother who has diabetes.

On the other hand, his wife sells desserts all day long except for holidays when Watthana can help her; therefore she can sometimes take a rest and watch television In addition, she uses a fan to cool her as well as to blow mosquitoes. There are not any screens in his house, thus when he opens the windows, they are opened wide. Watthana told me about cleaning, "I will do the house cleaning when it is dirty once a week". He will clean the whole house including sweeping spider nets on the ceiling once a month. When cleaning, he will not open the windows for ventilation because the windows have been closed for a long time.

I asked him, "Are there any mosquitoes around the clothes-lines and the wardrobe in the house? I stopped for a while and replied, "There are about 4-5 mosquitoes." It seemed that he did not want to answer the question, so I asked him about the water system instead. He told me that water in this community was hardly supplied in the evenings on weekends because a lot of people use it; therefore, he had to keep water in water buckets in his house. After that, I asked for his permission to go into his bathroom in order to observe if there are any mosquito larvas in water buckets in the bathroom. I was found that there are some like other houses. While I was going

to see his wife, I looked at the saucer under the food cupboard. Watthana saw me, so he said, “I have not changed water in the basin for a long time. Are there any mosquito larvas? Therefore, I observed it carefully and replied, “Yes, a lot.” He said, “I was sometimes busy, so I forgot it.”

4.10.2 Aranya: an employee who sews clothes

Aranya is a 35-year-old single woman and sews clothes as her occupation. Her house is located at the end of the alley next to the wall of a military flat. Her wooden house with rectangle shape like a box of matches is lifted 30 centimeters high from the ground. It is 3 meters wide and 4 meters long. There is one room where I interviewed her including a small bathroom and a kitchen inside this room. His brother’s room that is 2.5 meters long and 2 meters wide was built next to her room. There are 4 chicken cages and a pile of wood and construction materials in the area next to her brother’s room. The condition of the house is not firm and dirty because the draining ditch of the tenement house with two storeys nearby was placed on the cement ground at the gate of the house; therefore polluted water flooded the front of the gate since the ditch was broken.

There are 5 members in Aranya’s house: her father, her mother, her brother, her sister and her. Her father is a painter and often does not live in the house. Normally, he stays in Singburi Province with her mother. As for her brother, she said that, “He stays here sometimes.” Therefore, only Aranya, her sister and brother live here. In addition, her brother is an engineer and earns 15,000 baht per month whereas her sister is an officer in Sanam Luang and earns around 5,000 baht per month. Aranya is low educated, thus she cannot work outside the house. She can only sew clothes; therefore she bought a sewing machine and earned 5 baht per a dozen of clothes. She can earn around 3,000 baht per month. She and her sister have to get up at 5 o’clock and then she cooks and makes some coffee for her brother. After that she washes and irons clothes and then, she sews clothes. Thus, Aranya lives in her house almost all the time.

Her brother and sister wake up at the same time and then take a bath, have breakfast, get dressed and go to work. On weekends, her brother normally gets up at 10 o’clock and then goes out to his friends’ houses. He arrives home late at night. If he does not go out, he will stay home and usually turn on the electric fan. On weekends,

her sister gets up at 5 o'clock as usual. After that she does the house cleaning, for instance sweeping and mopping and watch T.V or read at home. Normally, she does not go out. According to my observation, it was found that there were a lot of striped mosquitoes flying all the time. When I observed the back of the room where they rarely go and the window were closed, I found old mosquitoes on the clothes-line hung on the wall near the bed and big plastic bags were also hung. After asking Aranya about mosquitoes in her house, she replied, "There are some mosquitoes flying around a pile of used clothes in the daytime. Sometimes, they stayed on the clothes-line and when I picked my clothes, a lot of them flew out."

There is a small bathroom in her house in which a plastic bucket modified from a 20-liter color tin is used for the toilet. It was found that there was a lot of moss and chrysalis of mosquito larvas in it. Moreover, there is another big plastic bucket for bathing. Aranya said, "I turn on the tap and throw water away everyday." However, I observed that there were a lot of old mosquito larvas in both buckets. Usually, she uses water from water supply; therefore she said, "Water often stopped running. I had to wait for it; however, it was not so long, about an hour." She told me about rain water, "I seldom catch rain water because there are a lot of cats on the roofs. However, if there are not any cats, I still do not dare to catch it since the roof is dirty.

Since Aranya's house is far from the drains of Bangkok, water was drained into the house area; therefore the area was filled by water even at the door of the house where mosquito larvas could be found. She said, "I sometimes noticed mosquito larvas, but I did not pay attention to it because it is the same as in other places and can not be got rid of."

Aranya said that she rarely went out or saw a movie since she did not want to waste her money because she had a little income and had to pay for necessary expenses. If she was free or had stress from work, she would walk out of the house and pick up some trashes littered around her house that were mostly plastic bags and plastic boxes littered from the flat above because her house was next to navy flat. "I often saw litters and sometimes I did not pick them up for 2 weeks." She said, "In the rainy season, I often saw that there was mosquito lava in plastic boxes. I do not dare to tell people who stay in the flat because they will not believe me. You can see a lot of chips of wood and garbage behind my house since they littered everything."

4.10.3 Chalo: an elderly woman

Chalo is now 84 years old. Her house is located in the alley in front of the temple. In front of her house, there is a draining water trough that is filled with a lot of plastic bags and litters that were brought by water. Her wooden house with zinc roof has one storey and is not so big. Furthermore, it was painted light yellow that cannot be seen clearly. While I was going inside her house, she was sitting in an untidy wooden shed in front of the house containing several old construction materials, for example planks. In addition, there was a big earthen jar located near the shed. I greeted her and asked, "What are you doing?" She answered, "I am feeding my dogs." Chalo has 2 black dogs that look fierce because it barked at me when it first saw me. However, she refused, "They are not fierce." Therefore, I talked with her and introduced myself including asking her to give an interview because I visited many houses and no one gave me a chance to interview them.

Chalo told me that she had settled down in this community before the World War II was ended; therefore, she has lived here for around 60 years. Previously, she worked as a sculptor in Department of Naval Dockyards, but at present she has retired. When I asked her, "How many children do you have?" She answered smilingly, "I have 8 children: 4 sons and 4 sisters. My eldest child was a policeman, but now he has retired and lives in a suburb." Her second son is now 48 years old and sells coffins in front of the temple whereas her daughter-in-law is around 30 years old. They have 2 children who are 3 and 5 years old respectively. The second family is her daughter's family. She is now 40 years old and works in the delivery room of Central Hospital whereas her husband is around 20 years old. On the other hand, the third family is her granddaughter's family. She married a guy who sells coffins. Chalo said that she previously worked at eye-glasses shop but she quit now. Chalo did not know why she quit and when she asked her, she did not tell her anything. Her granddaughter has a 3-month baby.

Chalo receives around 7,000 baht from her children. In addition, her grandchildren give her some money, so her income is about 9,000 baht. Usually, Chalo gets up at around 4 o'clock because she has to go to the toilet at this time every day. After that, she prepares a meal in order to offer food to monks in the mornings. Then, she listens to the news on the radio. When the sun rises, she will offer food to

monks. After that, she has breakfast which is a soft meal, such as milk or soup because her stomach cannot digest hard food. Then, she watches television inside the house and in the late morning, she feeds her dog before going back to watch television again until the T.V program 'Kon Bay Khlay Kliat' ends. After that, she has lunch and watches T.V and listens to the radio at the same time. At around 20 o'clock, she has a little conversation with members in the house and goes to bed on the first floor. Two sides of the house – the front and the side next to the place used for cleaning – have no screens.

Her eldest son gets up at around 5 o'clock. After that he goes to work as a coffin seller whereas her daughter-in-law goes to work at around 7 o'clock because she works at a nursery nearby. Her daughter and son-in-law who work in Central Hospital usually get up at 5 o'clock. After drink coffee, they get dressed and go to work at the hospital. They arrive home at around 17 o'clock. When they take over-time job, they will come home at around 20 o'clock. On weekdays, they take a bath and then cook together. They watch television until 20 o'clock. After dinner, they watch television in the bedroom and go to bed. On weekends, they do household duty, such as sweeping the floor and repairing the house. Sometimes, they clean the bathroom. They rarely go out but borrow C.D. to watch at home. Sometimes, they come out to relax in the shed in front of the house.

As for cleaning the bathroom, Chalo said, "We help one another clean the bathroom, but we rarely move water from the water bucket for bathing because they are so big as well as we rarely move water from the water bucket for the toilet. If there are not any deposits, we will not do it." As for her granddaughter's family, her granddaughter works for her father-in-law at the coffin shop and leaves home for work in the morning. If she does not have anything to do at noon, she will come home to play with her child. She usually arrives home at around 20 o'clock. Normally, she takes care of her child. When her child sleeps, she leaves it at home and turns on the electric fan for it. After that, she washes her clothes. On weekdays, Chalo's granddaughter who is 5 years old goes to school and arrives home in the afternoons. On weekdays, she rests at home because her parents do not want her to go out since they are afraid that some motorcycles may crash her.

As for water system, Chalo said, “A little water will be supplied on weekends. I have to prepare to catch water at night. Sometimes, I did not have any water to cook at 4 o’clock. Water was supplied again at 7 o’clock.” Due to her age, I asked Chalo about vases, “Do you usually worship Buddha with flowers?” She answered, “Previously, I used flowers to worship Buddha almost everyday, but now I am too lazy to change water, so I use artificial flowers instead.”

4.10.4 Somboon: A big family in a small house

Somboon is 65 years old and has lived in this community for more than thirty years. His previous house was located in Deeduat Temple, Thonburi. There for 9 members in his small house. His grandchildren are one, three and five years old respectively. He used to be a soldier but now he has retired. All members live in a two-storey wooden house that was built more than 40 years ago. It is dark inside the house and there are a lot of things scattered in the house. His wife often sits on the chair near the wooden bed on the first floor all day long because she has diabetes. A small table used for placing television and electric fan is nearby. Somboon explained to me, “She has diabetes and high blood pressure as well as her back is disabled; therefore she can only walk inside the house. After taking a bath, she will sit on the bed to take care of her three grandchildren all day in the house. When they sleep, she will do household duty, such as doing the dishes, filling water and sweeping the floor.” According to the observation with the raising method for her children, it was found that they were not protected from mosquitoes in the daytime. Chalo’s wife bound her youngest grandchild’s leg next to the bed’s pole and let her sleep or crawl around the bed without any protection of mosquitoes. In addition, she let other grandchildren play inside the house.

Somboon said that, “One of my children used to have hemorrhagic fever when he studied in Chinoros School. Previously, the school was not developed and was located near the canal; therefore it was dark and there was not good ventilation. When he did, he did not want to eat anything. As I went to the doctor, he said that she had a fever. After his temperature was low, there were a lot of red rashes throughout his body, so I went to see the doctor again. Then, the doctor sent him to the hospital. The doctors at the hospital thought that it was not so severe; thus, they gave him some pills and let him

go home. The pills were red pills and the pills for nourishing his blood."

Somboon said about the protection of hemorrhagic fever, "In the daytime, when it was dark, I turned on the electric fan while in the nighttime, I used mosquito nets. I moved water from the place that was filled with water, for instance I moved water from the saucer under the food cupboard every 7 days. Moreover, I moved mosquito larvas away to feed fish." Somboon uses mosquito-coil for protection and mostly he uses it at around 17 o'clock whereas he hardly ever uses it in the daytime because it may be dangerous for his grandchildren.

Somboon also told me about his routine, "Normally, I do not like to do nothing. I will try to do as much as I can. I usually get up at 5 o'clock and then play with my grandchildren in the mosquito net. At 7 o'clock, I go exercising and buy Chinese doughnuts. I reach home at around 8 o'clock and have a conversation with members in my family. Then, I make cocoa and take my grandchildren a bath and feed them. I will try to do anything and will stop when I am tired. After midday, I take a nap and wake up at around 14 o'clock. If I have nothing to do, I will walk wherever. In the evenings, I take a bath and then watch television as well as play with my grandchildren. Time of going to bed depends on the television program – if I do not like, I will go to bed early. In contrast, if I like it, I will go to bed at one o'clock because I do not have to go to work.

His daughter works for Mama Factory. In the mornings, she cleans the house, walks the dog and then goes to work. She has never been on holiday since her office is an exporting company. She reaches home at around 23 o'clock because she has to take over-time job. His son works as a motorcycle man who gets up at around 5 o'clock. Somboon told me about his son, "His name is Sinat. He works as a motorcycle man. He used to have a lot of accidents. He was often drunk and woke up at 18 o'clock. After he had woken up, he cleaned his motorcycle and left home. He came home again at 4 or 5 o'clock. He usually works at night and sleeps in the daytime. Mostly, he earns more than 10,000 baht per month.

Furthermore, he has a daughter-in-law and a son who work as musicians. He said, "Wachira is my daughter-in-law. Her husband plays a musical instrument for foreigners in Grammy Band. Normally, he earns 4,000 baht in two days. He lives upstairs and there are separated stairs near the house to get to his room. He usually

works at night; therefore he will continue to sleep after having meals. If he does not work as a musician, he will work as a motorcycle man as well. He works as a motorcycle man from the morning till the afternoon and does not do at night. When he does not work as a musician, he will get up at 5 o'clock. After cleaning his motorcycle, he leaves home at around 6 o'clock. He will reach home again at 14 o'clock to take a nap and will go to work again at 16 o'clock. At 20 o'clock, he will arrive home. As for Wachira, she gets up and prepares the meals. Then, she does household duty, such as washing clothes. She is often busy with her work."

Somboon has another grandchild who studies in the 2nd grade. In the daytime, she goes to school and when she comes home, she will play in the house. He does not let his granddaughter play outside the house because motorcycles are ridden very fast.

He said, "Only I do the household duty." I sweep under the bed, sweep dust and mop the floor everyday. However, I sweep spider nets every month. At present, his wife does not do it because she is ill. He said about his daughter, "In the mornings, she helps me clean the house, walks the dog and goes to work. In the evenings, she takes the dog home, feeds the dog and goes to bed. It is good that she helps me." Inside the bathroom, it is dark and the light has to be turned on all the time. He said, "I use a plastic bucket for bathing and another one for the toilet. That is enough because the bathroom is narrow and we have to keep water otherwise we will have a problem. Water often stops running, so I have to catch it in the bucket. However, I will be informed when water is not supplied. Mostly, it is not supplied on weekends. Water that is kept will be used up soon."

Somboon explained the reason why 9 members had to live together in a small house, "My children do not want to leave this house because the rental fee is very expensive. Therefore, they will not live outside the house and will share the expenses of electricity and telephone together. It is difficult for them to go out and live alone as well as they have to pay the rental fee. They can live happily here, and they do not have to pay the rental fee. All they have to pay are expenses of electricity and telephone. Only this son has meals together with me. He will pay for food and we cook together. The others have meals separately. I do not want them to think that I am their burden because they have their own families; therefore, I do not want to disturb them."

4.10.5 Ay: a sausage seller

Ay is 37-year-old white, tall and thin guy with a long face and sunken cheeks. His hometown is in Phayao Province. He graduated in the 4th grade. He has a two-storey house that is rented for 3,000 baht a month. On the first floor, there are a living room and a place to prepare sausages for grilling. Therefore, there are a lot of equipments for sausages scattered around the house. On the second floor, he sleeps and hangs clothes. I asked for his permission to visit the second floor and shook the clothes-line. It was found that several mosquitoes flew out. Ay said that he did not use a wardrobe:

"Normally, I hang clothes on the clothes-line upstairs. As for used clothes, I pile them for my daughter to wash. Mosquitoes often stay on clothes. I do not have any wardrobes because it is difficult to move. If I do not get good income, I will move."

Ay's tenement house is located in a narrow alley that people can walk past each other. It is made of cement and its cellar is filled up with slosh and a lot of plastic bags. He told me that he moved into this community when his daughter was young, but now she was 15 years old. His wife moved from Roi-ed Province to Bangkok when she was a teenager. They have 3 children – 2 sons and 1 daughter. Previously, Ay was an electronic mechanic in Worachak that was very far from his house and he received low income; thus, he quit the job that he had done for 9 years and became a sausage seller like his wife. He explained about the reason why he had to work in Bangkok that it was difficult for him to work in Phayao Province and he got low income as a farmer. On the other hand, when he woks in Bangkok, he usually earns around 500 baht as profit per day. In average, he can earn about 12,000 baht per month, but when all expenses are excluded, around 3,000 baht will be left. He and his family loves this community as he said, "Since the tenement houses in this community are cheap and are located in a good location for trading.

According to Ay's routine, he said, "I usually get up at around 6 o'clock and buy sausages for selling. However, when the school is open, I will get up at around 5.30 and then buy food for my children at the market. After that, I prepare sausages by

making them to be like round balls until midday. Then, I take a rest downstairs like my wife. I usually go to work at around 16 o'clock, but when the school is open, I have to go earlier at around 14 o'clock. After the school is ended, he will sell sausages at Siriraj Hospital until 2 o'clock." Ay and his wife have no time to relax themselves sa he said, "We have to work everyday in a month, so we hardly ever have time to see a movie." Therefore, the recreation of Ay's family is only watching television mostly when they prepare sausages. Ay also said that he previously had some time to talk to his friend and drank alcohol together. In contrast, at present he has no time to talk to anyone. Since he and his wife have to sell sausages; therefore they have to leave their youngest child with their elder daughter who studies at Suan Anan School and let her take care of her 5-year-old brother. He will wait for her daughter to come home before he goes to work. On weekdays, his children get up at around seven o'clock and then take a bath, get dress and go to school. His daughter will arrive home at around 14 o'clock. His 12-year-old middle son will arrive home at around 20 o'clock. After his daughter returns home and take care of her youngest brother, he then goes to work. He will arrive home again at around midnight or 1 o'clock. On weekends, he lets his children play in the house. His children normally do not sleep in the daytime.

"I let my sister take care of my youngest child. I also have to let my children take care of one another. My youngest child studies in kindergarten and usually arrives home at around 14 o'clock. At 14 o'clock, I do not go to work because I have to wait for my eldest daughter to come home and then I will go to work. My daughter normally arrives home at around 15 o'clock. On weekends, I come home sometimes and do not take a rest in the daytime. All of my three children do not sleep in the daytime. I sympathize with my children because sometimes I do not light the mosquito-coil; therefore when I arrive home, there are a lot of mosquitoes on my children's body but, they are all right."

However, it was found that there are screens in Ay's house for protecting mosquitoes, but he thought, "The screens cannot protect us from mosquitoes because the doors are often opened all the time." It is in accordance that there were a lot striped mosquitoes flying inside Ay's house all the time while I was talking with him. Thus,

he had to turn on an old electric fan to blow mosquitoes. Furthermore, he used some ways else to protect from mosquitoes, for instance when he returned home at night, he lit the mosquito-coil and used the electric fan to blow. In his opinion, the electric fan cannot totally protect us from mosquitoes since they cannot bite us when the wind is blowing; however, if the wind from the electric fan does not blow much enough, mosquitoes can bite us. Furthermore, he rarely uses mosquito spray because he does not want to spray it when their children stay home. He thinks that the mosquito-coil is more useful because if he lights it, mosquitoes will not fly nearby it. Mostly, he uses it for protecting mosquitoes at night – when his children is going to bed at around 20 o'clock whereas he does not use it in the daytime.

As for the house cleaning, he said, "I often clean my house. It is untidy now because we are preparing sausages for selling. When we leave home, our daughter will clean the house. However, I rarely clean upstairs because it is already clean. I usually open the screens and windows, so I do not have to open them when I have to clean." As for the elimination of striped mosquitoes by means of other methods, Ay said that he did not eliminate them because he did not have time and he spent most of the time working.

At his house, he uses water supply. Ay said that sometimes water was not supplied. The governmental office pronounced it in advance. When he knew it, he turned on the tap to keep water in a cement tub. Ay said that he turned on the tap and used it everyday. Furthermore, he had to keep some water in order to grill sausages. Ay said that after using water he covered it with an enameled bowl instead of a lid. Ay has never put some sand in cement earthen jar and bucket because he often is not at home and does not know when the governmental officers distributes the brochures of protecting mosquitoes. As for other water containers, Ay said that the vases at home, "I will change some water on Buddhist Day." Ay accepted that he found mosquito larvas every time he looked into the vases. As for water in the bathroom, he said, "I will clean and change some water when there are some deposits once a month." He accepted that he often saw mosquito larvas in the bathroom and he took it away sometimes. Ay thought that the mosquito larvas in the bathroom were born by general mosquitoes, not the striped ones. According to my observation, considerable mosquito larvas were found in the bathroom.

According to campaigning activities or activities for helping the community solve the problem, Ay said that he had never joined the activities or even campaigned inside the house because he had no time not only for the community but also for the school where his daughter studied since he had no time to take part in the conference for he had to sell sausages everyday.

4.10.6 Samart: a fried chicken seller

Samart is 29 years old. Her hometown is in Kamphaeng Phet Province. Previously, she stayed in Pak Khlong Talad. At present she married a guy who came from Bureerum. They first met each other in the factory. After the marriage, they changed their occupations to be fruit sellers in Pak Khlong Talad 4-5 years ago. Samart moved into this community less than one year ago. She lives in a rowed house without windows. Inside the house, there is a clothes-line in the corner of the room. Furthermore, since there is no kitchen, she has to set a place in the right corner of the room for kitchenware. If she wants to cook, she has to go outside. In addition, there are not any bathrooms inside the house. Members in five rental room have to use 2 public bathrooms that are quite dark. There is only 10-watt light bulb for lighting. When I examined the bathroom by using a flashlight to look inside, it was found that there were many mosquito larvas in the cement basin because tenants and owner of the tenement house had lack of cleaning.

Samart moved into this community since she got low income in Pak Khlong Talad. Nowadays, she has changed her occupation from a fruit seller to a fried chicken seller. While I was interviewing her, her husband went to sell fried chicken. Normally, both she and her husband have to sell it together, but these days the school was closed; therefore she took her children from Kamphaeng Phet Province to live with her.

She told me about the reason why she moved to Bangkok, “It was barren there, so I was not able to work as a farmer. I could earn only 10,000 baht per year if I worked hard.” Therefore, her elder brother was sent to Bangkok to work. When her brother could work in Bangkok, she came here as well. At the beginning, her income was 400-500 baht per day and she sent almost all income home. At present, she has a husband and children; however, her income is still 400-500 baht per day. Samart said that her and her husband’s income that was around 20,000 baht per month was not left

since they had to pay for their children's tuition fee and milk.

Except of the reason that she got low income in Pak Khlong Talad, another reason was the expensive rental fee as she said, "previously, I had to pay 1,000 baht per month for the rental fee and more money for the expenses of water supply and electricity. They all cost me 1,600 baht per month. The expense of electricity was expensive. Here, I have to pay 1,000 baht as well, but there are a lot of people, so I earn a lot of money."

Samart told me about her routine, "I usually get up at 5 o'clock and then I steam sticky rice and cut chicken. On the other hand, my husband helps me clean chicken and load my stuffs up to the pickup truck. At 8 o'clock, I go to work. If chicken is heavy, he often helps me carry it." As for the chicken, she told me that a tradeswoman will send it to her in the mornings. "A tradeswoman sends me chicken. If both of us go to work, we will help each other cut the chicken. I put sticky rice into a plastic bag. At 8 o'clock, we will go to work. We will push our push-cart to sell fried chicken. Sometimes, we stopped to fry chicken or fried it while we were pushing the push-cart. We usually use a small pot to fry it. Mostly, we sell it in front of Bangkok Bank. In the evenings, we push the push-cart back to our house and sell it from the house to other places. We will sell it until all chicken is sold out. "We can go home earlier if the chicken is quickly sold out whereas we have to go home late if the chicken is slowly sold out. Normally, we reach home at around 16- 17 o'clock. After that we clean our push-cart for one hour. Then, I cook dinner for my children, but if my children are not at home, I will buy some food and then watch television." Since Samart and her husband are normally very tired from their works in the daytime, they go to sleep at around 21 o'clock. On vacations, she and her husband usually take their children to live with them; therefore she cannot help her husband sell chicken since she has to take care of her children. When her children sleep, she will wash clothes and let it sleep inside the house "among the mosquitoes flying inside the house." There is only the electric fan turned on for protecting mosquitoes. Frequently, her youngest child sleeps at 11 o'clock or at noon whereas her eldest child sleeps sometimes and plays inside the house due to having no friends.

4.10.7 Rot: an offspring of local people in the community

Rot is a thin tall tanned guy with a short hair style. He is studying in Department of Business Administration, Suan Sunantha University. At present, he is 21 years old. There are 5 members in his house: his father, mother, brother, grandfather and himself. His father is 49 years old while his mother is 43 years old. His brother is 18 years old and his grandfather has retired. He has his own house but has to rent the temple's land. His old house has two storeys – it is dark downstairs and airy upstairs.

As for his routine, on vacations, he gets up at around 9.30 and then goes out to eat some noodles or cooks food by himself. After that, he listens to a radio or plays a game. At around 16 o'clock, he plays football in the field opposite the temple of the community. Sometimes, he plays football at Thammasat University. After that, he takes a bath, have dinner and watch news with his father. He usually goes to bed at 23 o'clock. On the other hand, if his university is open, he has to get up at around 7 o'clock and go to university at 8 o'clock. He hangs out with his friend in the evenings and arrives home at around 21 o'clock. Then, he takes a bath, has dinner and goes to bed at around 22 o'clock. His father working in Department of Naval Dockyards gets up at around 6 o'clock. After that he takes a bath, has breakfast and goes to work at around 7.30. After finishing his work, he returns home. If he comes home early, he will wash dishes and cook dinner. Usually he does all alone. At around 20 o'clock, he watches news. On weekends, he gets up at around 7 o'clock and then washes clothes and does housework until the evenings. After that, he drinks alcohol with his father. When he is drunk, he goes to bed. His mother is a full-time officer in the office opposite Central Department Store, Wang Burapha. She usually gets up at around 8 o'clock. Then, she drinks coffee. If she gets up early, she will sweep the floor and asks Rot to mop the floor. After that, she goes to work at around 10 o'clock and reaches home at around 21 o'clock. Then, she takes a bath and goes to bed. On weekends, his parents often go shopping in BigC or Lotus Department Store, for instance oil, meat and chicken to keep in the refrigerator. His younger brother is going to take an entrance examination to study in the university. He gets up at almost midday and goes to his friends' houses. He returns home in the evenings and then goes out to play football with Rot and come back with Rot to have dinner. After that, he goes out

again. His grandfather gets up at around 8 o'clock or 9 o'clock. After that, he buys something to eat and comes back to read Bangkok book. At 15 or 16 o'clock, he sleeps on a canvas bed. In the evenings, he drinks alcohol with his son (Rot's father) and goes to bed. Rot also said that his grandfather bred doves.

Rot told me more that there were a lot of big mosquitoes in his house. He thought that they were striped mosquitoes. As for the protection in the house, he said that used mosquito spray and there were screens and electric fans in the bedrooms. Mostly, he used the mosquito spray before going to bed at night twice a week. He sprayed it at around 20 o'clock and goes to bed at around 22 o'clock. He said that the electric fan was not used to protect us from mosquitoes but to reduce the temperature; therefore, mosquito protection was as a by-product. According to the elimination of mosquito larva sources, some sand was put in the earthen jar and covered it. He did not notice the vases but his mother often changed flowers a few times a week. As for other water containers, he said there were only an earthen jar and a cement bucket in the bathroom. However, he said he often saw mosquito larvas in the bathroom and sometimes he used them to feed fish. Outside the house, he said there was no protection of mosquito larvas because he did not know how to protect them thoroughly.

Water supply is used at his house since he has never kept rain water because he thinks that rain water in Bangkok is dirty. Asking about the water system, he said sometimes water stopped running but not so long, maybe twice a year. The reason was because the ditch was broken. When asking how he took care of the earthen jar in the bathroom, he said he just closed it with a cover and "changed water when it was muddy." He kept water for bathing in the cement basin but he "rarely moved water from it." After he took a bath, he filled it again. Rot thought that when water was moved, mosquitoes could not lay eggs, but they might lay some eggs at night because nobody used water. According to my observation, there were some mosquito larvas in the earthen jar as well.

4.10.8 Ornphak: a perfect life

Ornphak is a 65-year-old widow. She lives in a clean and tidy wooden house with two storeys. There is a one-storey small house for servants built next to the big house. There is a wide area in the house where several trees were planted like nobles'

houses in the past. There are a lot of earthen jars and their covers around the house. Her husband used to be a navy, but he passed away 8 years ago. She and her husband moved into this community 46 years ago in 1957. Her son is a policeman who works in another province. He will visit her on festivals. At present, she lives with her daughter who teaches English to children in the community in the evenings. Her daughter sometimes does not get money because it is as a spreading of knowledge for the general benefit. Furthermore, there are 6 servants and members of their family consisting of 2 children

Ornphak said that striped mosquitoes caused hemorrhagic fever, but she did not know which one was striped ones or general ones because she could not classify them. In her opinion, striped mosquitoes were similar to anopheles mosquitoes that had stripes at their bottoms. When asking when anopheles mosquitoes mostly suck blood, she said she did not know it because nobody had hemorrhagic fever in this community before and the target group – both children and adults - that was risky for it was those who were bitten by mosquitoes, but she thought that children were the most risky since they did not know how to protect us from mosquitoes, such as hitting and slapping as well as they did not know how to protect themselves. As for the symptoms of those who had hemorrhagic fever, she said that they recovered from fever and then they had low temperature including red spots throughout their body. They should go to see the doctor and should not cure themselves because those who had hemorrhagic fever would have some danger if they took antipyretic pills. In her opinion, hemorrhagic fever can be protected by protecting from mosquitoes, for instance sleeping in mosquito nets or using screens. Thus, there are screens in every room of her house even her servants'. Furthermore, as for the protection, she thought that the sources of mosquito larvas should be eliminated, thus she tried to get rid of water from every place in her house. If some places, such as lotus basins were filled with water, she would put the sand that was provided by the municipality into the water. In addition, she let someone spay the mosquito spray inside her house. In the bowls under the food cupboard, there was no water because she used lime instead. She said that if someone told her that her neighbor had hemorrhagic fever, she would not be afraid because there were no mosquitoes inside her house. However, she thought that hemorrhagic fever was very dangerous since she watched on television that a lot

of people dying, but not so many people died in Bangkok. If there was a patient in her house, she would take him or her to the hospital. Therefore, it was not so frightening. Also, she said that she had never seen larvas of striped mosquitoes but normal larvas. She told me that the larvas would be dangerous when they became mosquitoes.

Inside her house, she uses nothing to protect her from mosquitoes except screens. Mosquito-coil and lemon grass are only lit for the students who study English in the evenings. As for the protection, she said, “I only protect it at night, not in the daytime because I think there are no mosquitoes inside the house in the daytime.” Furthermore, she thinks that there are no sources for mosquito lavas in the house because the bathrooms are regularly cleaned by her servants every week.

As for the behaviors of her servants, she said, “I have several servants. In the mornings, a servant cleans one house upstairs and downstairs whereas another servant cleans another house upstairs and downstairs as well. They wipe and mope it everyday. They also remove spider nets and open the window to ventilate. There are no mosquito larvas in lotus basin and no plastic bags outside the house. You can check them. After cleaning, they will iron clothes, cook food for me and feed chicken. In the afternoon, they usually iron clothes and prepare dinner. In the evenings, they take care of me. After I have dinner, their duty will be over.”

As for her routine, she said, “I get up at 5 o’clock to listen and watch news. I go to bed at 22 o’clock, so I get up at 5 o’clock because magpie robins sing. After that I watch news and wait for offering food to 3 monks. Then, I have breakfast and take a nap before midday. In the afternoons, I will do something, such as planning food to offer to monks. In the evenings, I go out to relax and talk to my friends. I often go out and hang out at a place on the waterside outside the house every evening.

There are 2 servants in Ornphak’s house. She has to pay both them 7,000 baht altogether. These two servants have stayed with her for a long time- since they were not married. When they got married, their family stayed in her house as well. She told me about the servant’s children, “My servant’s children are 8 and 3 years old. His father takes the eight-year kid to school at 8.30. I bought him a bicycle. The 3-year-old kid will study in the kindergarten this year. He normally stays home in the daytime and at noon he drinks milk and take a rest. At night, they use a mosquito net; however, they do not use it in the daytime. They use only the electric fan.”

Normally, Ornphak uses water supply and water from the water filter inside the house. Sometimes, water stops running, but she does not have any troubles because "there are a lot of bathroom containing a water cement bucket in each bathroom all the time." As for other water containers, there are a lot of earthen jar around the house, but they are not filled up with water. Some water was put into them in order to protect them from breaking. Furthermore, there are covers for all of them. However, according to the examination, it was found that inside her house, it was tidy and clean whereas there were a lot of mosquitoes staying in the bathroom, but no mosquito larvas were found in the bathroom.

These are some of the pictures from Amphawa Community where local people's lives are influenced by the society in the big city. They have to struggle all the time as other societies in the big city. There are various occupations and origins; however, all local people in this community is totally related to hemorrhagic fever, both providing sources for mosquito larvas and having a contact with striped mosquitoes.

4.11 Striped mosquitoes and hemorrhagic fever

4.11.1 The survey of mosquito larvas: Breteau Index (BI)

According to the hemorrhagic fever in Amphawa Community, mosquito larvas are a Breteau index since when mosquito larvas become striped mosquitoes; they will suck blood around the house area, their source or the place around 50 meters away from their source. If there are patients of hemorrhagic fever in a house, they will receive the decease inside their house or among their houses. As for this research, I surveyed mosquito larvas in 100 houses of local people in Amphawa Community in order to show the risk of local people in this community.

When the surveying date was scheduled, Noi made an appointment with 4 health volunteers who were available on that day to help her as a guide who takes the government officials to the surveyed house and ask all of them to wear the shirts of health volunteers. On the other hand, all government officials wore safari suits from Ministry of Public Health. They were divided into 4 groups, and the health volunteers who were all female led 5 government officials to the planned routed spreading

throughout the community. They led them to the area that they were responsible and get used to. In contrast, they passed the houses that they did not know or could not survey. In average, one government official had to survey 20 houses. For me, I joined with Dr. Sriwika and Noi to go along the alley in front of the temple. The first house that we surveyed was Nu's house that was the public health center of the community. According to the survey, there were no mosquito larvas inside the house. Nu said, "I cleaned the water bucket yesterday otherwise I feel ashamed as a health volunteer who has striped mosquito larvas." It reflects the health behavior that is not a routine although she has knowledge as a health volunteer. At the beginning of the alley, there are two-storey rowed houses where the bedroom is on the second floor and the living room and place for trading in the daytime are on the first floor. We were able to survey all houses that Noi took us to because she knows the local people well.

People in some houses who understood and trusted us let us survey their houses easily. On the other hand, some people in some houses did not let us in and refused, "No. There are no mosquito larvas in this house."

The result of the survey can be shown in table 1 and 2 as follows:

Table 1: The number and rate of mosquito larvas found inside the houses in Amphawa Community categorized by containers

Types of containers (inside the house)	**The number of houses in which containers were found**	**The number of houses in which mosquito larvas were found in the containers**	**The number of containers that were filled with water**	**The number of containers in which mosquito larvas were found**
Earthen jars or water buckets for drinking and applying	49	18	93	27
Water cement buckets in bathrooms and toilets	88	48	212	72
Saucers under the legs of food cupboards	13	2	50	5
Vases for fresh flowers/ glasses for worshipping Buddha	42	8	135	12
Containers for steeping vegetables (to keep them fresh)	12	1	16	1
Containers for betel-vines and other aquatic plants	7	3	17	3
Water containers for pets	14	2	17	2
Aquariums and other containers for aquatic animals	7	0	10	0
Saucers for plant pots	1	1	3	3
Scraps of materials and containers	6	1	9	1
Wells in the gardens	1	0	1	0
Wet rubbish	1	0	1	0
Enameled bowls filled with water under food trays to protect from ants	2	1	2	1
Buckets for waste water	6	1	10	1
Useless water buckets	1	1	2	1
Total	**99**	**63 (64.0%)**	**578**	**129 (22.3%)**

Table 2: The number and rate of mosquito larvas found outside the houses in Amphawa Community categorized by containers

Types of containers (outside the house)	The number of houses in which containers were found	The number of houses in which mosquito larvas were found in the containers	The number of containers that were filled with water	The number of containers in which mosquito larvas were found
Earthen jars or water buckets for drinking and applying	23	10	55	16
Water cement buckets in bathrooms and toilets	7	3	13	4
Saucers under the legs of food cupboards	1	1	3	3
Vases for fresh flowers/ glasses for worshipping Buddha	15	3	44	4
Old automobile tires	2	0	16	0
Water containers for pets	11	1	15	1
Lotus basins or wells in the gardens	7	0	22	0
Saucers for plant pots	8	2	30	3
Scraps of materials and containers	16	1	90	1
Vases of betel-vines	1	1	2	1
Cement grounds	1	1	1	1
Containers for steeping vegetables	1	0	2	0
Total	**45**	**19 (42.2%)**	**293**	**34 (11.6%)**

There are 75 houses where mosquito larvas were found; therefore the house index (HI) is equal to 75. According to the survey of containers inside the houses, mosquito larvas were found in 129 out of 578 containers yielding 22.7 of the container index. As for the survey of containers outside the houses, mosquito larvas were found in 34 out of 293 containers, thus the container index is equal to 11.6. When adding the

number of containers where mosquito larvas were found inside and outside the houses, the total number is 163 out of 871 containers; therefore the container index is equal to 19.0 and the Breteau index is equal to 163.

As for the data from surveying mosquito larva in this house, Ministry of Public Health indicates that if House Index or Container Index yields more than 10 or Breteau Index yields more than 50, it can be regarded that the community has high risk of dengue hemorrhagic fever. It is obvious that the survey of mosquito larva shows that Wat Amphawa Community has high risk of dengue hemorrhagic fever since Breteau Index is 3.3 times more, House Index is 7.5 times more and Container Index inside the houses is 2.23 times more as well as Container Index inside and outside the houses is 1.8 times more than what indicated.

The containers in which striped mosquito larvas were found the most often were 76 water cement buckets in 51 houses. Next in rank were 43 earthen jars or water buckets for drink and applying in 28 houses. Furthermore, 18 vases for fresh flowers and 6 saucers for plant pots were found. The containers found inside the houses that were filled with water the most often were 212 water cement buckets in the bathrooms and toilets. Next in rank were 135 vases of fresh flowers and 93 earthen jars or water buckets for drinking. The containers found outside the houses that were filled with water the most often were 90 scraps of materials and containers, 55 earthen jars or water buckets for drinking, 44 vases and glasses for worshiping Buddha and 30 saucers for plant pots.

Almost all houses that we surveyed had some similar characteristics – it was dark inside the houses, there are a lot of things placed downstairs untidily, such as clothes, routine things or even food and occupational instruments. These all led to support striped mosquitoes to stay there.

As for a house near Amphawa Temple that we surveyed, when we arrived, the host just got up and checked his instruments and push-cart outside the house to prepare for trading. In front of his house, there were a lot of iron scraps of gadgets piled untidily. At 10 o'clock, his wife was working inside the house. When asking him, he said that there was another family living together, but they did not get up because they stayed up late. When we asked for his permission to survey his bathroom, at first he denied; therefore Noi had to explain for a while and then he let us in.

When we went into his bathroom, we saw a square water bucket made of cement next to the wall of the house to keep water for bathing and washing in the tenement house. It was quite dark, so we had to turn on the light. Then, we saw a lot of mosquito larvas gathering like a black group in the corner of the water container. We were startled with the number of mosquito larvas found in this house.

The host of the tenement block like a dormitory knew Noi well; therefore after he knew our purpose, he invited us to survey striped mosquito larvas in the block. The ground around the block was paved with cement and was clean and tidy. Howevr, we did not dare to survey in each room. We found mosquito larvas in small saucers under plant pots filled with a little water. If we did not notice them, we would not know that there was some water in them. These plant pots were placed near the place for washing of people who stayed in this block and this place was also used a lobby of the owner of the block. We also found mosquito larvas in flower vases at the spirit shrine located near the gate that people often walked past everyday.

A grocery shop was made of wood and had one storey. The shop was opened widely next to the road. It was airy and ventilated in the house. In the middle of the house, there was a place for members in the house to relax, talk to each other and have meals together. No mosquito larvas were found in the vases or in spirit shrine and the bathroom; however they were found in 4 big earthen jars for drinking placed near the house. There were covers for every jar, so there should not be mosquito larvas staying in them.

As a health volunteer, her house had two storeys built in the same area as other 4 houses that were 2 meters far from each other. There was a vacant room for rent downstairs. There were two bathrooms next to each other at the back of the house. The windows and doors were closed all the time; therefore it was dark inside the house. Translucent roofs were used to make it brighter. Some earthen jars for bathing and toilet were found, but there were no covers; therefore mosquito larvas were found.

4.11.2 Hemorrhagic fever and local people in the community

Sample groups of local people knew that hemorrhagic fever was caused by striped mosquitoes. In contrast, some of them did not know that. Most of them said that kids often had hemorrhagic fever because they stayed at home and could not take

care of themselves. In addition, their parents or babysitters might not take care of them since they might think that the kids could take care of themselves. Another reason was because the kids were weak and not as string as adults. However, many said that people in all ages could have hemorrhagic fever, but they had less risky chance, such as teenagers and adult. It was because they were strong and could take care of themselves, such as slapping mosquitoes and protect themselves from mosquitoes. Furthermore, they rarely stayed at home. If adults or teenagers had hemorrhagic fever, it meant that they were so weak.

According to the study, it was found that the sample groups knew that hemorrhagic fever was dangerous and severe because it could cause death if they did not go to see the doctor. However, some of them said, “I am not afraid of hemorrhagic fever because I think there are no striped mosquitoes in my house and nobody in my community had it.” Some said, “According to my experiences, nobody died of hemorrhagic fever.” Most of them thought that if only one striped mosquito bit them, they could not have hemorrhagic fever; therefore patients had to be bitten by several striped mosquitoes because only one of them could pass a little decease into the body that could not cause hemorrhagic fever. Moreover, they had to be bitten several times because the decease could be accumulated in the body and when it reached a level, they would have hemorrhagic fever.

In addition, according to the causes of hemorrhagic fever, two third of the sample group knew that hemorrhagic fever was caused by striped mosquitoes. They thought that the patients had hemorrhagic fever because they had not enough rest or were weak; therefore they had a little immunization leading to several deceases and they could have hemorrhagic fever.

As for the time when striped mosquitoes suck blood, half of the sample group thought that they sucked blood only in the daytime whereas they did not do it at night as well as they often hid in the dark corners or clothes hanging inside the house. However, some said that they sucked blood in the daytime and stayed outside the house. Some thought that they sucked blood at night or at dawn and stayed in slosh outside the house. In addition, it could be found that they did it in the daytime as well since it depended on the time when they were hungry. In the day time, they stayed in the dark area because they did not like light. This sample group thought that striped

mosquitoes did not stay in the house whereas ones inside the house were normal ones, not the striped ones.

As for the sources for striped mosquitoes, some of the sample groups did not know that the sources were in dirty water or clean water as Phanthipha, an officer of a chemical company, said: “I do not know if there are striped mosquito larvas in dirty or clean water. There might be some even in clear water, rain water or water supply.” According to the sample group’s belief, three fourth of them said that the sources of striped mosquito larvas were outside the house, for instance canals in which water was still and mostly water was dirty and still. This sample group said that the sources should not be inside the house because most water inside the house was water supply that often ran and was used all the time; therefore mosquitoes could not lay eggs since the surface was rippled as well as there were no containers filled with water. Furthermore, some thought that there was no food for mosquito larvas in clean water inside the house; therefore, they could not grow up to be mosquitoes. Some thought that the sources were in containers filled with clear and clean water. On the other hand, some said that striped mosquitoes liked the sources filled with rain water while mosquito larvas in other sources, such as water supply were other types of mosquitoes, not the striped ones.

As mentioned above, it could be said that the sample groups knew that the sources of striped mosquito larvas were outside the house in still water whereas in running water, there were no striped mosquito larvas because water was rippled; therefore mosquitoes could not lay eggs. Moreover, some believed that mosquito larvas that were born in the bathroom inside the house could not grow up to be mosquitoes due to lack of food. Thus, it is implied that many of the sample groups have wrong knowledge of the sources of striped mosquitoes.

4.11.3 Missing information cannot reflect the real problem

According to official statistics, Amphawa Community is an area in Bangkok that has records of hemorrhagic fever for several years. In 2002, there were 15 patients and in 2001, there were 17 patients. However, there were no records of the dead from hemorrhagic fever. The public health center is responsible for the mission of control and protects the decease in Amphawa Community. This community is located not far

fron Siriraj Hospital. However, in records from the public health center, there were only a few patients every year. On the other hand, in records from the office of controlling insects and carrier animals that is responsible for controlling the decease and spraying to get rid of old mosquitoes in the affected areas when informed, it was found that there were more patients than in records from the local public health center. When asking local people and public health volunteers in the community about the information of hemorrhagic fever, it was found that there were a lot more patients who had hemorrhagic fever than the official records as informants said as follows:

Somboon, the first informant, said, “I knew that there were a lot of patients in this community, for instance in the house nearby, members in the house was sick at the same time. The younger member was sick before the elder one. There are some patients in the next alley.”

Aranya, the second infarment, said, “Last year, a child living behind my house was sick. He had fever for several days and his parents took him to the hospital. The doctor drew his blood and told him that he had hemorrhagic fever, so he had to stay in the hospital for several days.”

However, there were more informants informing about hemorrhagic fever.

Boy is 20 years old and study in Deapartment of International Business Administration, Siam University told me, “I had high temperature in June last year. I got red spots throughout my body and was so weak; therefore I went to see a doctor at Sriwichai Hospital. He examined me and drew my blood. He told me I had hemorrhagic fever.”

Nuch is a 32-year-old beautician in the community. She told me, “Last month, my grandchild and brother had hemorrhagic fever. My brother went to other places; therefore I did not know where he got the decease from. When he had fever, he did not go to work whereas when he recovered from fever, he went to work. He had fever and vomited for a few days. Then we took him to the hospital. After taking medicine, he did not recover; therefore he went to see the doctor again. Then, the

doctor drew his blood and said that he had hemorrhagic fever. My grandchild had the same symptom."

While I was interviewing Chalo, I heard that a 4-year-old girl had hemorrhagic fever 2 weeks ago. The girl's house is located opposite Chalo's house. According to the observation, things outside the house were placed like in Chalo's. However, I was not able to interview the host because he was not at home. After asking local people in the community, many of them did not know that there were some patients who had hemorrhagic fever in their community although the houses of the patients were not far away from their houses or even next to their houses because they did not pay attention to it. Sometimes, they knew the patients but had no time to meet them. Some thought that it was not their business. Some met the patients but did not know because they did not talk about their deceases.

Furthermore, according to the interview of Noi who is a public health volunteer, it was found that hemorrhagic fevers were found very often in the community all year long, mostly in the rainy season. There were patients, both adults and children, especially children who were 0-12 years old throughout the community. When local people were sick and did not know which decease they had, they went to the clinics or hospitals. The doctors told them that they had hemorrhagic fever. When they recovered, they went home. No organizations carried out public health service after the sickness. Only the public health volunteers visited them and gave them some advice as a public health officer and neighbor. As for the campaign of eliminating the sources of striped mosquito larvas according to the governmental program, the volunteers gave advice to their acquaintances whereas they did not do it for those who they did not know before.

CHAPTER V
DISCUSSION AND RECOMMENDATION

For over 50 years, since B.E. 2489, Bangkok has undergone a lot of changes in physical environment, social, economic and cultural part. The changes have affected life of people living in the city in different dimensions, resulted from self-adjustment in individual and group level. A traditional society in which people led simple life and cared for one another changed into an urban society or modern society in which people are in haste and hardly have interpersonal relationship. There are a lot of people migrating from rural areas to the city, resulting in congestion in many areas so that they become slums with various public health problems caused by urban ecology, including biophysical and socio-cultural part, especially an important communicable disease Dengue virus.

According to previous research studies, Wat Amphawa Community had high occurrence of Dengue virus, which its villagers always experienced. It can be said that the phenomenon was caused by not only people's behavior but community's physical factors settlement pattern, social, economic and cultural condition, lifestyle and daily living condition, such as resting and recreation of people in the community. These are related factors, which can be divided into 2 types environmental factors and risk behavior factors, which can be analyzed as follows:

5.1 Survey of domestic mosquito larvae

Domestic mosquito larvae can be a good indicator of a risk of the occurrence of Dengue virus because Aedes mosquitoes habitually fly to suck blood around people's dwellings or their breeding source. People are likely to get Dengue virus within their dwelling. In the research study, there was a survey of mosquito larvae in dwellings in Wat Amphawa Community to find a risk of Dengue virus and breeding sources of Aedes mosquitoes.

According to the survey, it was found that Wat Amphawa Community had higher House Index, Breteau Index and Container Index than standard values many times. This means that it is a community of a high risk of Dengue virus. Data obtained from the survey suggested that important breeding sources of Aedes mosquitoes in Wat Amphawa Community were the interior rather than the exterior of each dwelling. This is due to the fact that Aedes mosquitoes naturally lay their eggs on clean stagnant water. In each dwelling, there were important stagnant water sources—water containers in the toilet, that lacked cleaning and prevention of egg laying of Aedes mosquitoes. Narrow and rather dim toilets were then Aedes mosquitoes' perching places and breeding sources. Vases and glasses for Buddha image were also important sources because people were not aware of them because these containers were placed at a noticeable point, such as on a high shelf. After water in the containers was changed, it would be left for many days before new replacement, long before to allow Aedes mosquitoes to lay their eggs, which will finally grow to be mosquitoes. This relates to behavior of people living in dwellings.

Data collection was carried out during the hot season, which is the period of low epidemic of the disease. However, it was found that index values regarding Aedes mosquitoes were very high. And the index values would be higher in the rainy season because a lot of containers around the dwellings and garbage will become a breeding source of Aedes mosquitoes, which already existed in a large quantity.

5.2 Surroundings of dwellings and settlement pattern

In part of surroundings of Wat Amphawa Community, it can be said that the community had risk condition of Dengue virus due to its poor environmental sanitation and congestion in the community. That is, the community, even gaps between dwellings, was full of garbage. For example, in the rainy season, if there is stagnant water under each dwelling, this will become a breeding source of Aedes mosquitoes. Old condition and simple materials used to build each dwelling could not prevent mosquitoes but became perching places of Aedes mosquitoes. Another important thing was gaps between dwellings that always became an area to keep garbage or damaged articles. It was observed that such gaps between dwellings could

be a habitat of some lizards or poisonous animals, including perching places of mosquitoes because they were rather dark and narrow.

Furthermore, dwellings in the community located near one another, especially those with very close roofs, became a vast hunting area and breeding source of Aedes mosquitoes, in which mosquito larvae can grow to be mosquitoes. Also, settlement pattern could be a factor allowing perching and food hunting of Aedes mosquitoes, which made people in the community have a risk of getting Dengue virus.

5.3 Congestion of community

Condition in Wat Amphawa Community had changed a lot from the previous time. In Wat Amphawa Community, there were low cost rental dwellings, located in the center of city which could facilitate transportation and occupational execution, thus attracting a large number of people to live there. Accordingly, there were a large number of dwellings, rental dwellings or rooms, which caused congestion within the community.

From the above condition, it can be said that congestion of Wat Amphawa Community, in which dwellings were closely located along the community allowed the community to have a risk of getting Dengue virus. This is because the scope of food hunting area of Aedes mosquitoes, which isn't a long distance; however, it covers many dwellings. For this reason, if there is even only person in the community ill from Dengue virus, there will be more 30-40 dwellings that had a risk of illness from Dengue virus due to the congestion of the community, which allowed perching and food hunting of Aedes mosquitoes.

5.4 Interior condition of dwellings

In part of interior condition of almost all dwellings in the community, it was found that their interior space was occupied by a lot of daily used articles because of limited space, which made their dwellings narrow, unventilated and dim. Space around the dwellings was also occupied by articles. Gaps of each dwelling were full of shabby articles, suitable for mosquitoes's perching. Dim toilets with water containers or

cement tanks were neglected without awareness that they can be a breeding source of Aedes mosquito larvae.

Then, it can be said that interior condition of dwellings in the community was substantially suitable for the occurrence of Dengue virus, especially when each dwelling had breeding sources or perching places of Aedes mosquitoes, which could easily occur because it was built with walls made from unstable materials. Some dwellings were in old and bad condition. Some had screens but most of them were shabby. And the interior condition with dim light and position of a lot of articles was suitable for being mosquitoes' hiding and perching places, such as old cupboards, shelves and plies of daily used articles. As a result, if there was a breeding source inside the dwellings or there were Aedes mosquitoes flying into the dwellings, the dwelling interior would be a good source of the disease.

The way the people placed their articles in their dwellings is a risk behavior factor, resulted from limited interior space and close locating of dwellings, which is accounted an environmental factor.

5.5 Congestion of dwelling

The fact that, in the community, there were many people living together in a dwelling to reduce economic burden, due to poverty and that their dwelling was small and narrow resulted in congestion of each dwelling.

It can be said that congestion of dwellings brought about a risk of Dengue virus because Dengue virus is a communicable disease with easy epidemic and spread from a person to another, with Aedes mosquitoes as the carrier. For this reason, in a dwelling where there were a lot of people, there was a high risk of the epidemic due to the fact that there was a higher risk for people living in a congested dwelling to contact with Aedes mosquitoes. Then, in any dwelling in the community where there were a lot of people, there would be a high risk of illness from the disease, especially in the dwelling where there was a person ill from the disease or a disease source.

5.6 Water supply

Water supply system is another factor influencing the risk of Dengue virus because if water supply system cannot distribute water to people all the time, people have to reserve water in containers, instead of using a water tap directly. Wat Amphawa Community, as well, its water supply system couldn't distribute water to people all day long, such as during dusk, holidays or weekends, which was the time that most people arrived their dwellings from working or did activities. Reserving water without prevention of egg laying of Aedes mosquitoes made the containers become important breeding sources of mosquito larvae within the dwellings.

5.7 Using space in community

In part of space in Wat Amphawa Community, it was found that space, especially that around dwellings was not spacious enough for people in the community to relax because almost all the space was occupied by constructions located in dense condition. Vacant space was normally occupied by articles for working, such as carts and equipment, such as old crates and machines. Public area in Wat Amphawa Community, only around the temple or school, was spacious and used for activities or aerobic exercise. However, there were not many people befitting this area as ground for aerobic exercise in the evening.

In part of physical condition of the community, there was construction closely located so that there wasn't much vacant space to be a public area, except for road, lane and canal. However, the space was used for placing articles and garbage or unusable articles. Such garbage was a disease source and articles were a perching place of Aedes mosquitoes and their good breeding sources in the rainy season as well.

5.8 Community relationship

Wat Amphawa Community had changes in socio-economic part into a competitive society with migration of a large number of rural people. This made

people in the community lead their life individually, without tight relationship, generosity and cooperation. They would give cooperation or help only when they received something in exchange. This is a characteristic commonly found in general communities.

Organizations in the community are only a group of people doing activities according to their objectives. In part of cooperation in developing the community, it was found that people in the community didn't view its importance, based on the reason that they had to work to earn their living and to support their family.

From the above factors, although Wat Amphawa Community consisted of a lot of groups or associations, they lacked activities relating controlling and preventing Dengue virus, in association with the lack of relationship and kinship of people in the community. Then it can be seen that Wat Amphawa Community became a community, with loose relationship structure. This indicates that such relationship doesn't allow gathering to control and eliminate breeding sources of Aedes mosquitoes. Thus, it can be seen from the survey of Aedes mosquito larvae that almost all dwellings had at least a breeding source of mosquito larvae. That is, each dwelling had a risk of illness from Dengue virus.

5.9 Beliefs and perception of Dengue virus

Most people in the community perceived that Dengue virus was a fatal disease; however, they were not afraid of it because they hadn't seen any death from Dengue virus. For this reason, it can be concluded that the samples didn't realize the severity of the disease due to the fact that they didn't have an illness experience from the disease. They thought that they they could be ill from Dengue virus if they were bitten by a large number of Aedes mosquitoes. They perceived that Dengue virus occurred in children the most because they had low immunity and it was found rare in adults because they had higher immunity. Accordingly, it can be seen that the samples had wrong beliefs about the occurrence of Dengue virus in adults. In fact, adults have the same possibility to be ill from the disease as children. Furthermore, some samples didn't know that Dengue virus is caused by being bitten by Aedes mosquitoes, that are carriers but they believed that Dengue virus is the result of weaker health condition.

In part of food hunting of Aedes mosquitoes, most thought that Aedes mosquitoes lived and found food outside dwellings during daytime and especially nighttime.

In part of breeding sources of Aedes mosquito larvae, most samples thought that they lived outside home in still water. They thought that in the area of flowing or dropping water, there would not be Aedes mosquito larvae because such water surface would be wavy then mosquitoes would not able to lay their eggs. In addition, some believed that mosquito larvae in the toilet would not able to grow to be mosquitoes because they had no food.

Thus, it can be said that most people in the community had wrong perception of breeding sources of Aedes mosquitoes. There have been campaigns on Dengue virus prevention from the government; however, people in the community hardly received the information. They didn't have much knowledge about Dengue virus. This influenced their behavior in their daily life, which effected a risk to the disease, disease prevention and epidemic.

From the above data, it was found that physical environment of Wat Amphawa Community suited for the occurrence of Aedes mosquitoes—being situated on the level that could allow flooding, having garbage and articles spreading over, close locating of dwellings, domestic condition that couldn't prevent mosquitoes, overcrowding, poor water supply system, which effected breeding sources, food areas and perching places of Aedes mosquitoes, that were commonly found in all dwellings.

5.10 Behavior and daily life of people under urban society

Apart from physical environment, people are another a main factor influencing the occurrence of Dengue virus. Lifestyle and behavior of people in the community of living in the community all the time or some times also resulted in Dengue virus because if they lived in the areas with a lot of Aedes mosquitoes, they had a high risk of contacting the animals despite domestic prevention and a chance to get disease from Aedes mosquitoes outside their dwelling. According to the study on lifestyle and behavior of people in Wat Amphawa Community, they can be divided as follows:

5.10.1 Lifestyle and occupations

This relates to getting up and working of people who were vendors, worked for hire and worked in the office. The people can be divided into 2 groups—those working in daytime and those working in daytime and nighttime. As a result, getting up and working behavior are similar and different as follows:

Those working in daytime, including company employees or vendors, seemed not to be different in their activities and lifestyle. The people got up at about 5-6 a.m. For example, in the group of vendors, female vendors would go out to buy materials in the market and their husband would prepare other things at home, waiting for their wife. Some prepared breakfast for their children before they went to school. Another group took a bath and went to work.

Among vendors, after their children went to school, wife and husband would help each other prepare things, such as chopping and mixing chicken with seasoning and washing fruits to sell on their pushcarts. Many people of many occupations left home at 8-9 a.m. and sold their goods on their pushcarts to many places. But during the time, company employees started their work.

When the vendors could sell out all or almost all their goods in the evening, they traveled back to their dwellings to clean their equipment, pushcart and take a rest.

In some cases, such as motorcycle riders, they got up at 5 a.m. as well. After they got up, they cleaned their motorcycle and thus went out to work. The group of people would come back their dwelling again at noon to 2 p.m. and went out again in the afternoon. They would go back home at night to sleep.

Those who worked at home or unemployed people got up nearly at the same time of the above group but some of them got up late because they didn't have to go out or to buy things as vendors. Thus, they got up at 5-8 a.m. After they got up, they cooked for themselves and then worked, such as sewing clothes. Some people did housework during taking care of their children or selling goods. They would stop working about at 8-10 p.m. to sleep.

As for the group of people working during daytime and nighttime, they would get up at about 5 a.m. to buy things for sale, such as sausage and food for their children. After their children went out to school, they would prepare things for sale. Most of them would prepare it until noon. After that, they would take rest and went

out to work at about 4 p.m. During open days in schools, they had less time to rest because they had to go out at 2 p.m. to sell their goods by pushcart to reach the school in closing time of the school. The group of people would work until 10 p.m. and some worked until 1-2 a.m. and went back to sleep after that.

In view of lifestyle of people living in the community, it was found that under urban lifestyle, they had to be hurried to go out to work in the morning and go back home at night. Another group had to work in daytime and nighttime, making them waste most of their time traveling and working. It was found that the need to live and work under urban life, they didn't have time to look after of their house and environment outside their dwelling, which made interior and surrounding of their dwelling become a good breeding source of mosquito larvae, which is accounted risk behavior. And when mosquito larvae become mosquitoes, they would find food within the dwellings and around there. For this reason, people living in the dwellings or people around there would have a risk of getting Dengue virus during when they lived in their dwellings during daytime, which was life-cycle allowing them to contact Aedes mosquitoes all the time.

5.10.2 Resting /recreation

In part of resting and recreation behavior of people in the community, it was found that most of them took a rest after coming back from work by watching TV, which didn't consume much time due to tiresome from their all day-long working. However, in the group of labors, motorcycle riders or vendors with pushcarts, during weekend, some of them didn't stop working because they didn't want to lack their income. There were only some of them stopping working on Sunday to do their personal stuff, such as washing clothes or relaxing. However, the group of people had no much time for recreation outside home to the fair organized by the community, temple fair, yearly fair or gathering with their neighbors or other people in the community.

In the group of people working at home, they said they had no much time for recreation outside or in the community, even for going to the department store or theater. Most of them normally watched TV while working for hire at home.

In the group of unemployed people, they usually went to talk with their neighbors in the shop in the community. This is due to the fact that the group of people was elderly people that had retirement or elderly people taken care of by their children. The group of people did not prefer to go out of the community, for example, to the department store or theater. Mostly, after they came back from talking with their neighbors in the community, they would take a rest or watch TV.

Resting and recreation behavior of people in Wat Amphawa Community is in accordance with that of a research study of Chakrit Noramitphadungkarn (1975) finding that the population in Bangkok went out to work on weekday and weekend. It was found that on the weekend, they took a rest in their dwelling to save their money. People in Wat Amphawa Community as well, some of them had to take a rest at their dwelling in daytime and didn't prevent mosquito biting, which is a risk behavior factor. In association with poor sanitation allowing the dwellings to be mosquito a breeding source and the condition that couldn't prevent mosquitoes to fly inside, which is an environmental factor, this caused people in the community to have a risk of getting Dengue virus.

5.10.3 Child-rearing behavior

In part of child-rearing behavior of people in the community, it was found that in the midday during working or selling, they left their child with their old parents or eldest child. Most of them stayed in their own dwelling. However, for those with relatively high income, they would take their child to the "Young Child Center" at Wat Amphawa or to school.

As for those who were vendors and worked for hire, most of them brought their child who was old enough to stay with them during vacation. But they preferred to leave their very young child with their parents in other provinces and would bring them to stay with them periodically. When they brought their young child to stay with them, the wife would be responsible for taking care of him/her while doing light housework, such as cloth washing. Then the husband went out to work alone. Their child would play or sleep inside or around the dwelling. There were some families that left their child with the eldest child during they parents went out to sell things.

As for those who worked at home or unemployed people, it was found that they took care of their children while working. Their children were sometimes left sleeping in the cradle with mosquito netting or in front of TV facing against electric fan. Other elder children were at school. After finishing their studying in the evening, they played with their friends until the nighttime and then did their homework in their dwelling. During vacation, they were left to play with their friends inside or outside their dwelling.

Such child-rearing behavior can lead to a conclusion that mostly, children were left to be inside or around their dwelling. In view of dwelling condition that was suitable for perching of Aedes mosquitoes, leaving young children with their elder child or elderly people didn't allow the young children to receive enough good care. Taking care of young children with no measures to protect them from mosquitoes and neglect them during daytime, which is accounted risk behavior, in association with dwelling and community condition, which is accounted a community environment factor, brought about a risk of being bitten by Aedes mosquitoes and illness from Dengue virus. And even if there is only a person ill from Dengue virus, the disease can spread quickly.

5.10.4 Water consumption behavior

Water supply system is also considered what effecting a risk of occurrence of Dengue virus because if water supply system cannot provide water to the people for 24 hours, people have to reserve their water in containers, instead of directly using a water tap. In Wat Amphawa Community as well, it was found that water supply system could not provide 24-hour water supply to people in the community. During some periods, water supplied to the community was low in volume especially during nighttime from 10-11 p.m. or on holidays or weekends, which was the time that most people stayed at home or did activities in their dwelling.

In part of water consumption behavior of people in the community, it was found that those who were vendors, worked for hire and worked in the office living in rental dwellings had only water containers in the toilet for washing or cleaning. The condition of their rental dwelling including toilet, which was unventilated and dim, was suitable for being a breeding source of mosquito larvae although there were not

many containers and they were not in a big size. However, due to the lack of sufficient water supply during some periods, they used containers to reserve their water, which was sometime sufficient or insufficient for them due to the lack of big containers.

Lifestyle of those who were unemployed or worked at home was totally different from those who were vendors, worked for hire and worked in the office, that is, most of people who were unemployed or worked at home had their own dwelling. Their dwelling tended to be in old condition with a large numbers of water containers and most of them preferred to keep water in their cement tank in full level. Accordingly, some dwellings became a good breeding source of mosquito larvae. This accords with the survey of mosquito larvae, finding that in almost all dwellings, there were mosquito larvae in any containers.

Because there were a large number of people in Wat Amphawa Community, water supply system could not distribute sufficient water to each dwelling, resulting in provision of domestic water containers. And such containers were an important factor effecting breeding sources of Aedes mosquito larvae, which is accounted a risk behavior factor. This is in accordance with the study of Rudnick (in Suporn Chunhawutiyanon, 1999:20) on ecology regarding Dengue virus in Malaysia, suggesting that reserving water and patterns of water supply services were important factors on breeding of Aedes mosquitoes, which caused the epidemic of Dengue virus. And this is in accordance with the study of Whiteford L.M., (1997) on anthropological ecology of Dengue virus in urban area of the Republic of Dominican, finding that the most important cause of Dengue virus was reserving water for consumption.

5.10.5 Dwelling cleaning behavior

In part of dwelling cleaning behavior of people in the community, it was found that those who were vendors, worked for hire and worked in the office usually cleaned their dwelling quickly before going out to work in the morning. Mostly, they swept their floor but they didn't have much time to clean it thoroughly, without care for dwelling cleaning.

Alternatively, many people asked elderly people and their children, who were students to clean their dwelling after they went out to work. It is thus found that depending on children or elderly people labor for cleaning resulted in messy condition

in the dwellings. It was found that their screens were dusted and their ceiling was full of webs. Furthermore, most of them, while cleaning, didn't prefer to open the door, window or screen for ventilation or controlling and preventing mosquitoes. In only some dwellings, elderly people or retired people cleaned their dwelling. However, they could do it in only some areas.

As for those who were unemployed, it was found that they usually spent their free time, for taking a rest and watching TV, to clean their dwelling. It was found that this group cleaned their dwelling the most among other groups. They frequently cleaned their dwelling inside as well as outside.

It can be concluded that in part of cleaning behavior, most people in the Wat Amphawa Community cleaned their dwelling quickly or especially in the part they viewed dirty and whiling cleaning, they didn't open the door or window for ventilation and driving mosquitoes out of the dwelling. As a result, their cleaning behavior of people in the community couldn't reduce the number of mosquitoes in their dwellings. In addition, in cleaning toilet, they ignored discharging water in water containers. Then even though there were not many containers, mosquito larvae were found in there. Although this was dwelling cleaning behavior of people in urban community, it is in accordance with the study of Sawangchai Chaiyakit (1996) studying environmental heath behavior and knowledge of Dengue virus of housewives in rural areas in Namkam Sub-district, Thatphanom District in Nakorn Panom Province, suggesting that there was only one-third of the households that paid attention to clean their toilet, getting rid of filthy water and cleaning their house inside and outside. However, such care was not sanitary, as it should be but needed improvement. Accordingly, dwelling cleaning behavior of people in Wat Amphawa Community, didn't reduce the number of mosquitoes in their dwellings, which is accounted a risk behavior factor. And they not only ignored eliminating breeding sources of Aedes mosquitoes but they also allowed the occurrence of Aedes mosquito larvae.

5.10.6 Mosquito biting prevention behavior

In part of mosquito biting prevention behavior of people in the community, it was found that most of them prevented mosquito biting during only nighttime. Normally, they prevented mosquitoes by lighting mosquitoes repellant coil and

spraying mosquito repellant to eliminate mosquitoes, especially during the period when there are a lot of mosquitoes, twice a week. In some dwellings, people closed their dwellings to prevent mosquitoes in the dusk with the mentioned methods.

However, there were many people who used an electric fan to prevent mosquito biting, which is a byproduct of driving heat. Among those using screens to prevent mosquitoes, they viewed that these couldn't fully prevent mosquitoes because mosquitoes could fly into the dwelling if people in the dwelling were careless and often opened the screens.

Such methods were applied by people in the community to prevent and eliminate mosquitoes according to their necessity, skills and convenience, such as turning on an electric to drive mosquitoes, lighting mosquito repellant coil to prevent mosquitoes, closing dwelling before nighttime, sleeping in a mosquito net at night and using screens, which was found in only bedrooms in some dwellings. Such mosquito biting prevention behavior, compared with the habit of Aedes mosquitoes that they like to hunt food during daytime, suggests its inefficiency to prevent mosquitoes biting, especially among those working in daytime and nighttime, such as vendors of grilled Thai sausages, who spent a period during midday to take a rest after preparing their products they would sell in the afternoon. Even those working for hire, they had to go back home to have lunch and take a rest during midday because the weather was hot and there were not many service users. Accordingly, their mosquito biting prevention behavior didn't prevent and control Dengue virus, which is accounted risk behavior of contacting with Aedes mosquitoes. This also accords with the finding of the study of Suriya Samutkoop (2536: 120).

5.10.7 Cloth hanging behavior

In part of cloth hanging behavior of people in the community, it was found that those who were vendors, worked for hire and worked in the office. Due to living in a small rental dwelling with a small size, they didn't have a cloth cupboard. They didn't prefer to buy it because it wasn't convenient for them when they moved to another place. If they couldn't earn well in the area, they would move to another place. Accordingly, they made their own wire lines to hang their clothes. Furthermore, they folded their dried clothes and put them in their dwelling. As for freshly used clothes,

they put them in a basket waiting for washing and some plied them up at the corner in their dwelling, that could be a habitat of Aedes mosquitoes.

Among people who worked at home and those who were unemployed, after they washed and dried their clothes, they preferred to keep some of them in the cupboard and folded some or hang them on the lines outside the cupboard. Generally, they like to make wire lines at the corner of the room, which could be also a good living place of mosquitoes.

It could be said that cloth hanging behavior of people in Wat Amphawa Community allowed the accumulation of Aedes mosquitoes in their own dwellings. This is due to the fact that Aedes mosquitoes live and perch on the clothes hung on wire lines on the wall and suck blood during daytime. If Aedes mosquitoes don't suck blood or don't suck enough blood during daytime, they will fly from their perching place to suck blood during dusk, especially in the room with not enough light. Aedes mosquitoes prefer to bite those wearing dark clothing to those with lighter cloth, especially red, black, blue and green. However, according to a study on perching place of Aedes mosquitoes in Bangkok (Pant & Yasuno, 1970b), it suggested that during daytime, most mosquitoes perch on hanging items. This is in accordance with that of Somkiat and Banyong, 1996, studying perching place of female Aedes mosquites in Rayong province, suggesting that they perched on hanging clothes (66.5 %), mosquito net and robe (15.7%) , wire line and electric line (5.5%) ,furniture (4.4%), container (2.6%), dwelling wall (2.5%), and other material (2.8%). Then it can be seen that Aedes mosquitoes like to perch on hanging clothes the most. People in the community didn't prefer to use a cupboard to keep their clothes because of considering convenience in moving and dwelling space. Then hanging cloths on the wire line is a risk behavior factor of being bitten by mosquitoes, resulting in Dengue virus.

5.10.8 Mosquito larvae prevention and elimination behavior

In part of mosquito larvae prevention and elimination behavior, it was found that most people didn't pay attention to mosquito larvae in their dwelling because they thought that mosquito larvae in their dwelling were not likely to be harmful, making them hardly eliminate their breeding sources. Due to the ignorance of harm of mosquito larvae, the way they eliminate mosquito larvae's breeding sources was

pouring water, especially among vendors, those working for hire and those working in the office. This is because the group of people didn't have much time to take care of their dwelling due to the fact that most of their time was spent on their work. For this reason, the group of people didn't notice environment in their dwelling. It can be concluded that they would eliminate mosquito larvae breeding source when they them but they wouldn't do so in the containers in which mosquito larvae weren't noticed, such as in the vase or food cupboard legs.

There were many people who were hardly interested in controlling mosquito larvae breeding sources. They considered only having water of daily use. From an observation, it can be noticed that in some dwellings, even in small containers, there were mosquito larvae inside. In addition, when they found that there were larvae in such containers, they didn't think they should eliminate them. However, there were minority who had behavior of controlling and preventing Dengue virus by closing jar lids, and adding Abate sand in containers inside and outside their dwelling to prevent mosquito larvae breeding sources. Besides, the lack of correct knowledge of Dengue virus resulted in incorrect behavior of controlling Dengue virus, such as the lack of awareness of controlling the disease due to thinking that the disease was caused by mosquitoes outside the dwelling. For this reason, they didn't pay attention to eliminate mosquito larvae breeding sources in their dwelling. Although there were campaigns, advocacy to eliminate their breeding source, these didn't create people's proper behavior of controlling the disease.

In part of involvement in controlling mosquito larvae breeding sources, Supatra Sombat (2000) stated that, due to there are 4 periods of mosquitoes' life-cycle varying to biological and ecological condition, methods to control eliminate mosquitoes in each period must vary to each period: 1) Egg period. Due to the fact that eggs of Aedes' mosquito have a very small size and are dryness-and chemical-resistant. The easy method to eliminate their eggs is to wash the surface of containers 2) Larvae and pupa period. Controlling and eliminating mosquitoes in the period is the easiest and the most convenient due to the fact that mosquito larvae and pupae live in water containers inside and outside dwelling, thus being a still target for eliminating better than mosquitoes in other period. The easy and convenient method to control and eliminate mosquito larvae and pupae is to reduce or eliminate their breeding sources,

that is covering water containers. As for water containers with no lids, such as cement tank in the toilet, it is preferred to add *Abate sand to eliminate mosquito larvae, wash and discharge tank every 7 days or put 2-10 small fish, depending on the size of the tank, to eat larvae. However, it was found that people in Wat Amphawa Community hardly eliminated mosquito larvae, reasoning that they "had no time", "didn't pay attention to them" and "didn't know if they are harmful." Such things made the dwellings become mosquito larvae breeding sources and resulted in illness from Dengue virus, This is in accordance of the study of Prakong Panurai et al. (1985) studying on acceptance to use Abate sand suggesting that the people with low acceptance to use Abate sand would have a higher rate of illness from Dengue virus than those with high acceptance to use Abate sand. This is also in accordance with the study of Tonn T.J. (1969) surveying breeding sources of Aedes mosquitoes in 14 areas in Bangkok in 1969, finding that the increased number of water containers related to the number of mosquito larvae. For these reason, if people's dwellings have a lot of breeding sources of mosquito larvae without elimination like Amphawa Community, there will be a high risk of illness from Dengi disease. From the above information, it can be concluded that contact with mosquitoes of the people in Wat Amphawa Community was caused by changes in the community after World War II, during when there was construction of roads inside and outside the community, resulting in progress and development. This is in accordance with the study of Pusadee and Tipatat and Manop Phongsatat (1982:408) finding that Bangkok, from the period of World War II, especially in 1982, middle-sized housing estate were located away from the city center around vacant space in the north; northeast around Tung Bang Khane and Bang Sue; and the east, extended towards Taling Chan, Nong Kham and Bang Khuntian. These became residential areas of middle-classed people or those having moderate economic power. There was a variety of dwellings—twin and single house in middle-sized housing estate and block buildings. Another group of people, poor people, namely 'slum people', preferred to stay in center in low-cost rental dwellings or invade vacant land to build their simple dwellings with low cost. Then there was an increased number of dwellers in the areas, which caused overcrowding so that the areas become "slums".

Most people migrating to Wat Amphawa Community were people from the Northeast, Central and North of Thailand respectively. They came here to execute a variety of occupations, such as vendors of fruits, sausages and noodle. Such migration made the small community become overcrowded by people and dwellings. It can be considered that people who migrated to live in the community were influenced by some factors, such as having infertile land for growing plants or having their own land for growing plants and poverty. Such causes of migration to urban areas are in accordance with those found in the study of Davis (1965) suggesting that the origin of urbanity might be urban condition itself in which people's lifestyle significantly depended on time and migration of people from the rural area due to the expansion of population in the rural areas, resulted from public health development which effected higher birth rate than mortality rate. Such increased rate didn't accord with economic development, which caused migration of people in rural areas to urban areas. And migration of people from rural areas to urban areas significantly resulted in rapid urban growth and slum, in association with some factors attracting people to migrate in Wat Amphawa Community, such as low-cost rental dwellings. In addition, the community was near commercial centers because there were a lot of people and it was a transportation center allowing convenient traveling to work in Bangkok, such as to Wong Wien Yai, Sanam Luang or Bang Khae.

The density of population and dwellings is an important factor effecting urbanity and congested community. Settlement pattern here lacked proper order, that is, its condition is not in accordance with sanitation. It can be found that dwelling condition of people in the community was characterized by unstable and simple materials, such as plywood. Some dwellings were dilapidated with stagnant water under. Areas around the dwellings and the canal were full of garbage. This was in accordance with the study of Weeraphan Suphanchaimat at al. (1993:80-81) studying urban environment of Muang Municipality of Khon Kaen province, suggesting that there was overcrowding condition and most areas around dwellings were full of garbage and only 60 % of people got rid of garbage by using truck services of the municipality. Such garbage disposal condition in Muang Municipality was a cause of Dengue virus within the community because garbage or disposed items around the dwellings, such as used cans and tyres were an important sources of mosquito larvae

around their dwellings (Booluan Panthumachinda, 1992,163-175). In addition, in view of interior of the dwellings of the people, it was found that there was no much space within the dwellings because it was substantially occupied by articles. And it was also found that the dwellings had no ventilation, with web on the ceiling and dim condition in the toilet. Such dwelling condition allowed the community to expose to Dengue virus. Such condition could not prevent Aedes mosquitoes to fly into the dwelling.

Besides, in view of lifestyle of people living on the community, it was found that lifestyle under urbanity, people had to be hurried to go out to work in early morning and go back home at night. This affected cleaning in their dwellings. Such haste didn't provide much time to clean their dwellings. And in view of water consumption behavior, it was found that they needed to reserve water because water supply system couldn't distribute enough water flow during dusk, which was the period in which a large number of people need water at the same time. This made them reserve water in containers. And although such containers were only small plastic containers or jars, according to the survey, it was found that in such containers, there ware mosquito larvae. This is in accordance with the study on reserving water in containers resulting in mosquito larvae breeding sources of Rosenbaum J., et al. (1995) studying involvement of people in a community in preventing and controlling Dengue virus in Trinidad and Tobago, suggesting that an important problem was the lack of clean water supply, resulting in a lot of Aedes mosquito breeding sources. This is also in accordance with that of Mehar (1978) studying the epidemic of Dengue virus in Malaysia, suggesting that there was no water supply to people and then people had to reserve water in jars. This is accounted the most important factor influencing the increase of Aedes mosquito breeding sources. Furthermore, the lack of proper dwelling cleaning, in association with behavior of hanging clothes on wire lines of people in the community, resulted in breeding sources of many kinds of mosquitoes. Accordingly, if people had cleaned their dwelling with opening window for ventilation to allow mosquitoes to fly out, the number of mosquitoes perching the dwellings would have decreased, resulting in less risk of Dengue virus.

However, in part of the occurrence of Aedes mosquito larvae breeding sources and accumulation source, in association with child-rearing behavior, it was found that child-rearing behavior without good protection by mosquito-prevention

equipment, electric fan or mosquito repellant coil allowed high possibility for people to be bitten by mosquitoes. This is in accordance with the study of Rosenbaum J., et al. (1996) studying involvement of community in preventing and controlling Dengue virus in Trinidad and Tobago, suggesting that an important problem within dwellings that people paid interest in was only disturbance from mosquitoes or mosquito biting during nighttime. Then the lack of appropriate measure on mosquito prevention or leaving young children to sleep in front of TV during daytime or with elderly people and elder sister, including leaving them to play in the dwellings, resulted in illness from Dengue virus. This is because such behavior allowed the children contact with mosquitoes, even the adults, especially the group working at night and taking a rest during midday or holiday. This is due to the habit of Aedes Aegyph, a kind of mosquitoes likely to suck blood during midday. Then, it can be said that dwelling condition and the lack of proper prevention of mosquito's biting are complementary factors to the mosquitoes' habit. In addition, urbanity caused people to lack cooperation in controlling Aedes mosquito breeding sources inside and outside their dwelling and community, in association with group of people that lacked potential to deal with the issue but aimed at doing activities according to their objectives without coordination among groups, resulting in the lack of campaigns for controlling Dengue virus effectively.

5.11 Wat Amphawa Community and existence of Dengue virus

The ongoing development doesn't only differentiate between urban and rural areas in terms of social, economic, political and demographic but it is also an important factor of migration of rural people to urban areas due to the fact that their need that cannot not meet any response in the rural area. Especially economic necessity, it is an important cause of rapid increase of urban population, resulting in many effects, especially social and environmental parts and changes in ecological system. Urban development without proper resource distribution under urban ecology effects driving a group of underprivileged people, mostly poor people, to live in urban areas lacking development. Congestion in limited space, lacking public utility and

sanitation with lifestyle suiting for disease cycle result in the possibility of illness from diseases, especially Dengue virus.

According to a study of people's lifestyle and urban ecology relating illness from Dengue virus in Amphawa Community, it was found that the population here were those who were natives of the community and those migrating from other areas. The latter group had different reasons for migrating in this community, including economic factors driving them to earn their living in the community, to rent a dwelling or to buy a small piece of land. No matter which group they were from, they were in common that they had some necessity to live in the community under the country development in economic, social and cultural parts, which change rapidly and affect the majority of the country.

In Wat Amphawa Community, after the development, it has changed into urbanity with a lot of construction. The land with no commercial block buildings would become residential area, with dwellings that were maintained in their original patterns, such as single 2 storey-dwelling or rental dwellings made from easily available, cheap material with low cost but not stable by using all the space with utmost benefits as much as possible. This is because the land cost higher rapidly and then landlords divided it and sold or rent it to people in small plots without land development or construction planning so as to gain utmost benefits from higher price of land. Then small dwellings or rooms were constructed near one another with disordering arrangement and low cost for the dwellers with low income. In the dwellings, there was no light enough because of considering the safety. Some area of the community, under the dwellings, was full of stagnant water all year long. There was a small wooden or concrete bridge above the water level from the outside road into each dwelling so as to prevent flooding. There was no draining system or drainpipes of each dwelling then under some dwellings, there was stagnant water with garbage, resulting in pollution and breeding sources of Aedes mosquitoes and other kinds of mosquitoes. The dwellings themselves couldn't prevent Aedes mosquitoes from flying inside. Environment inside and outside the dwellings then allowed breeding sources and perching places of Aedes mosquitoes, resulting in risk of mosquito biting.

Aiming only at developing economic areas, neglecting other parts, even public utility services, made people need to reserve water in containers when water supply became scarce. The lack of regular cleaning of water containers caused the containers become breeding sources of Aedes mosquitoes, in association with the lack of proper elimination of garbage, which not only resulted in pollution and unhealthy condition, but also breeding sources and perching places of mosquitoes. Disparity of country development didn't only cause some people to migrate to urban areas, but it also caused them to live in the areas with inequality of government services in improving their environment.

Lifestyle of people in the city was also different. Some only lived in the community sometimes, such as to sleep and take a rest but spent most of their time at their workplace. Some spent most of their time in the community. This is up to their occupation. Most people in the community had low economic status with low potential and resource, including natives and those migrating from other areas. Their occupations were not comlicated, such as being labors, those working for hire, vendors, employees and government officers. Their working time was not only limited to daytime. People of many occupations had to work during nighttime and dusk due to economic necessity. Similar to taking a rest and sleeping, many people took a rest and did housework in midday. Some had to work or prepare their goods at home during midday and went out to sell their goods in the nighttime. In many families, their members didn't have much time to be together and to clean their dwelling and arrange articles at home and surroundings of their dwellings because they had to do their work or activities, which were considered more important. Families with very young children had to take care of the children themselves instead of leaving it to be the responsibility of a nursery, substantially resulting in a risk of getting illness from Dengue virus.

Alternatively, once they lived in the community, all they had a risk of being ill from Dengue Virus due to the fact that they had to spend a period in the community, allowing them to contact with Aedes mosquitoes. Although some families had correct practice regarding eliminating Aedes mosquito breeding sources and protecting their family members from mosquito biting, they couldn't prevent mosquitoes outside their dwelling. The mosquitoes could find food in a vast scope

throughout the community due to close settlement pattern. With dim condition suitable for mosquitoes' living, the community became a vast piece of land for their living, especially those spending daytime at their dwelling. And if they didn't have any prevention, they were likely to have more risk, such as by taking a rest during midday using only an electric fan to drive mosquitoes and heat or sitting selling things in a grocery shop .

Apart form the people's lifestyle allowing them to contact with mosquitoes, their daily behavior also effected Aedes mosquitoes' breeding source, especially in the interior of dwellings. And apart from environment suitable for the existence of Dengue virus, the dwellers themselves were a part maintaining the mosquitoes due to their behavior causing mosquitoes' breeding sources, such as lacking changing water and cleaning water containers in their dwellings and in the toilet, vases, ant-anti trays, plant pot trays and water containers around their dwellings with no lids. An important reasons for lacking attention in their behavior causing Aedes mosquitoes' breeding source is the fact of "time". People of all families spent their time preparing themselves for their work, of which its time couldn't be determined by themselves so as to obtain things they and their family wanted, which is economic necessity. Most of their time and attention was spent on working to gain money. Housework was then always the responsibility of a particular person in each family. If he or she had little time to take care of their dwelling or ignore such a thing, stagnant water within their house would become Aedes mosquitoes' breeding sources. Apart from "time", another important reason is the feeling of being the owner of land or dwelling. It was found that dwellings around the temple were located on the land belonging to the temple, which was rather spacious. Next to that, it was the land of private owners that was sold or rent with rental dwellings. The feeling of not being the owner of the place they lived made them not interested in improving it. They just simply fixed it as necessary, letting it dilapidated based on the thought that this was not their duty. This facilitated Aedes mosquitoes' breeding or the epidemic.

Behavior relating to Dengue virus didn't only come from individuals because it was found that it was also environment that determined the behavior. For example, vacant space in the community, although it wasn't much spacious like that around the canal, it was occupied by unusable articles due to the lack of place to keep garbage

because dwellings were built very close to one another. Lacking water supply in some periods also made each dwelling need to reserve water in containers. Stagnant water under dwellings due to low level of land with no ditch became mosquitoes' breeding source. Articles placed outside around dwellings, due to a small size of each dwelling and limited interior space, became perching places of mosquitoes and their breeding sources when they consisted of stagnant water, especially during the rainy season.

The mentioned factors didn't make people in the community to improve environment in community better. Although they would like to improve it, they might not able to do anything much to deal with it and they didn't change their risk behavior to illness from Dengue virus. Although there were campaigns on eliminating Aedes breeding sources in the community via mass media, health officers and health volunteers, this was not much successful. Government officers responsible for Dengue virus only visited patients at their dwelling according official reports. They gave them suggestion and sprayed smoke to eliminate mosquitoes around the patients' dwelling. This couldn't directly address with the problem of mosquitoes and Dengue virus. But it was just working based on fixed steps of solution of Dengue virus. Under urbanity, the people did not pay attention to one another. They didn't care if their neighbors were ill from Dengue virus. And although they didn't pay attention to such a thing, they couldn't prevent or reduce any risk. All they were still at the same points with the same lifestyle. The most important thing is that they didn't even know that their neighbors were ill from the disease.

According to socio-economic changes, urban communities have to use their land the most cost-effectively. Land is expensive. Lacking their own land, people had to rent a dwelling. This made poor people in the urban area stay together in the area with physical environment suitable for being Aedes mosquitoes' breeding sources. Location, settlement pattern and dwellings with poor sanitation made the community become a place of people and Aedes mosquitoes. Another part relates to economic necessity, which drove people with diverse background, lifestyle and behavior allowing to cause Aedes mosquitoes had a risk of illness from Dengue virus, such as working, recreation, water consumption and child rearing.

It can not determine, between factors of urban ecology or factors of lifestyle or behavior of people in Wat Amphawa Community, which group is the determiner of

the other. This is because both determine or effect each other, with mutual relations and exist together under economic, social and political environment, determining such factors. Urban communities have some characteristics making those living therein have a risk of being ill from Dengue virus. As a result, Dengue virus is maintained in the society forever.

RECOMMENDATION

In conclusion, the actual problem that leads people to be related to mosquitoes is due to social and financial factors that drive the poor from the country to move into the city and have urban lifestyles. Especially for the poor in the city, they have various origins, hence their lifestyles are various. Their routine behaviors related to striped mosquitoes lead to the risk of dengue hemorrhagic fever. These behaviors are complicated and cause by macro system that is the urban ecological system that has an effect on the urban biophysical aspect leading to a large number of striped mosquitoes. These conditions are directly related to the construction of urban slums. Every city in any countries in which there are slums has the same problems in an aspect of environments and society. National resources cannot be distributed to the slums; hence they have lack of conscientious and continuous care that has been a prolonged problem. Those who stay in the community are familiar with striped mosquitoes and dengue hemorrhagic fever as a normal matter in daily routines, thus they do not know how to solve the problem and also do not think about the solution since there are some problems, such as possession.

The wrong acknowledgement about dengue hemorrhagic fever is probably a cause of dengue hemorrhagic fever in slums. It leads to wrong protection and decease control or none of them; therefore, the risk of contact with mosquitoes in daily routines is not decreasing. Some misunderstandings also support the existence of mosquitoes. It reflects on the work efficiency in an aspect of hygiene public relations of Ministry of Public Health in urban areas.

The dengue hemorrhagic fever is one of the social problems concerning with health. It can be found in slums and becomes a problem of other groups of people at present. Only health organizations that have lack of personnel, instruments, budget and true understanding of the problem can not get rid of dengue hemorrhagic fever.

I would like to propose a solution in an aspect of a policy: Slums should be obviated from developing cities. The policy of city plans, public utilities and solutions in advance should be readily planned in order to protect the cities from biophysical problems and urban ecology becoming a place for striped mosquitoes. Eliminating slums through localizing development, which will prevent migration of people from rural areas to cities or the capital, overcrowding in slums and forming new slums by means of rural development. If there provided work opportunity, income promotion and government services distribution to rural areas, comparable to the city's, there will be no people preffering to leave their warmth from their hometown, friends and relatives to lead their life in the capital.

On the other hand, the existing slums must be dealt with under the responsibility of the government, which has to study appropriate methods to solve the problem to improve environment and government services. There should be offices directly responsible for the existing problems in multidisciplinary ways. This is due the fact that improvement of slums is a sensitive issue, dealing with individuals in many dimensions, especially mental part. The government shouldn't aim only at improving physical part, such as building construction, but the government has to solve economic problems and social problems at the same time as well as to provide education to maintain development level to exist. It can be seen that this is solution by means of integration, different from that existing as today, which will lead to achievement. By solving this, it is not only Dengue virus that will be addressed but there will be also a lot of problems to be solved with sustainability. Without changes in solution, Dengue virus will be maintained in slums forever.

As for the suggestion in an aspect of the area operations, it is found that health organizations in the community, especially health volunteers work vigorously and sacrificially as well as are united. They have good social relationship, cooperate with other leading groups and are well-know in the community since the health volunteers are friendly and have worked for a long time, thus they are well-known. If the governmental organization that is responsible for this district focuses on this point and find an appropriate way in accordance with the works of the health volunteers and other leading groups, dengue hemorrhagic fever can be controlled in domestic level of the community.

As for the suggestion of further study in an aspect of dengue hemorrhagic fever in urban communities, solution factors of dengue hemorrhagic fever and striped mosquitoes in houses and the community that local people realize and pay attention to should be analyzed in individual, domestic, social and cultural levels in order to be a significant mechanism to control dengue hemorrhagic fever in urban areas. Furthermore, the roles of health volunteers in the community concerning their social statuses in the community, work obstructions and their requirements should be studied to support their works. Although there are few social relationships in urban communities, it is better than none of them.

Furthermore, the acknowledgement of people in urban areas towards the protection of dengue hemorrhagic fever or striped mosquitoes should be studied. According to this research, it is found that there are wrong acknowledgements effecting on risky behaviors and spreading decease. The result of the study might be useful for informing people in urban areas about hygiene public relation better that one at present that the same method of protecting dengue hemorrhagic fever is applied throughout the country. However, the acknowledgement and culture in each area must be different.

The study of dengue hemorrhagic fever through qualitative research leads to know all aspects of the problems rather than a lot of quantitative research used previously that could not solve the problem especially in urban districts where there is a lot of decease spreading all the year. The problem is complicated in aspects of ecology, society, culture, economy and health. Especially society, culture and economy are not so much studied although they are significant factors supporting the problem. Hence, the involved organizations should support learning new knowledge through various methods that will help with the deep understanding of the problem leading to planning efficient solutions in the future.

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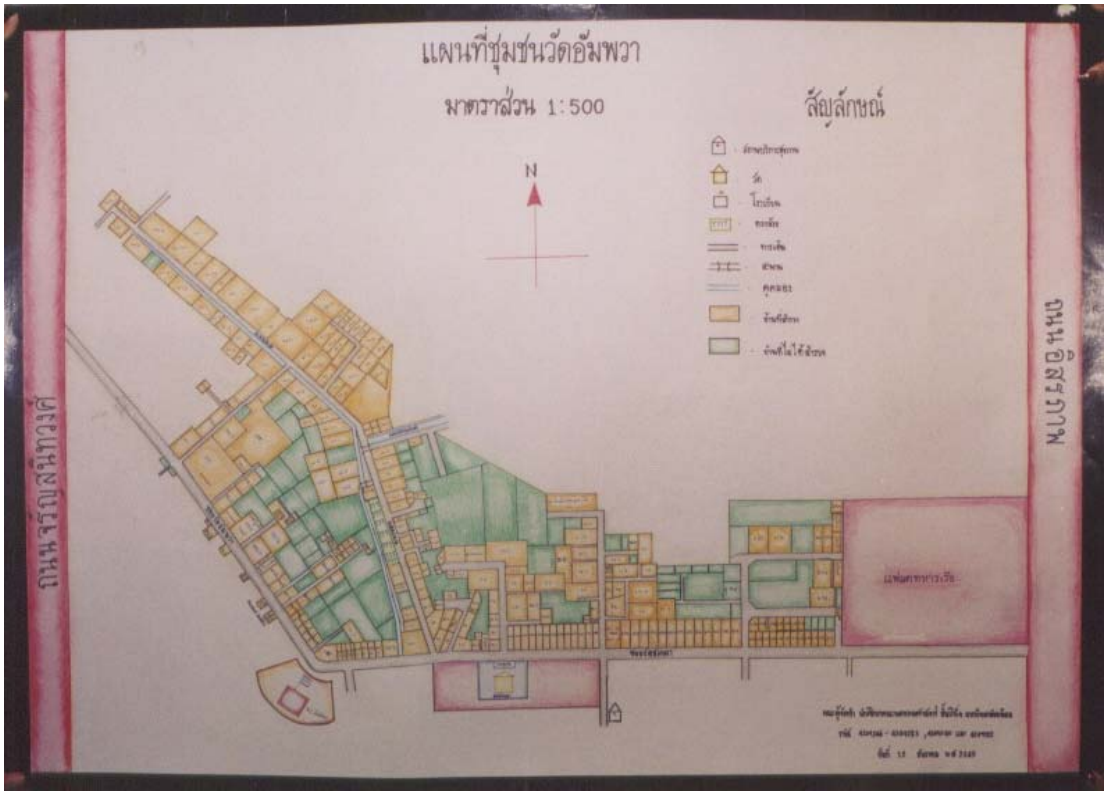
สถาบันวิจัยประชากรและสังคม.

APPENDIX



Picture of environment and daily life of people in community

Picture of environment and daily life of people in community

Picture of environment and daily life of people in community

Picture of environment and daily life of people in community

Picture of environment and daily life of people in community

แบบสัมภาษณ์เจาะลึก (Indept Interview) ที่ใช้ในการเก็บรวบรวมข้อมูลงานวิจัย เรื่อง นิเวศวิทยาเมืองกับการเจ็บป่วยด้วยโรคไข้เลือดออก กรณีศึกษาชุมชนแห่งหนึ่งในกรุงเทพมหานคร

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1. พฤติกรรมและชีวิตประจำวัน

1.1 การใช้เวลาระหว่างวัน

1) ตั้งแต่ตื่นนอนจนกระทั้งเข้านอนในแต่ละวันท่านต้องทำอะไรบ้าง แต่ละอย่างทำอย่างไร ทำที่ไหน นอกจากนั้นยังมีอะไรอีก

2) มีกิจกรรมอะไรบ้างที่ท่านต้องทำทุกๆสัปดาห์ แต่ละอย่างทำอย่างไร ทำที่ไหน

3) มีกิจกรรมอะไรบ้างที่ท่านต้องทำทุกๆเดือน แต่ละอย่างทำอย่างไร ทำที่ไหน

ถ้าหากไม่ได้ตอบในประเด็นที่เกี่ยวกับการพักผ่อน การทำงาน การทำมาหากิน การเลี้ยงลูกจะถามด้วยคำถามต่อไปนี้

4) ในแต่ละวันท่านทำมาหากินหรือทำงานอะไร ทำอย่างไร ทำที่ไหน เวลาใด นอกจากนั้นมีอะไรอีก

5) ในแต่ละวันท่านมีเวลาพักผ่อนในช่วงไหน ท่านพักผ่อนโดยวิธีใด

6) พฤติกรรมการเลี้ยงดูเด็ก

6.1) ที่บ้านท่านมีเด็กหรือไม่ ถ้ามีมีกี่คน แต่ละคนเป็นเพศใดบ้าง อายุเท่าไร

6.2) ปกติในตอนกลางวันเด็กในบ้านท่านอยู่ที่ใด ใครเป็นผู้ดูแล ผู้ดูแลดูแลอย่างไร หรือถ้าหากเด็กต้องไปโรงเรียน เด็กไปเรียนที่ไหน สภาพบ้านหรือโรงเรียนที่เด็กอยู่เป็นอย่างไร ส่วนใหญ่เด็กมักจะเล่นอยู่บริเวณใด ลักษณะสภาพโดยทั่วไปเป็นอย่างไร (มืด สว่าง รกรุงรัง เป็นระเบียบ ทึบ โปร่ง ฯลฯ)

6.3) มีอุปกรณ์ในการป้องกันยุงหรือไม่ ถ้ามีอุปกรณ์นั้นเป็นชนิดไหน ใช้ป้องกันอย่างไร

1.2 พฤติกรรมในเรื่องการใช้น้ำ การกำจัดขยะ การกำจัดของเสีย การทำความสะอาดบ้าน

1) ปกติบ้านของท่านใช้น้ำจากแหล่งใด เพียงพอหรือไม่

2) บ้านของท่านมีภาชนะเก็บกักน้ำอะไรบ้าง อยู่บริเวณใด มีฝาปิดหรือไม่ มีการหมุนเวียนน้ำที่เก็บกักใส่ภาชนะไว้อย่างไร

3) บ้านของท่านใช้น้ำประปาหรือไม่ ถ้าใช้ใช้อย่างไร (เปิดจากก๊อกใช้ทุกครั้งหรือเก็บกักน้ำไว้ในภาชนะ ฯลฯ)

4) ส่วนใหญ่ขยะในบ้านของท่านเป็นขยะประเภทไหน บ้านของท่านทิ้งขยะที่ไหน อย่างไร

5) ที่บ้านของท่านมีการกำจัดน้ำที่ใช้แล้วอย่างไร

6) ปกติที่บ้านของท่านทำความสะอาดบ้านอย่างไร บริเวณไหน ทำความสะอาดบ่อย แค่ไหน ข้างของเครื่องใช้เช่นเสื้อผ้าเก็บไว้ที่ใด เก็บอย่างไร

1.3 พฤติกรรมการป้องกันโรคไข้เลือดออก

1) โรคไข้เลือดออกเกิดจากอะไร มีชื่อเรียกอย่างอื่นหรือไม่ โรคไข้เลือดออกเกิดได้กับคนกลุ่มไหน คนที่เป็นโรคไข้เลือดออกจะมีอาการอย่างไร รักษาอย่างไร ป้องกันได้หรือไม่ ถ้าป้องกันได้จะป้องกันได้อย่างไร โรคไข้เลือดออกเกิดในชุมชนนี้บ่อยหรือไม่ ส่วนใหญ่เกิดในช่วงไหน สำหรับในชุมชนนี้เกิดในกลุ่มคนอายุไหน

2) ท่านเคยเห็นลูกน้ำยุงลายหรือไม่ ถ้าเคยเห็นมีลักษณะอย่างไร มีชื่อเรียกอย่างอื่นหรือไม่ มักพบที่ไหนบ้าง ลูกน้ำยุงลายมีโทษอะไรหรือไม่ ถ้ามีมีโทษอย่างไร จะมีวิธีการกำจัดลูกน้ำยุงลายได้อย่างไร

3) บ้านของท่านมีการป้องกันยุงกัดหรือกำจัดยุงหรือไม่ อย่างไร การป้องกันดังกล่าวส่วนใหญ่ใช้เวลาใด

4) ที่บ้านของท่านมีการกำจัดแหล่งเพาะพันธุ์ยุงบ้างหรือไม่ ถ้ามีทำอย่างไร ทำบ่อยมากน้อยเพียงใด

- เมื่อครั้งที่คนในบ้านท่านป่วยด้วยโรคไข้เลือดออกท่านทราบได้อย่างไรว่าป่วยเป็นโรคนี้มีอาการป่วยอย่างไรบ้าง เหตุใดทำไมจึงป่วย เมื่อป่วยแล้วมีการรักษาอย่างไรบ้างตั้งแต่เริ่มต้นจนหาย ทำไมจึงรักษาอย่างนั้น ถ้าหากไม่รักษาท่านคิดว่าจะเป็นเช่นไร

- หลังจากที่มีการเจ็บป่วยด้วยโรคนี้แล้ว คนในบ้านนี้มีการระมัดระวังเกี่ยวกับโรคไข้เลือดออกเพิ่มขึ้นหรือไม่ ถ้าเพิ่ม มีการระมัดระวังเพิ่มขึ้นเกี่ยวกับอะไรบ้าง อย่างไร

แบบสัมภาษณ์ผู้ให้ข้อมูลสำคัญ (Key Informants)
ที่ใช้ในการเก็บรวบรวมข้อมูลงานวิจัย
เรื่อง นิเวศวิทยาเมืองกับการเจ็บป่วยด้วยโรคไข้เลือดออก
กรณีศึกษาชุมชนแห่งหนึ่งในกรุงเทพมหานคร

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1. ความสัมพันธ์ทางสังคมและวัฒนธรรม

1.1 ที่ตั้งและประวัติความเป็นมาของชุมชน ชุมชนนี้ตั้งอยู่ในเขตพื้นที่ใด ชุมชนนี้เริ่มตั้งตั้งแต่เมื่อไร มีกี่เชื้อชาติ ผู้ก่อตั้งชุมชนคือใคร ในระยะแรกเริ่มมีกี่ตระกูล กี่เชื้อชาติ มีจำนวนกี่หลังคาเรือน มีการอพยพของประชาชนเข้ามาอาศัยอยู่หรือไม่ ถ้ามีอพยพมาจากที่ใดบ้าง

1.2 ลักษณะประชากร – ในชุมชนนี้มีประชากรทั้งหมดเท่าไร คนในชุมชนส่วนใหญ่นับถือศาสนาอะไร เรียนหนังสือจบชั้นไหน มีคนอ่านไม่ออกเขียนไม่ได้มากน้อยเพียงใด คนในชุมชนส่วนใหญ่มีอาชีพอะไร

1.3 ความสัมพันธ์ในชุมชน – ปัจจุบันคนในชุมชนเป็นญาติพี่น้องกันหรือไม่ มีการแต่งงานกันเองภายในชุมชนมากน้อยเพียงใด ลักษณะของคนในชุมชนมีการพึ่งพากันไปมาหาสู่กัน หรือต่างคนต่างอยู่ คนในชุมชนมีการติดต่อสื่อสารกับภายนอกชุมชนอย่างไร

1.4 กลุ่มในชุมชน/ผู้นำชุมชน – ที่ผ่านมาคนในชุมชนมีการรวมกลุ่มกันทำอะไรบ้าง ใครเป็นคนริเริ่ม ริเริ่มอย่างไร ปัจจุบันกลุ่มดังกล่าวเป็นอย่างไร คนที่มีชื่อเสียงและเป็นที่นับถือของคนในชุมชนมีใครบ้าง แต่ละคนมีบทบาทอย่างไร

1.5 ความหนาแน่นของบ้านเรือนในชุมชนแต่เดิมเป็นอย่างไร มีพัฒนาการมาอย่างไร และปัจจุบันนี้เป็นอย่างไร

2. สภาพนิเวศวิทยากายภาพของชุมชนเมือง

2.1 ระบบประปา

1) ประปาของชุมชนนี้เป็นประปาของหน่วยงานใด

2) ระบบประปาดังกล่าวพอเพียงกับความต้องการของประชาชนหรือไม่ อย่างไร

3) ระบบประปาของชุมชนนี้มีปัญหาในเรื่องการจ่ายน้ำหรือไม่ อย่างไร (อุปกรณ์/ท่อส่งน้ำชำรุด น้ำประปาไม่ไหล) หากมีปัญหาในการจ่ายน้ำประชาชนทำอย่างไร การมีปัญหาในแต่ละครั้งมีการแก้ไขอย่างไร ใช้เวลาในการดำเนินการนานเพียงใด

4) ในชุมชนนี้มีบ้านที่ไม่ได้ใช้น้ำประปาหรือไม่ ถ้ามีมากน้อยเพียงใด บ้านเหล่านั้นใช้น้ำจากที่ไหน เพราะเหตุใดบ้านเหล่านั้นจึงไม่มีน้ำประปาใช้

แบบสังเกตอย่างมีโครงสร้าง (Structured Observation)
ที่ใช้ในการเก็บรวบรวมข้อมูลงานวิจัย
เรื่อง นิเวศวิทยาเมืองกับการเจ็บป่วยด้วยโรคไข้เลือดออก
กรณีศึกษาชุมชนแห่งหนึ่งในกรุงเทพมหานคร

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1. สภาพแวดล้อมในบ้าน – สังเกตจาก

1.1 สภาพบ้านโดยทั่วไป เช่น ความแข็งแรงของวัสดุที่ใช้ในการสร้างบ้าน ความคงทนถาวร ประตู หน้าต่าง มุงลวด ฝาบ้าน ฯลฯ

1.2 ความสะอาด การระบายอากาศ แสงสว่าง การจัดวางสิ่งของภายในบ้าน

2. สภาพแวดล้อมภายนอกบ้าน – สังเกตจาก

2.1 ลักษณะที่ตั้งของบ้าน

2.2 ขยะ วัสดุสิ่งของในบริเวณบ้าน

2.3 การปลูกพันธุ์ไม้ในบริเวณบ้าน พุ่มไม้ในบริเวณบ้าน

2.4 ความห่างจากแหล่งทิ้งขยะของชุมชน (ถ้ามี)

3. การใช้น้ำและภาชนะเก็บกักน้ำ – สังเกตจาก

3.1 พฤติกรรมในการใช้ กำจัดและเก็บกักน้ำ

3.2 การใช้ฝาปิดภาชนะเก็บกักน้ำว่ามีจำนวนทั้งหมดเท่าไร ไม่มีฝาปิดเท่าไร ภาชนะที่มีฝาปิดปิดสนิทหรือไม่

3.3 ภาชนะที่มีน้ำขัง เช่น ที่รองขาตู้กับข้าว แจกัน ห้องน้ำ/ห้องส้วม ยางรถยนต์เก่า ฯลฯ

4. การตรวจนับแหล่งเพาะพันธุ์ยุง - โดยตรวจนับจำนวนภาชนะทั้งหมดว่ามีเท่าไร ซึ่งดูจากโอ่งน้ำ แจกัน ห้องน้ำ/ห้องส้วม ขารองตู้กับข้าว ยางรถยนต์เก่า ขยะที่มีน้ำขัง เช่น จาน ชาม โอ่ง ไห และภาชนะอื่นที่มีน้ำขัง

5. อุปกรณ์ในการป้องกันยุง – โดยสังเกตดูจาก มุ้งลวด การกางมุงนอนตอนกลางวัน กระป๋องสารเคมีฉีดพ่นยุง เครื่องดักยุงไฟฟ้า ยาจุดกันยุง พัดลม

6. ความหนาแน่นของประชากรในครัวเรือน – สังเกตจำนวนคนที่อยู่ในบ้าน (อาจสอบถามเพิ่มเติม) เปรียบเทียบกับพื้นที่ของบ้าน

7. ความหนาแน่นของบ้านเรือนในชุมชน – ลักษณะการปลูกสร้างบ้านเรือน การกระจุกตัว การกระจายตัว

8. การใช้ประโยชน์จากพื้นที่ว่างในชุมชน – สังเกตจาก การใช้พื้นที่ว่างในชุมชนทั้งที่เป็นพื้นที่ส่วนบุคคลและพื้นที่สาธารณะ ในเรื่องการทิ้งขยะ การใช้เป็นที่เก็บวัสดุอุปกรณ์ การใช้เป็นพื้นที่พักผ่อน หรือการปล่อยให้เป็นพื้นที่รกร้างว่างเปล่า

9. การจัดทำแผนที่ชุมชน – ประกอบด้วย สถานที่ตั้งของชุมชน เส้นทางคมนาคม กลุ่มบ้าน วัด โรงเรียน สถานที่ราชการ บ้านกลุ่มเป้าหมายที่สัมภาษณ์เจาะลึก แหล่งทิ้งขยะ (ถ้ามี) แหล่งน้ำของชุมชน

BIOGRAPHY

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