

# Thai Health 2008



**Global Warming**  
A Real Threat from Humans

**13 Health Indicators**  
**10 Health Issues**



Institute for Population and Social Research, Mahidol University

Thai Health 2008

Thai Health Promotion Foundation

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# Thai Health 2008



# Preface



The 2008 edition of the Thai Health Yearbook the 5<sup>th</sup> issue released to the public. As for this publication, the authors have selected the “hot” issue of “global warming” and have included a special article in the current issue, “Global Warming: A Real Threat from Humans” Thailand has faced global warming as have other parts of the world due to various human activities that have released greenhouse gases. Global warming is a severe problem which widely affects all aspects of our lives. If the problem continues to worsen and human beings do not try to limit and reduce greenhouse gases, there is an approximate probability of 50% that the planet’s temperature will increase by more than 5 degree Celsius within the next ten years. Such a rise in temperature would be catastrophic for certain areas. Although human beings have started to realize the threat of global warming, the world has not been able so far to reduce activities that have released greenhouse gases.

“Global Warming: A Real Threat from Humans” notes that global warming will hopefully drive people in Thai society to acknowledge and address the problem as well as try to find solutions, guidelines, and energy reduction measures.

The ten outstanding health situations covered in this issue represent some of the key issues that have garnered public attention over the past year. For example, it is widely known that the Southern unrest is a problem that has plagued the country for the past four years and thus requires continued and that constant monitoring. Even though some measures have been launched to decrease the frequency of the violence, much more needs to be done to develop effective strategies to stem the tide of terrorism.

The ten critical issues covered here are: 1. New Laws to Protect Victims of Violence: Another Step towards Stopping Violence against Women 2. Four Years of Fire in the South.....More Violence and Brutalities 3. It’s Time to Prevent and Effectively Deal with Unsafe Abortion 4. Dengue Spreads due to Global Warming 5. Computer Crime Act: A Restriction of Freedom in the Cyber World? 6. Mab Ta Put...,Influxes of Misery, Flowing with Pollution 7. Thailand to Be Flooded with Garbage within the Next 3 Years 8. “TV Ratings”: Adults’ Responsibility toward Young Viewers 9. Ensuring That the War against Cervical Cancer Goes in the Right Direction 10. Health Center Transfer to Local Administrative Organizations, Returning Health to People





Several beneficial research studies have been included in this report. These studies, all of which were conducted by Thai researchers, have valuable and significant impacts on Thai health. This year we proudly presented four outstanding health studies, namely: 1. UNESCO Rewarded a Young Thai Scientist for Solutions to Plant and Animal Extinction 2. Health Insurance Scheme Granted Patients with Kidney Disease the Right to Kidney Dialysis and Transplantation Free of Charge 3. Thai People Developed the "Strip Test for Alpha Thalassemia Detection," the World's First Successful Detection Method for Thalassemia 4. Thai Researchers Succeeded in Developing a "Biosensor," the World's First Bird Flu Detector

Health indicators of this year were dedicated to the issue of "Preschool Children," which is considered a crucial age for brain and physical development. This period is the best time to develop children's thinking, writing, and socialization skills in order to become good adults in the future. This age is really a turning point to be able to memorize, increase their innovative thinking no matter what their economic status, and create the This is the time when all children, no matter what their economic status, develop their intelligent quotients (IQ), the emotional quotients (EQ), moral quotients (MQ), and the social quotients (SQ).

The presentation of this year's Thai health indicators have changed from addressing various indices to selecting the main theme of "Preschool Children" consisting of 13 indicators, namely: 1. Growth in the Womb and Delivery 2. Diseases of Preschool Children 3. Breast Milk and Bottle-Feeding 4. Supplementary Foods 5. Malnutrition 6. Dental Health 7. Emotional Intelligence 8. Development of Intelligence in Different Area 9. Orphans/ HIV Infected Children/ Disabled Children 10. Caregiver 11. Influence of Childcare on Child Development 12. Care Provided by Childcare Centers 13. Today's Media

We truly hope that every section of this report will help all health-conscious readers gain knowledge and understanding of the problems described and extensively apply our suggestions to develop our society further.

Thai Health Report Team

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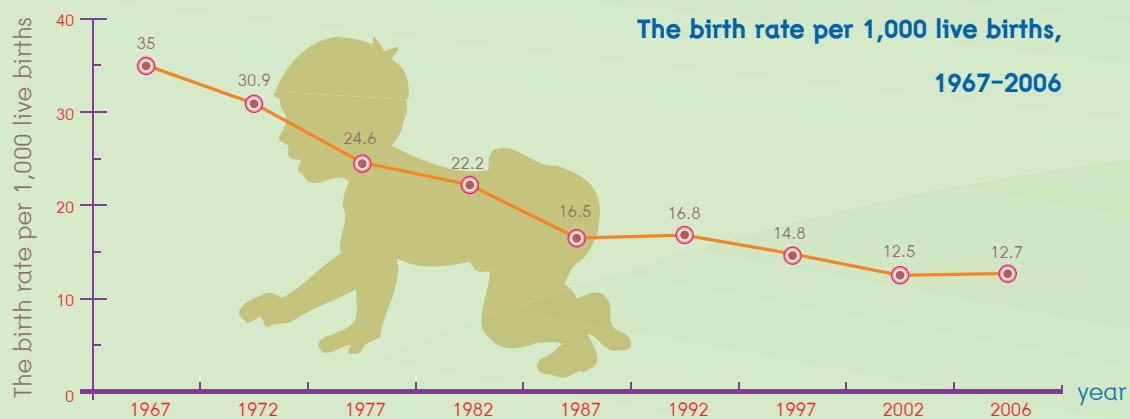




# **13** *Preschool Children Indicators*

# 13 Preschool Children Indicators

The preschool age is considered the "Foundation Age." It is the stage during which a child's nervous system and brain grow fastest. Promoting development in all areas is easier and more effective in preschool children compared to other ages.



Source : Public Health Statistics 1967-2006



Brain cell and neurons that have not been frequently stimulated and used.



Brain cell that has been frequently used and stimulated. There are more neurons and the brain cell is bigger.

Source : The Learning Revolution 1999

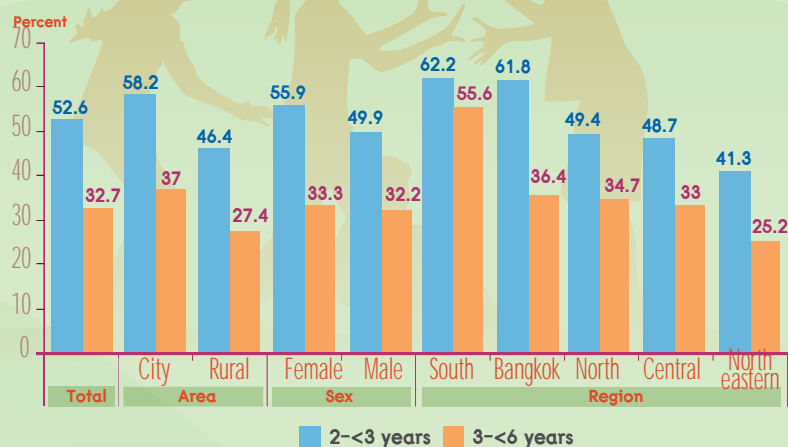
The development of preschool children begins with the growth and functioning of their brain from the time they are in their mother's womb. The brain of a full-term newborn baby weighs approximately 500 grams. After birth, the brain develops at a stunning pace. The brain of a 3-year-old is approximately 80 percent the size of an adult's, weighing approximately 1,100 grams compared to that of an adult, which weighs approximately 1,300-1,500 grams.

Before the age of 3, the brain grows neurons and numerous connections between the neurons, which are vital to memory, cognition, and learning. The number of neuron connections created depends on the child's experience. Therefore, if the child's development and learning is promoted through communication using all six senses (hearing, sight, smell, taste, touch, and feelings), the brain will work harder and the number of neuron connections will increase.

Child development and learning depends on a stimulating environment and nutritious foods appropriate for growth.



### Children age 2-<3 years and 3-<6 years with growth and development appropriate for age, 2001



Source : Holistic Development of Thai Children, 2004

Note : Development appropriate with age — measure physical development, intellectual development, and emotional, mental, social and ethical development  
Development appropriate with age — measure children with normal or high development in all areas  
Physical development — use height according to age  
Intellectual development — use Capsule Scales test in children under 3 and Gesell test in children aged 3-<6 years  
Emotional, mental, social and ethical development — use MITSEA test with mother providing information  
And in children aged 3-<6 years, include ethics test.

A survey of the holistic development of Thai children in 2001 found that almost half of children under 3 years old had development appropriate for their age in all 3-6 areas (Physical; Intellectual; Emotional, mental, social and ethical). Only one-third of children aged 3-5 had development appropriate for their age.

The quality of Thai children when they grow up is worrisome. There is a need to give more importance to the development and learning of preschool children.

### Development of children from newborn to the first 18 months (1 ½ years)

	Age child should be able to	Age child should be able to	
Lift head	2 months	8-11 months	Point or gesture to something to get needs met
Smile	2 months	10-12 months	Find hidden object
Follow an object by watching	2 months	10-12 months	Drop object into container
Cooing	2 months	10-12 months	Follow simple directions
Turn in the direction of a voice	4 months	10-13 months	Use body language such as bye bye and clap hands
Pass object from one hand to the other	5-7 months	10-15 months	Call mommy, daddy or caregiver
Look for dropped object	6-7 months	12-15 months	Draw lines
Sit without support	6-8 months	12-15 months	Pour things from cup or small bottle
Pick up tiny object	7-9 months	15-18 months	Solve simple problems
Babble such as ja-ja, mum-mum	8-10 months	16-18 months	Point to picture or 1 body part

### Development of children from 1 ½ to 6 years

	Age child should be able to	Age child should be able to	
Build a tower of 2-3 cubes	1 ½ - 2 years	4 years - 4 years 9 months	Sing a short song with gestures
Use approximately 20 single words	1 ½ - 2 years	4 years - 4 years 9 months	Know prepositions such as on top, under, in front, at the back
Combine 2-3 words	1 year 9 months - 2 years	4 years - 4 years 9 months	Tell size such as big/small and short/long
Count 1 block	2 - 3 years	4 years - 4 years 9 months	Draw simple picture of a person
Identify 1 color	2 ½ - 3 years	5 years - 5 years 9 months	Know how to answer the question why?
Carry on a conversation with short sentences (3-4 words)	3 years - 3 years 9 months	5 years - 5 years 9 months	Speak almost every word clearly
Ask questions — what, who	3 years - 3 years 9 months	5 years - 5 years 9 months	Know the value of 1-5 or more than 5
Draw a circle	3 years - 3 years 9 months	5 years - 5 years 9 months	Know how to play simple games with other children
Tell a story	4 years - 4 years 9 months	5 years - 5 years 9 months	Mold clay or mud

Source : Tools to Promote Development and Emotions of Preschool Children, 2004

Note : Child with development faster than age that he/she should be able to do things has faster development than most children  
Child with development slower than age that he/she should be able to do things — allow child to get more practice or consult health officer near home

This issue of the Thai Health Report has divided the indicators into two sections — The Situation of Children and Factors Related to Preschool Children's Development.

**The Situation of Children** includes indicators related to physical health (Growth in the Womb and Delivery, Diseases of Preschool Children, Breast Milk and Bottle-Feeding, Supplementary Foods, Malnutrition, and Dental Health), intellectual health (emphasizing intelligence in various areas) mental and emotional health (focusing on emotional intelligence), and Orphans /HIV Infected Children/Disabled Children.

**Factors Related to Preschool Children's Development** covers family upbringing (Caregivers and Effects of Child Care on Child Development), care provided by childcare centers and today's media.

# 1

## Growth in the Womb and Delivery

Prepare by The Thai Health Team

**The death of newborns within the first 7 days can be prevented if mothers take care of their health during pregnancy. This will increase the newborn's chances of survival and ensure that their birth weight will be over 2,500 grams.**

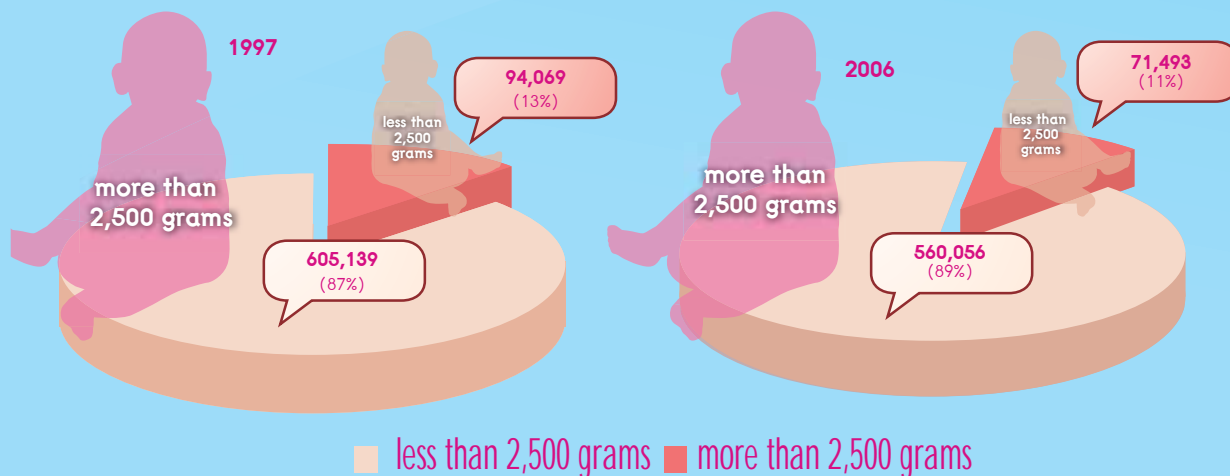
Growth in the womb is measured by the newborn's birth weight and the term of the pregnancy. Data from the Ministry of Public Health found that in 2006, out of 631,558 newborns, 11 percent weighed less than 2,500 grams. This figure was down from 13 percent in 1997. Even though the situation has improved, almost 70,000 babies are born underweight, which is a major risk to their health.

### Growth in the Womb and Delivery

Number and percentage of livebirth by birth weight 1997 and 2006

Target of the 9<sup>th</sup> health Development Plan (2002-2006)

= Reduce newborns weighing less than 2,500 grams to less than 7% of livebirth



Source : Public Health Statistics 1997 and 2006

Note : By 2006, the numbers of 631,558 newborns include 9 unknown weight of newborns.

By 1997, the numbers of 699,260 newborns include 52 unknown weight of newborns

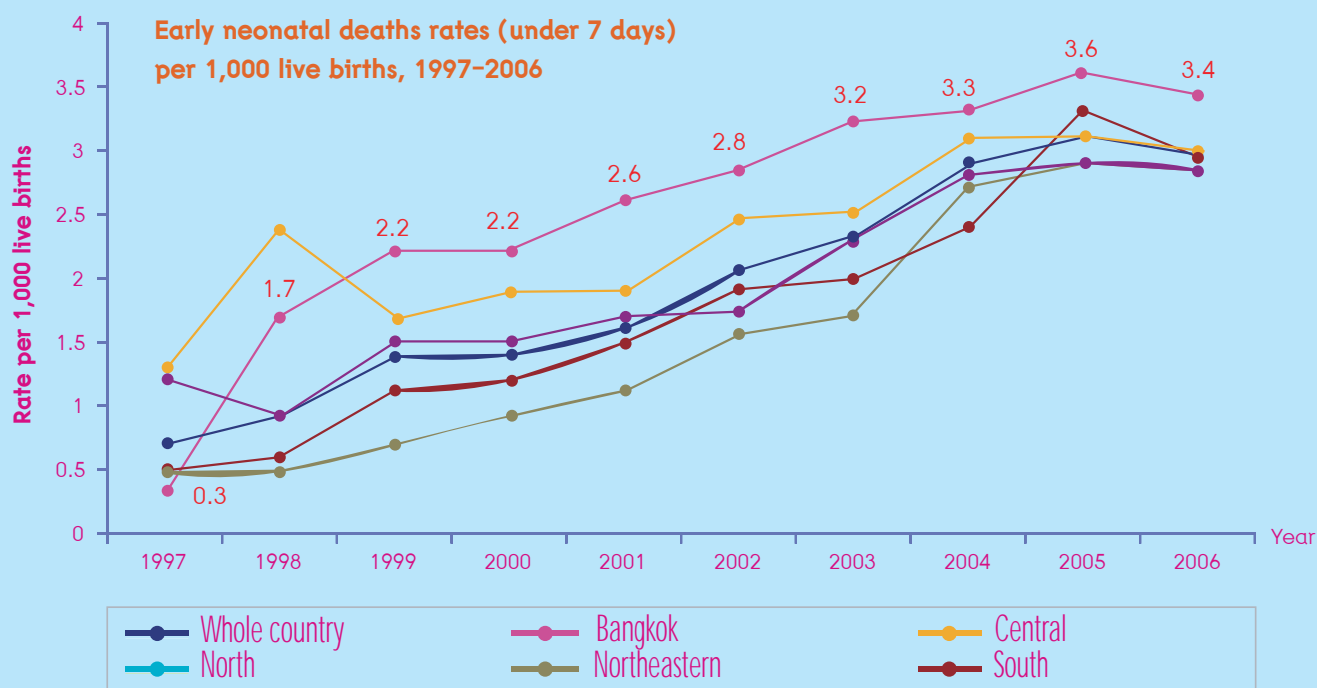
### Why weigh more than 2,500 grams?

There is a chance of finding abnormalities in various body systems that are not fully developed in newborns who weigh less than 2,500 grams such as

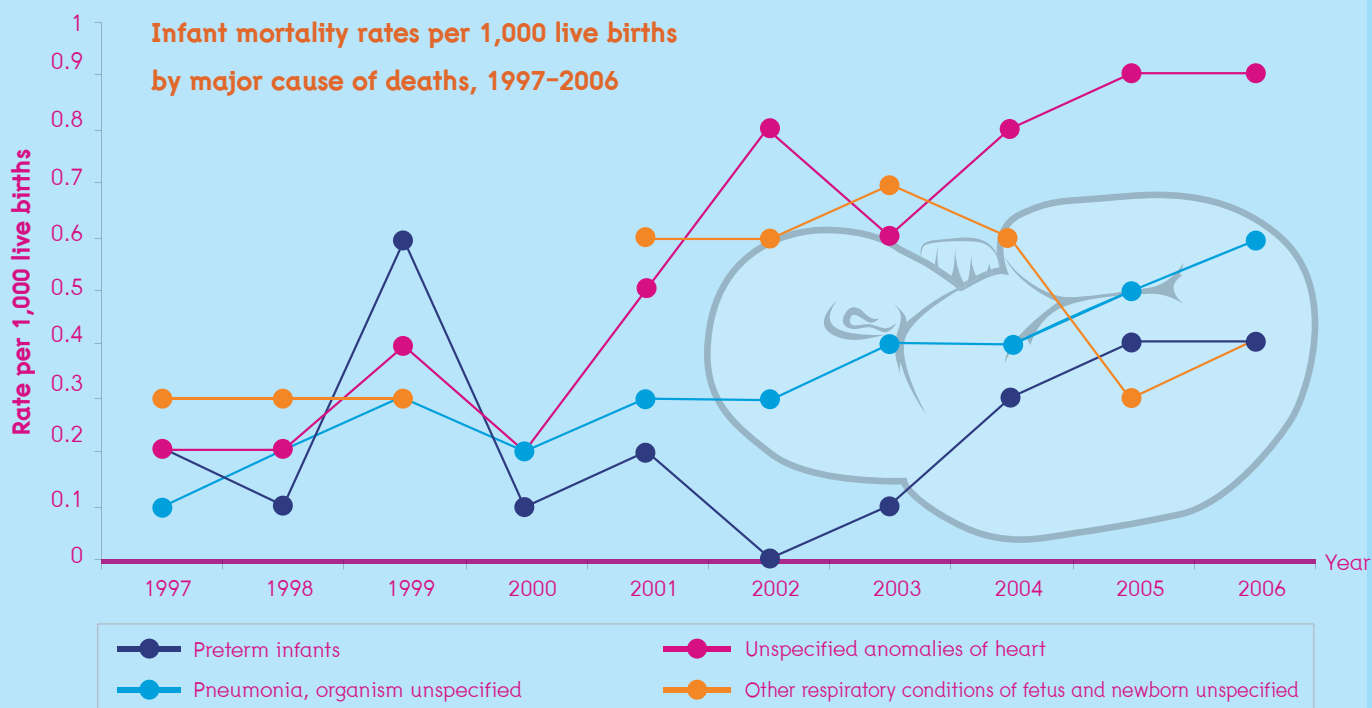
- Respiratory system — baby may have difficulty breathing and lack sufficient oxygen
- Cardiovascular system — may have heart defect since birth
- Low body temperature — baby may not be cheerful, drink less breast milk, have low blood sugar, may stop breathing
- Low immunity — easily catch infections

(Reference from Situation of Newborns with Below Standard Birth Weight and Health Promotion Strategy, Dr. Nipunporn Voramongkol)





Newborns weighing less than 2,500 grams have the chance of having abnormalities in various body systems which put them at risk of dying within 7 days after birth.



Information from health statistics of the Ministry of Public Health confirmed that premature birth is the major cause of 1 out of 4 deaths among infants from 1997 – 2006.

# 2

## Diseases of Preschool Children

Prepare by The Thai Health Team

Children have low immunity, which puts them at risk of sickness, especially respiratory diseases and diarrhea. Therefore, food and water cleanliness is very important in childcare.

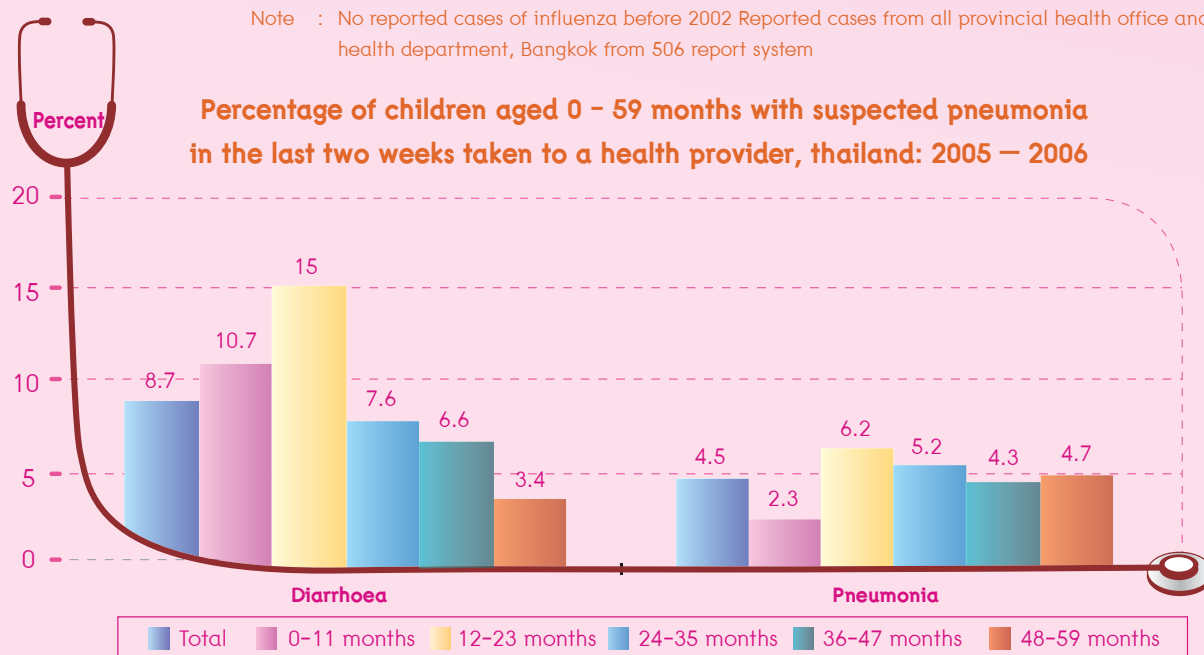
Preschool children have lower immunity than older children and have a higher risk of infection. Infections most common in preschool children are severe diarrhea and pneumonia.

### Reported cases of diseases of children under 5 years old per 100,000 population, 1997–2006

Diseases Year	Acute diarrhea	Pneumonia	Food poisoning	Influenza
1997	7,644.5	1,914.7	295.8	–
1998	8,296.9	1,803.9	360.5	–
1999	7,140.7	1,964.8	392.4	–
2000	6,844.7	1,633.3	534.7	–
2001	7,193.3	1,602.0	557.2	–
2002	8,483.8	1,584.9	586.1	78.7
2003	7,696.7	1,739.7	539.5	67.0
2004	9,720.2	1,736.6	669.9	55.5
2005	9,453.3	1,919.7	563.7	63.3
2006	10,610.5	1,877.5	557.3	47.0

Source : Annual Epidemiological Surveillance Report 1997–2006, Ministry of Public Health

Note : No reported cases of influenza before 2002 Reported cases from all provincial health office and health department, Bangkok from 506 report system



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 – February 2006, National Statistical Office, Ministry of Information and Communication Technology

A survey of children in Thailand conducted by the National Statistical Office during 2005–2006 found that 8.7 percent of preschool children had diarrhea during the 2-week survey. Diarrhea occurred more often in children aged between 0–23 months than in older preschool children while 4.5 percent of preschool children were suspected of having contracted pneumonia. Children most likely to contract pneumonia were those over 1 year old.

# 3

## Breast Milk and Bottle-Feeding

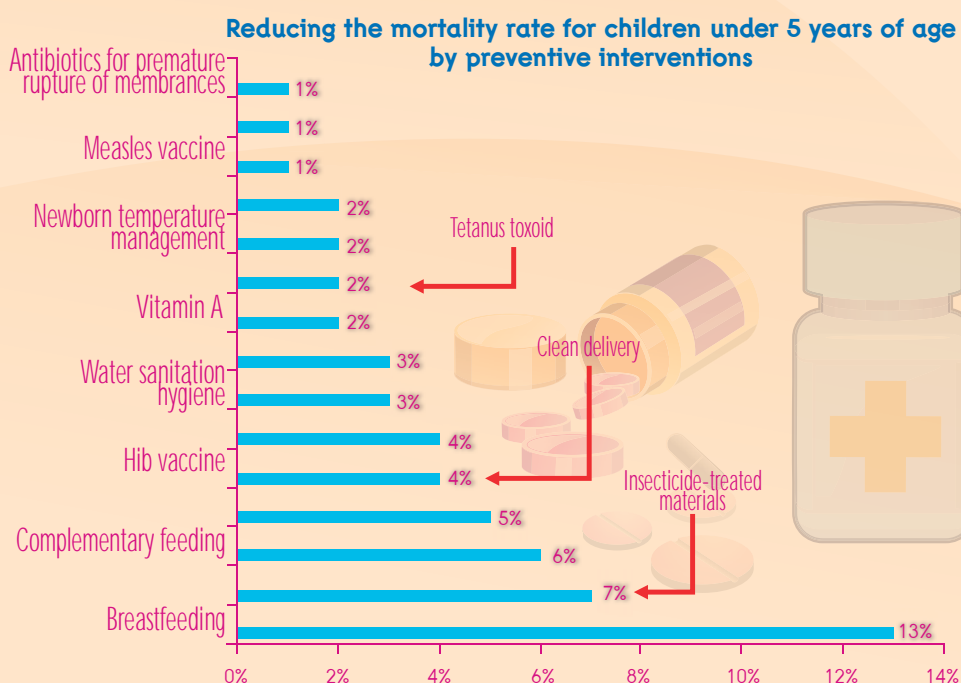
Prepare by Dr. Siraporn Sawasdivorn, Thailand Breastfeeding Center

Dr. Suntaree Ratanachu-ek, Queen Sirikit National Institute of Child Health

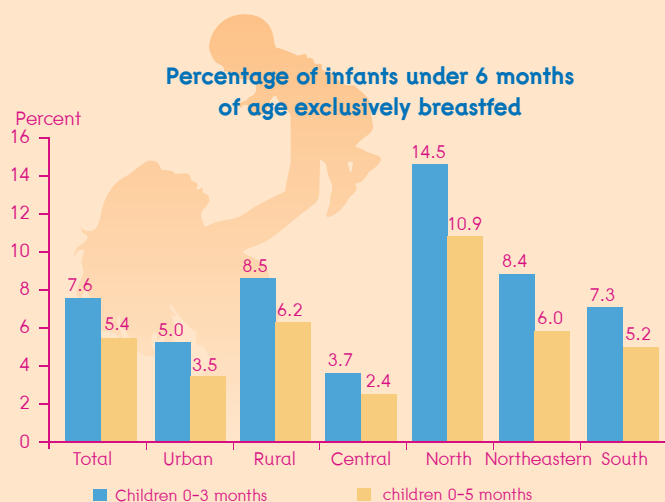
Drinking breast milk reduces the death of children under 5 years of age more than any other factor. Therefore, babies should drink only breast milk for a full 6 months. But bottle-feeding even breast milk to children until they fall asleep at night increases the risk of tooth decay. Therefore, children should be weaned from the bottle at the age of one or one and a half at the latest. In Thailand, however, children are weaned from the bottle at an average age of 2 years and 5 months.

Food is essential to the physical health of preschool children. The best food for young children is breast milk. According to the World Fit for Children, babies should drink only breast milk for a full 6 months. After that, they should take supplementary foods appropriate for their age as well as continuing to drink breast milk until the age of 2.

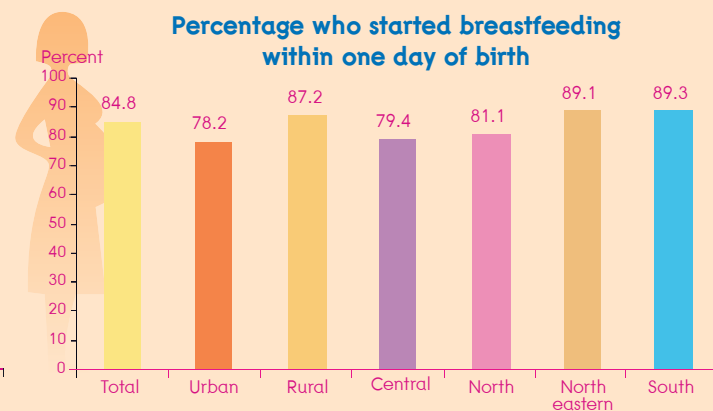
The direct benefits of drinking breast milk are improved immunity, reduced allergies, and ingestion of nutrients that boost brain development. The indirect benefits include development of a strong mother-baby bond. According to studies from the World Health Organization (WHO, 2005), breastfeeding reduces the mortality of children under the age of 5 by as much as 13 percent, the most significant amount compared to other preventive methods against disease.



Source: World Health Organization 2005



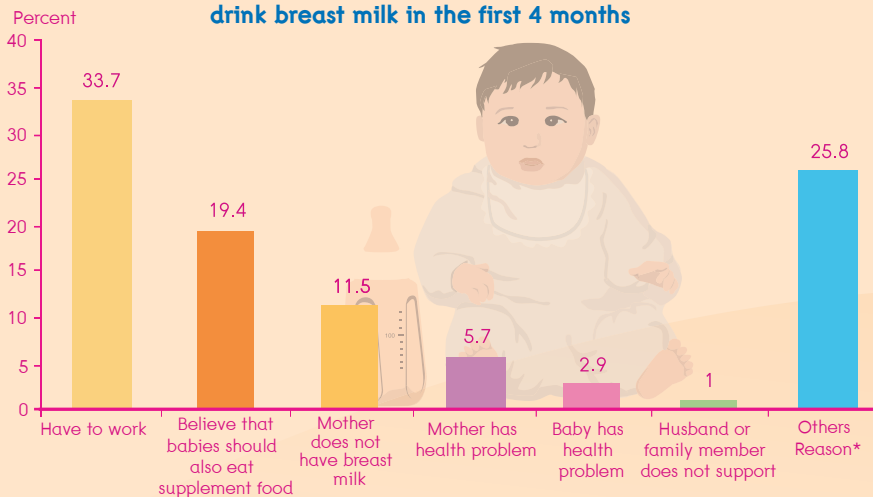
Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology

A survey of children in Thailand conducted during 2005-2006 revealed that only 7.6 percent of 0-3-month-old babies and 5.4 percent of 0-5 month babies were exclusively breastfed. Rural babies were breastfed more than city babies. Babies from the Northern region were exclusively breastfed more than babies from other regions. Meanwhile, the Central region (including Bangkok) had the lowest number of babies who were breastfed.

### Reasons why babies cannot exclusively drink breast milk in the first 4 months



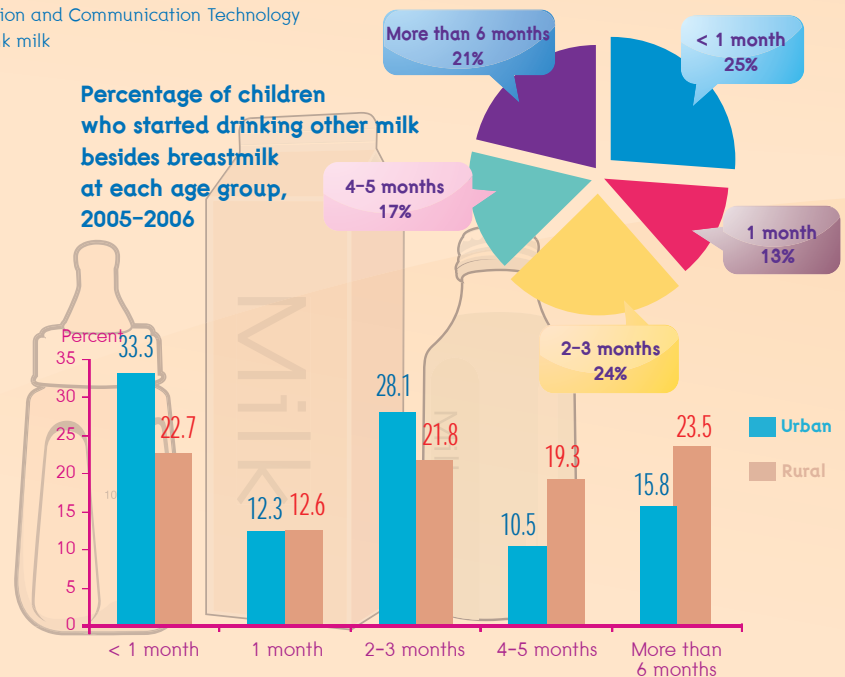
1 out of 4 children who drink other kinds of milk besides breast milk are children under 1 month. Children aged 1 – 3 months living in the city started drinking other kinds of milk besides breastmilk faster than rural children.

Source : The Multiple Indicator Cluster Survey (MICS) December 2005 – February 2006, National Statistical Office, Ministry of Information and Communication Technology  
Note: \* Afraid will have bad figure, baby refuse to drink milk

Though breast milk is the best food source for babies, mothers may be unable to breastfeed for various reasons. For example, they may have to work, or they may believe that babies should eat supplementary food. The reason may also be health-related, such as an inability to produce breast milk or other health problems of the mother or child. If the mother is unable to exclusively breastfeed her child, the baby is usually bottle-fed instead. According to the good nutrition practices, these babies should be given formula milk.

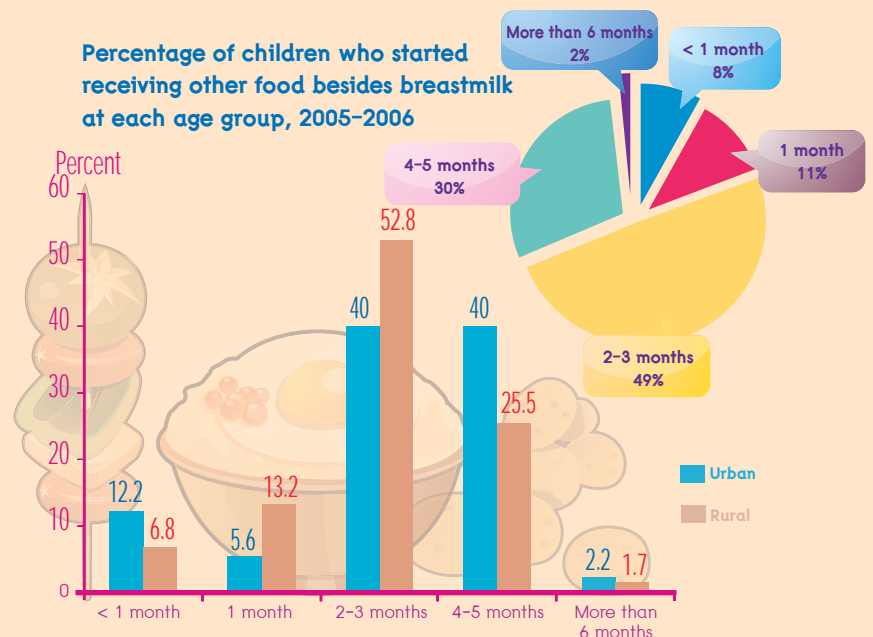
Today, child-related institutes recommend that children be weaned from the bottle and start drinking milk from glasses at the age of one or one and a half at the latest. Prolonged bottle-feeding will cause inappropriate eating for their age and health problems such as tooth decay, refusal to eat solids, low body weight, insufficient uptake of nutrients, and obesity. In addition, after this age, it will be harder for children to be weaned from the bottle.

### Percentage of children who started drinking other milk besides breastmilk at each age group, 2005-2006



Source : The 5<sup>th</sup> National Nutrition Survey 2006

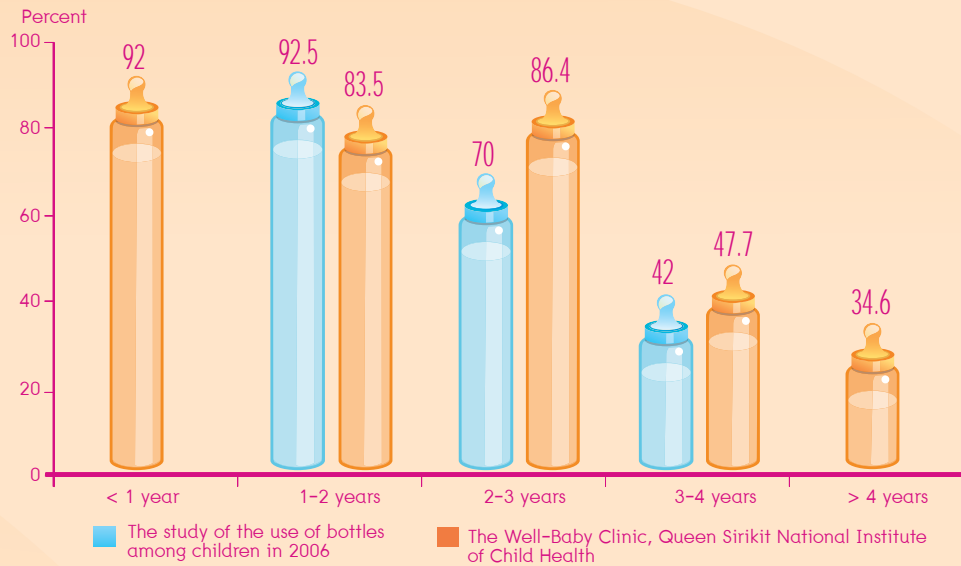
### Percentage of children who started receiving other food besides breastmilk at each age group, 2005-2006



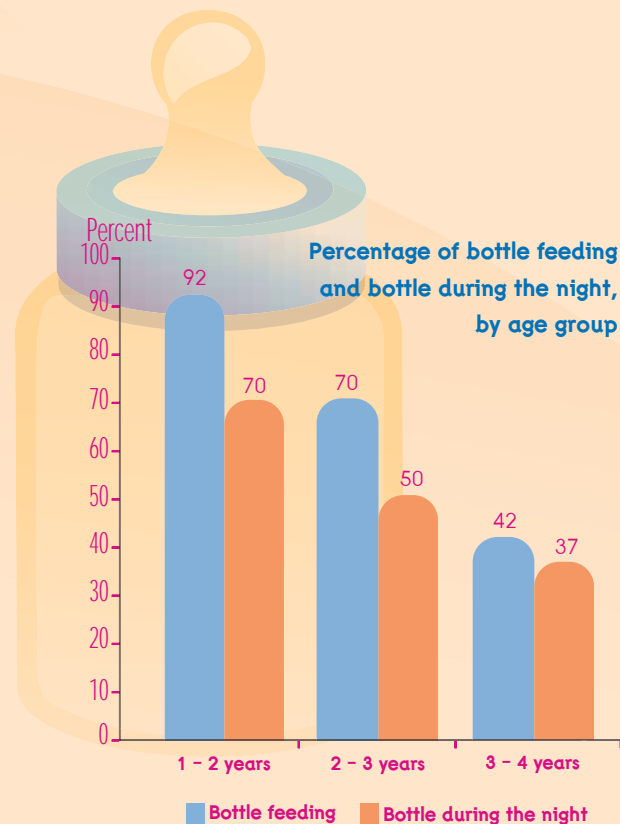
Source : The 5<sup>th</sup> National Nutrition Survey 2006



Percentage of children who bottle feeding at each age group



Source : Siraporn Sawasdivorn and Suntaree Ratanachu-ek. Bottle-Feeding Situation



Source : Siraporn Sawasdivorn and Others 2007

From a study of the use of bottles among children in 2006 and from interviews with parents at the Well-Baby Clinic, Queen Sirikit National Institute of Child Health, it was found that 80 percent of children aged between 1 and 3 still used a bottle. Half of them drank milk from the bottle during the night (from midnight to 4 am). Part of the problem was due to child-rearing behavior that encouraged children to be attached to the bottle. It was revealed that 46 percent of children aged between 6 months and 4 years old fell asleep with the bottle in their mouth. In addition, 34 percent of children who were raised to be attached to the bottle were given nighttime feedings when they started to toss and turn. On average, Thai children stop using the bottle at 2 years and 5 months. However, children should not stop drinking milk entirely because milk provides a rich source of protein and calcium for their growth.

# 4

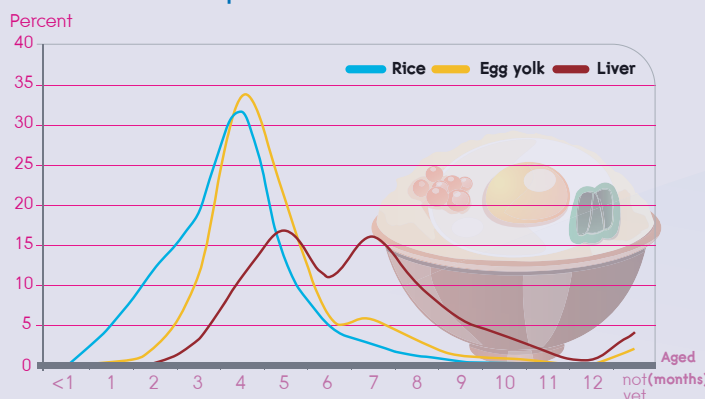
## Supplementary Foods

Prepare by Assistant Professor Uraiporn Chittchang,  
Institute of Nutrition, Mahidol University

**Almost half of all babies start to eat supplementary food before the age of 4 months and almost two-thirds of children aged 3-5 years consume over 6 teaspoons of sugar per day. Furthermore, only 1 out of 3 Thai children eat fruits and vegetables every day, resulting in lack of essential vitamins and minerals.**

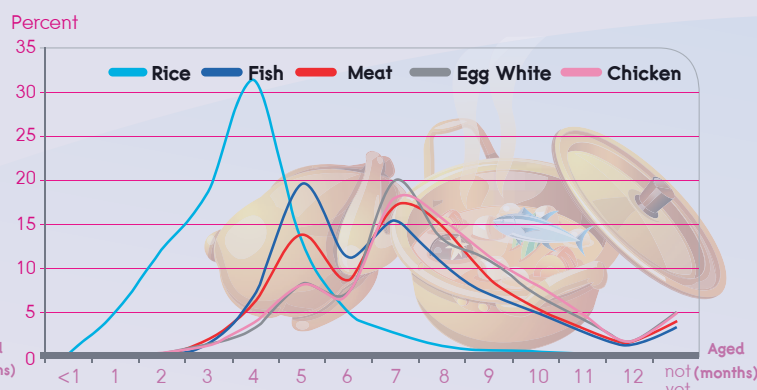
In principle, children should consume only breast milk until the age of 6 months, then start supplementary food. However, such food may be given before 6 months if necessary. In the first 4-6 months, supplementary food must be finely mashed and be rather watery. Beyond 6 months, the food may be progressively thicker in texture. At the age of 1, the food no longer needs to be mashed.

**Percentage of babies in the first year who start eating rice and foods which are important sources of vitamin A and iron**



Source : A Long-term research project on Thai children (1997-1999)

**Percentage of babies in the first year who start eating rice and foods which contain protein from meat**

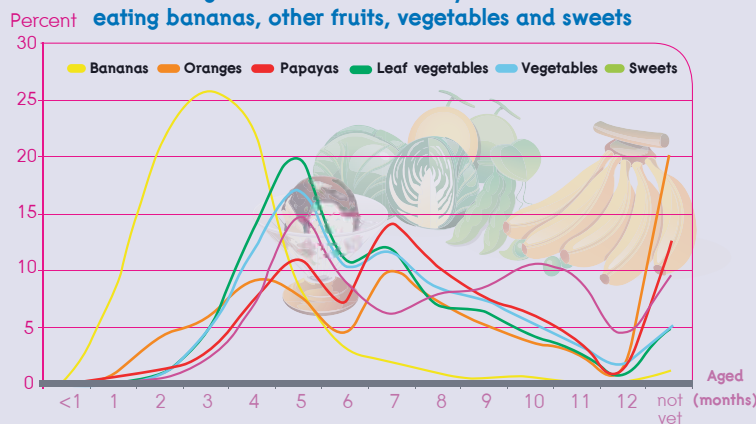


Source: A Long-term research project on Thai children (1997-1999)

A survey on food and nutrition in 2003 revealed that Thai children started to eat food other than milk too early. Almost half started eating supplementary food before the age of 4 months.

Data from a long-term research project on Thai children (1997-1999) showed that more than half of Thai children consumed other foods besides milk before the age of 4 months especially taking banana and rice as main supplementary food. Egg yolk, a major source of vitamin A and iron, is usually one of the first foods combined with rice, following advice from health officials. Some parents gave only rice to their children in the first months and added fish, liver, meat, and eggs (both egg yolk and egg white) later on. Even though approximately 1 out of 5 Thai babies are at risk of being allergic to eggs, it was discovered that babies were nevertheless fed egg whites before the age of 7 months.

**Percentage of babies in the first year who start eating bananas, other fruits, vegetables and sweets**



Source: A Long-term research project on Thai children (1997-1999)

### Infant supplement food according to age

Age	Supplement food
<b>Birth until 4 months</b>	Drink only breast milk. If possible, it would be best to drink only breast milk until 6 months.
<b>4 months</b>	Able to give 1 teaspoon of finely mashed rice with chicken broth, vegetable broth, or liver broth with cooked egg yolk. Alternate with 1-2 teaspoons of finely mashed banana. Slowly increase to ½ cup. Follow with breast milk.
<b>5 months</b>	Should add cooked fish and vegetable. approximately 1/2 cup
<b>6 months</b>	Should add finely minced meat and rice should be mashed coarsely. almost 1 cup.
<b>7 months</b>	Should add fruits as a snack. Can give 1 egg. Total food is 1 cup. Can replace 1 meal of milk.
<b>8-9 months</b>	Can give food with coarser texture. Food can replace 2 meals of milk.
<b>10-12 months</b>	Food can be coarser without grinding. Food can replace 3 meals of milk.

Source : Nutrition Division, Department of Health, Ministry of Public Health

### Food of Preschool Children (1-5 years)

Food	Suggested amount
<b>Various meat and organs</b>	5-6 large spoons per day
<b>Liver</b>	Once a week
<b>Egg</b>	1 egg per day, every day
<b>Milk or soybean milk</b>	2-3 glasses per day
<b>Rice or other beans</b>	4-5 ladles per day
<b>Green vegetables and other vegetables</b>	2-3 ladles per day or ½ - 1 ladle per meal
<b>Fruits</b>	Should eat everyday. 2-3 pieces per day such as 1 banana, 1 piece of ripe papaya
<b>Fat</b>	2 tablespoons of vegetable oil used in stir frying or frying

Source : Nutrition Division, Department of Health, Ministry of Public Health.

### Food benefits for preschool children to support growth and brain development

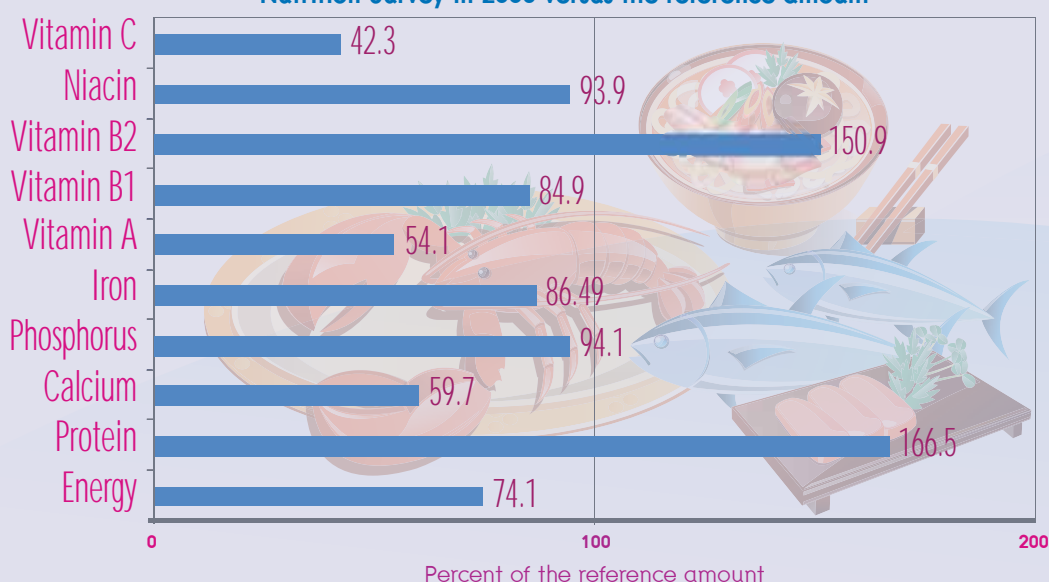
Suggested food	Benefits
<b>Liver, egg yolk, blood</b>	High quantities and quality of iron which supports memory and concentration
<b>Fish (fish meat, fish oil)</b>	Develops memory and promotes growth of dendrites (the threadlike, branching fibers of the neuron (brain cell) that receive signals from other neurons), helping children learn faster and easier.
<b>Vegetables, fruits, green, yellow and red leaf vegetables</b>	<ul style="list-style-type: none"> <li>* Provides vitamin C used to create other body cells</li> <li>* Provides vitamin A so that eye cells work effectively which directly and indirectly affects brain development</li> <li>* Fruits and vegetables have various vitamins and minerals that help cells convert glucose into energy. Insufficient vitamins and minerals may cause brain cells to function less and slower, affecting the child's learning.</li> </ul>
<b>Fish, various kinds of meat, milk</b>	These foods contain various minerals such as iron, copper, magnesium, zinc and phosphorus which affect the function of brain cells.
<b>Seafood and iodine</b>	An important source of iodine which prevents low IQ and Iodine Deficiency Disorder (IDD)
<b>Cabbages (cooked), breast milk</b>	Prevents against free radicals which destroys brain cells

Source : The Brain as the Foundation for Preschool Children's Learning

The study found that caregivers did not give enough importance to training children to eat other kinds of fruits and vegetables besides bananas. Instead, they allowed children to consume sweets and sweetened drinks. In addition, even from the first year, supplementary food was sweetened. After turning one year old, some babies had never tried eating fruits other than bananas. This group was larger than the group of babies who had never eaten sweets. Therefore, it is not surprising that Thai children have a habit of eating sweet food and dislike eating fruits and vegetables as they get older.

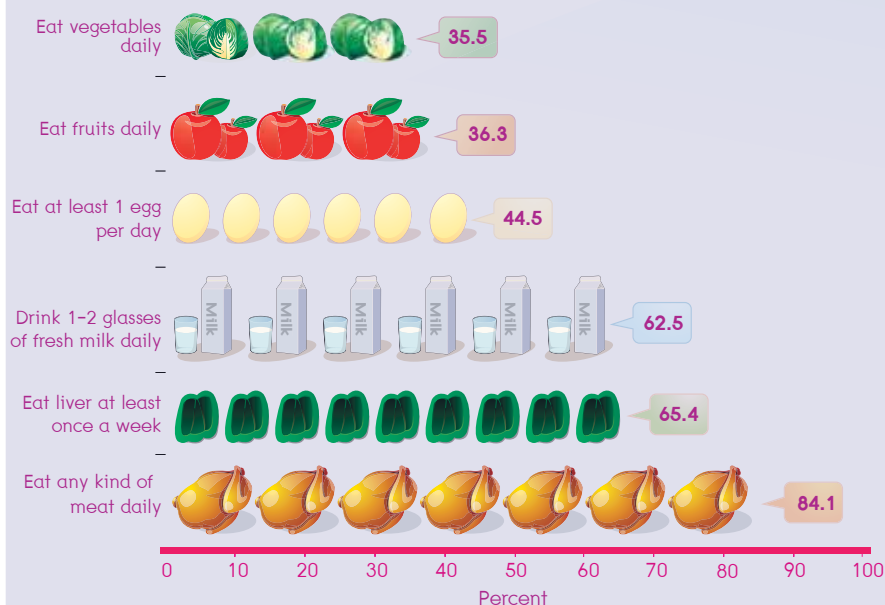
Ages 1-5, especially at ages 1-2, comprise the growth stage of both the body and brain. At this stage, the brain develops rapidly, reaching 80% of full development. Therefore, the type of food given to preschool children is very important. Consuming nutritious food full of energy, fat, protein, vitamins, and minerals will support the growth of Thai children's physical and mental health to their full potential.

**Calories and nutrients that 1–5 year olds receive in 1 day from the Thailand Food and Nutrition Survey in 2003 versus the reference amount**



Source : The 5<sup>th</sup> Food and Nutrition Survey 2003, Department of Health

**Percentage of children aged 1–5 years who consume various food categories**



Source : The 5<sup>th</sup> Food and Nutrition Survey 2003, Department of Health

**Percentage of dietary recommendation for children aged 6 months – 5 years**

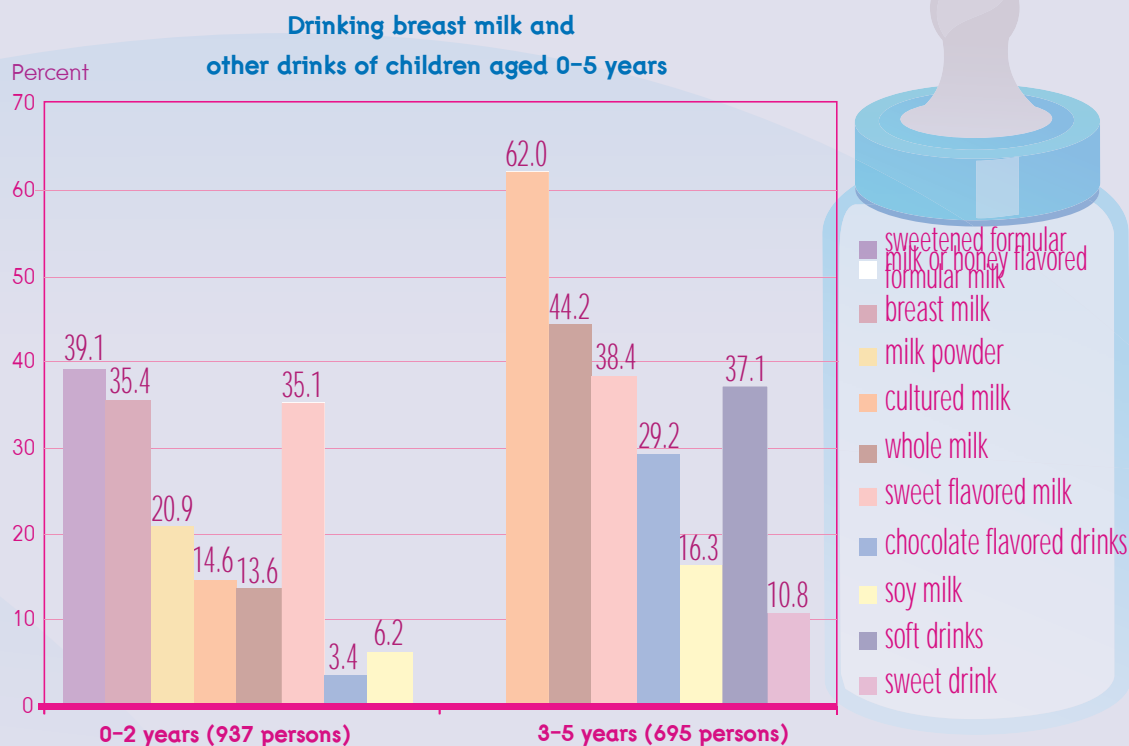
Nutrition	6–11 months	1–3 years	4–5 years
Vitamin C (milligramme/ day)	35	40	40
Niacin (milligramme/ day)	4	6	8
Vitamin B2 (milligramme/ day)	0.4	0.5	0.6
Vitamin B1 (milligramme/ day)	0.3	0.5	0.6
Vitamin A (microgram/ day)	400	400	450
Iron (milligramme/ day)	9.3	5.8	6.3
Phosphorus (milligramme/ day)	275	460	500
Calcium (milligramme/ day)	270	500	800
Protein (gramme/ day)	16	19	25
Energy (kilocalories/ day)	800	1,000	1,300

Source: Dietary Reference Intakes For Thais 2003

A survey on food and nutrition in 2003 showed that Thai children did not lack protein, but lacked essential vitamins and minerals such as vitamin C, vitamin A, and calcium. The survey found that 44 percent of 1–5-year-old children did not consume eggs everyday and that only 1 out of 3 ate vegetables and fruits daily.

When parents gave supplementary foods to children, they sometimes sweetened it. Consumption of sugar from supplementary foods, sweets, or drinks is a cause of addiction to sweetness, which results in tooth decay. In addition, regular excess consumption of sugar increases body weight and obesity, which lead to other chronic non-communicable diseases.



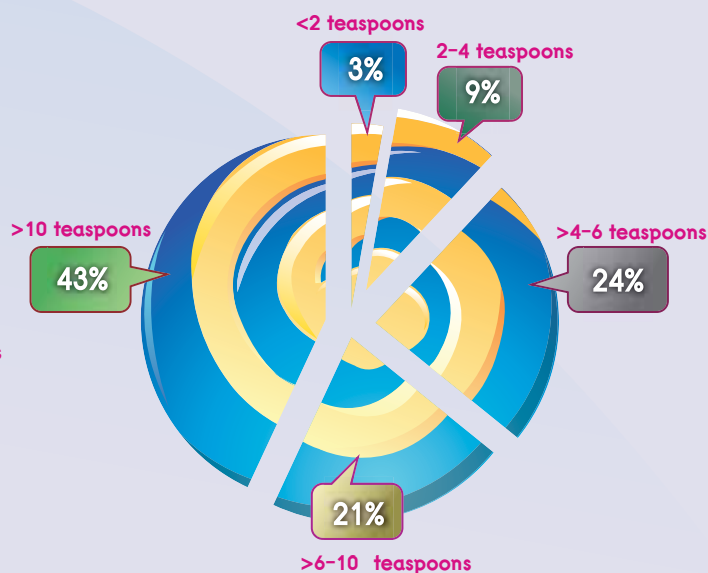


source : Chantana Ungchusak and Others. A Survey of The consumer behavior of preschool children in The No Sugar Campaign. 2004.

### The daily sugar intake of children aged 0-2 years (937 persons)



### The daily sugar intake of children aged 3-5 years (652 persons)



source : Chantana Ungchusak and Others. A Survey of The consumer behavior of preschool children in The No Sugar Campaign. 2004.

During the No Sugar Campaign which was organized in 5 different provinces in 2004, observation of the consumption behavior of preschool children revealed that consumption of sugar from milk and drinks of preschool children aged 3-5 years came from drinking yogurt, sweet flavored milk, carbonated drinks, and chocolate flavored drinks. By comparison, children aged 0-2 consumed less sugar from milk and drinks than preschool children in other age groups. Milk and drinks with sugar that infants usually drink include sweetened formula milk or honey-flavored formula milk and sweet-flavored ready-to-drink milk. As they get older, children start drinking yogurt at a higher rate (from the ages of 6 months to 3 years).

Overall, it was observed that the daily sugar intake of children aged 3-5 was very high. Two-thirds of these children consumed more than the recommended sugar intake standard of 6 teaspoons of sugar per day.

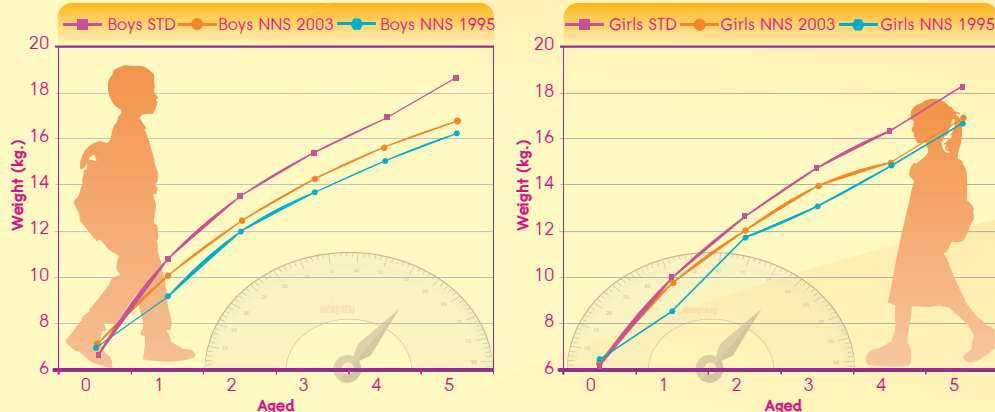
# 5

## Malnutrition

Prepare by Assistant Professor Uraiporn Chittchang,  
Institute of Nutrition, Mahidol University

Body weight and height of Thai preschool children are increasing. However, both these measures are still below the standard. More than a tenth of preschool children are short for their age. Providing knowledge and raising the standard of living of low-income households will lower malnutrition among preschool children.

Standards of weight for Thai children aged 0-5, by sex



**STD** : Standards of Weight for Thai children, 1997 **NNS** : Data from The 5<sup>th</sup> National Nutrition Survey  
Source : The 5<sup>th</sup> National Nutrition Survey 1995 and 2006

Despite being underweight at birth, babies who are well nourished with breast milk will continue to grow at a normal rate or close to the normal rate in the first six months. Their weight will increase more apparently and faster than their height. During the next six months, babies also receive other foods besides breast milk. If babies receive inappropriate supplementary foods or have gastrointestinal infections, their bodies will not receive normal nutrients, thus inhibiting their growth. During the stage of changing from consuming breast milk to eating solid food, the rate of malnutrition will rise and will be especially high during the second year.

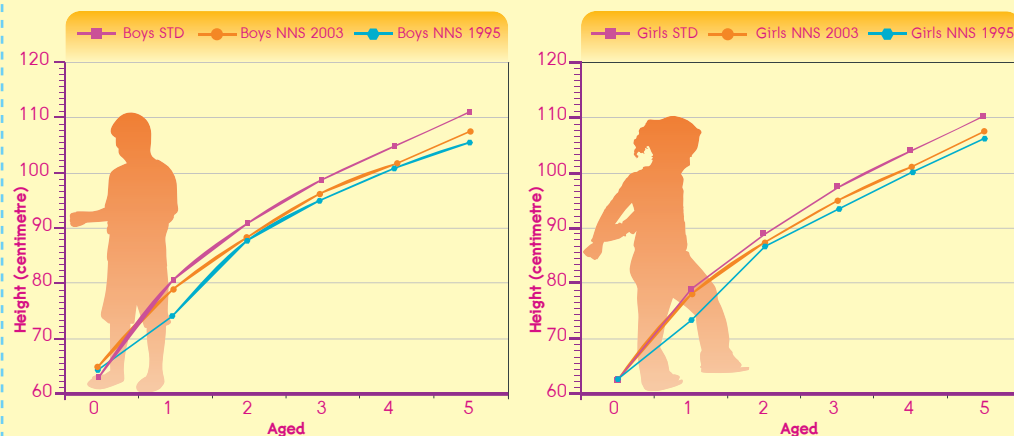
### Weight for age

Is an indicator of lack of protein and energy, but does not clearly indicate whether the lack of protein and energy is chronic or acute. Since weight is an overall composite of muscle, fat, water and bones, it is difficult to clearly determine whether the loss of weight is a result of a change in which part. Children whose weight is more than 2 standard deviations under the average for their age are considered moderately or severely underweight.

### Height for age

Is an indicator of chronic lack of protein and energy, reflecting insufficient receipt of nutrients for a prolonged period and frequent or chronic illness, adversely affecting structural growth and causing the child to be shorter than other children the same age. Children whose height is more than 2 standard deviations under the average for their age are considered short (compared to children the same age). These children are also considered as having moderate and/or severe chronic malnutrition.

Standards of height for Thai children aged 0-5, by sex



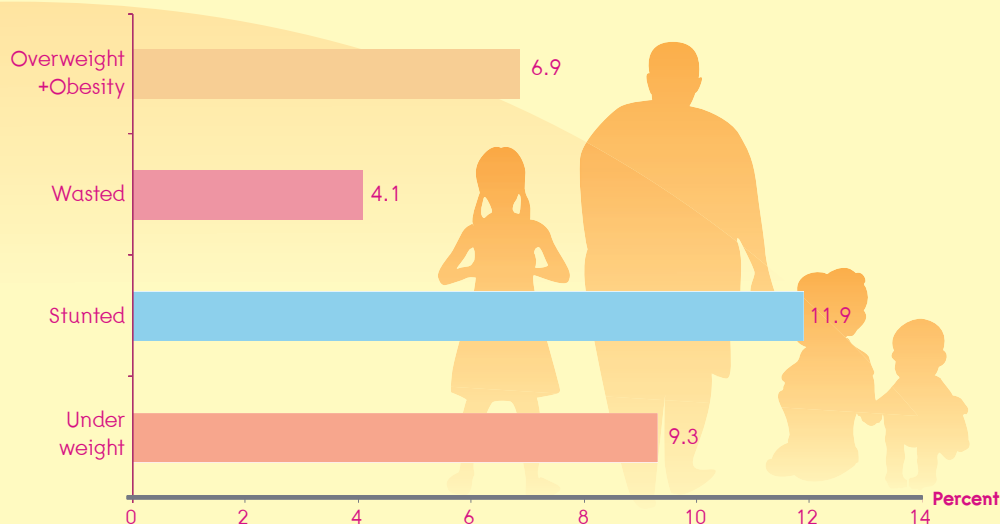
**STD** : Standards of Height for Thai children, 1997 **NNS** : Data from The 5<sup>th</sup> National Nutrition Survey  
Source: The 5<sup>th</sup> National Nutrition Survey 1995 and 2006

Children's consumption behavior and the nutrients that they receive affect their growth and risk of malnutrition. According to the food and nutrition survey conducted in 1995 and 2003, even though the average weight and height of both Thai boys and girls aged 0-5 have increased, these figures are still below the standard.

## Weight for height

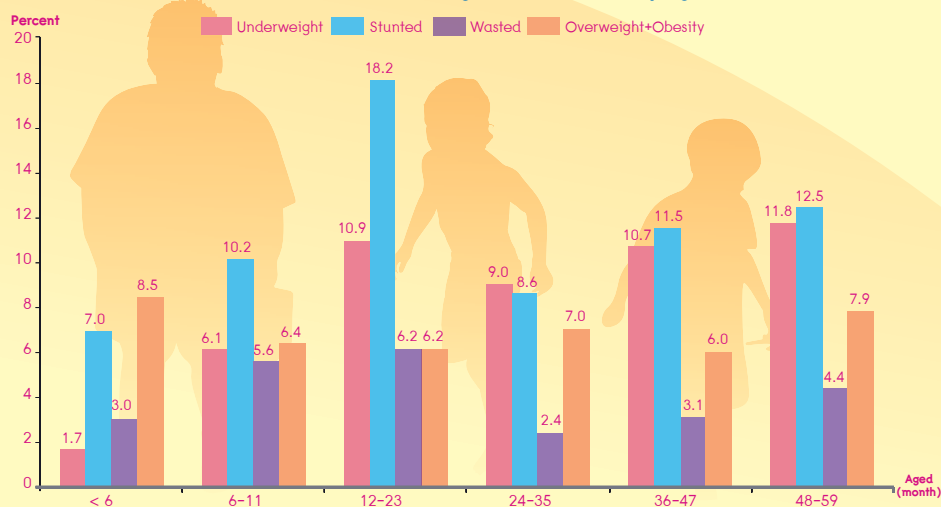
Is an indicator of acute lack of protein and energy as muscles and fat accumulated in the body will be used resulting in skinniness. Children whose weight for height is more than 2 standard deviations under the average are considered as having moderate to severe acute malnutrition. It is a result of prior lack of nutrients that occurred not long ago. In addition, weight for height is an indicator of over-nutrition or obesity as it compares whether weight is appropriate for height. Children whose weight for height is more than 2 standard deviations over the average are considered as having over-nutrition problems, starting to be fat or are already fat.

## Malnutrition in children aged 0-59 months



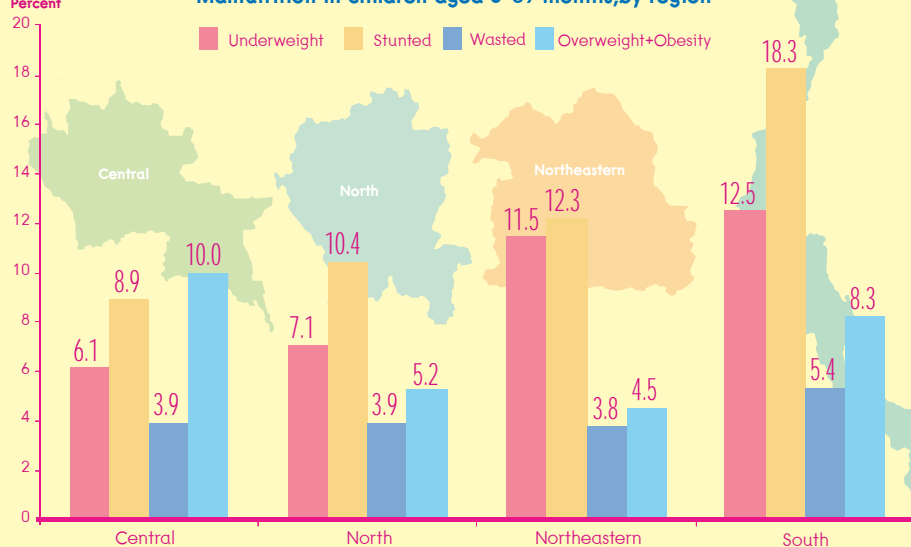
Source : The Multiple Indicator Cluster Survey (MICS) December 2005 – February 2006, National Statistical Office, Ministry of Information and Communication Technology

## Malnutrition in children aged 0-59 months, by age



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 – February 2006, National Statistical Office, Ministry of Information and Communication Technology

## Malnutrition in children aged 0-59 months, by region



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 – February 2006, National Statistical Office, Ministry of Information and Communication Technology

In addition, the survey of children in Thailand conducted during 2005-2006 revealed that more than one-tenth of preschool children are short for their age. At the same time, approximately 10 percent of preschool children are underweight. Data from the Department of Health's Nutrition Watch System show that the malnutrition rate has remained steady and has not declined since 2000. The same is true for the rate of underweight newborn. What is interesting is that the rate of obesity among children is almost double the rate of malnutrition.

Classification according to children's age (in months) reveals that in almost all age groups there are more children of short stature than with any other condition. The next most pronounced category consists of children who are underweight. The numbers increase when babies enter the second six months of their lives, and the rates almost double during the second year, with 18.2 percent of babies shorter than the standard for their age.

The severity of the problem at regional levels has clearly changed. The northeastern region used to have the highest rates of malnutrition. But according to the 2003 survey, the southern region had a worryingly high incidence of malnutrition, in line with the results of the 5<sup>th</sup> food and nutrition survey of Thailand in 2003.

Factors affecting malnutrition include the education level of the head of the household and the financial status of the household. But when the financial status of the household improves, the likelihood of obesity also increases.

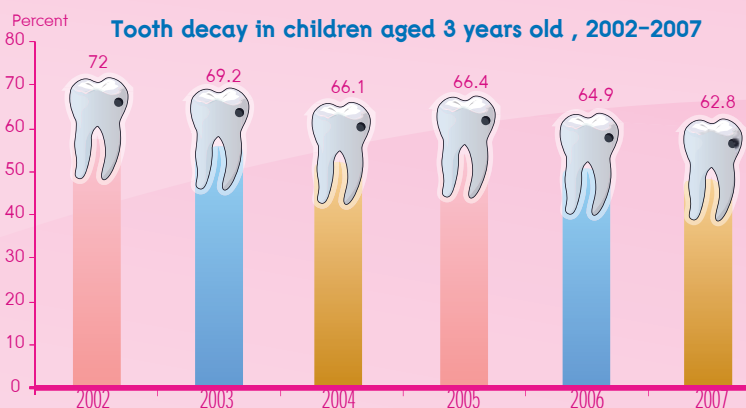
# 6

## Dental Health

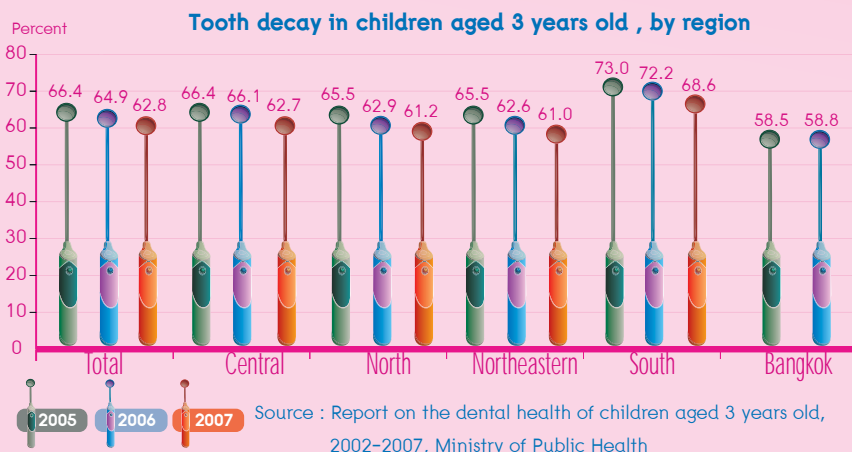
Prepare by Chantana Ungchusak, Dental Health Division, Ministry of Public Health

*Thai children still have hope. Brushing at an earlier age reduces tooth decay.*

Preschool children who still suck from the bottle before going to sleep and who drink carbonated drinks at least once a week are at risk of tooth decay. However, the dental health of preschool children is improving overall, and the number of 3-year-olds with tooth decay has fallen from 72 percent in 2002 to 62.8 percent in 2007.



Source : Report on the dental health of children aged 3 years old, 2002-2007, Ministry of Public Health



Source : Report on the dental health of children aged 3 years old, 2002-2007, Ministry of Public Health



Source : Report on the dental health of children aged 3 years old, 2002-2007, Ministry of Public Health

The factor leading to the improvement of children's dental health is parents brushing teeth for their children at an earlier age (at 13.8 months in 2007 compared to 24 months in 2001). Seventy-six percent of children brush their teeth with regular toothpaste while 95.7 percent use children's toothpaste. Also, during 2004-2007, the number of children under 3 who drank sweetened milk fell from 39.1 percent to 19.7 percent. Since 98.5 percent of parents do not add sugar to their children's milk, this decrease most likely results from regulation No. 286 from the Ministry of Public Health, issued in 2006, which prohibited the addition of sugar in formula milk for children. The Ministry of Public Health also stipulated that health service centers under the Ministry of Public Health provide oral checkups and demonstrate proper brushing to parents who brought 9-12-month-old children to the Well-Baby Clinic. More children received dental checkups between 2003-2005, covering, respectively, 42.9, 54.6, and 54.2 percent of children.

Most children aged 3-5 receive care from child development centers or kindergartens. The 2006 survey found that 90.5 percent of child development centers and 97.4 percent of kindergartens arranged for children to brush their teeth with toothpaste everyday. In addition, the Municipal Governments and Tambon Administrations took an active role in purchasing unsweetened milk for children to drink everyday, and 32 percent regularly purchased toothbrushes and toothpaste for children in child development centers.



# 7

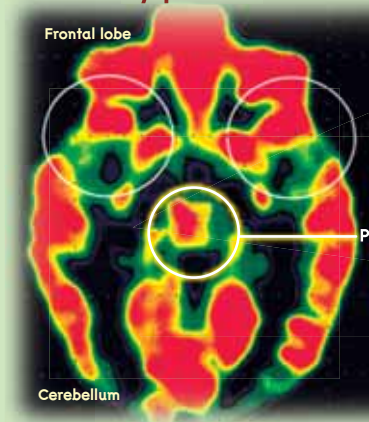
## Emotional Intelligence

Prepare by The Thai Health Team

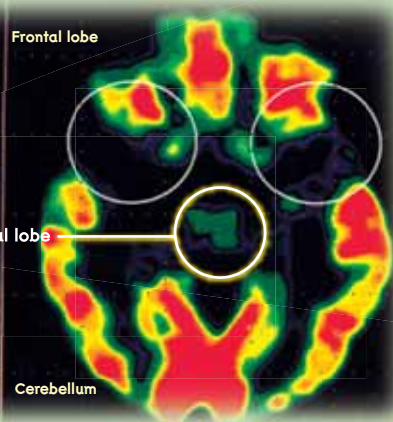
**Most preschool children aged 3-5 have emotional intelligence according to their age. Parents' touch helps children to control and adjust their emotions.**

Parents, families, and society must help children learn to be sympathetic, gentle, and cooperative. However, parents are the best teachers when the baby is still in the mother's womb, and they are the ones who must demonstrate love and care once a child is born. (Dr. Sem Pringpuangkaew, 2007) Therefore children's emotions depend on how their parents treat them. Parents are happy when their child is born. As their child grows up, they must show appreciation, give praise, and provide encouragement for their child's actions. Preschool children will acknowledge and be grateful for their parents' care, leading to good mental and emotional health, which will affect the development of their intelligence.

**Brain of typical child raised by parents**



**Brain of child raised in orphanage**

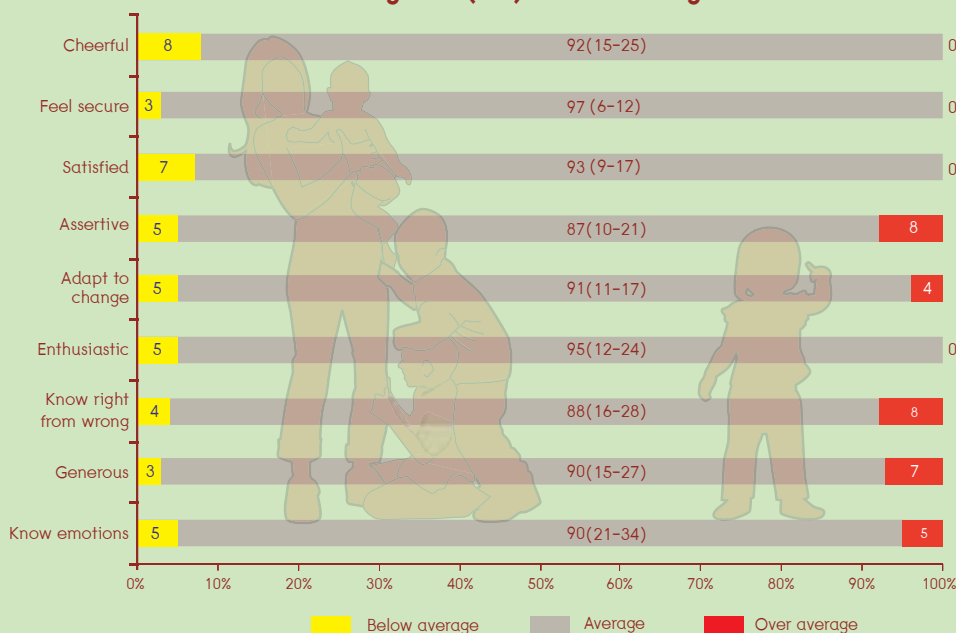


Source : The baby Brain Quoted in Brain and Learning 1999

Dr. Naipinit Kotchapakdee, the Neurobehavioral Specialist from the Institute of Science and Technology for Research and Development, Mahidol University, explains that studies of the development of preschool children not only focus on the brain, intelligence, and memory, but also emphasize emotions, feelings, humanity, morality, and virtue.

Studies comparing the brain growth of normal children and orphans (FAS, 1996 reference from Kamolphan Chivapansi, 2005) found that the temporal lobe of the brain of orphans who did not receive warm responsive care grew less than that of normal children who were raised, held, cuddled, and hugged by their parents. Therefore, it can be said that children who do not receive physical contact and warmth, praise, and love may experience a gloominess that will affect their learning development.

**Emotional intelligence (EQ) of children aged 3-5 in 2007**



Note : Figures in parenthesis are typical scores

Source : Department of Mental Health, Ministry of Public Health, 2007

An Emotional Intelligence Survey of Children aged 3-11 showed emotional intelligence of most children aged 3-5 in average level



Studies from the Brain Research And Integrative Neuroscience Network (BRAINnet) show that the most effective learning for children in various areas should begin during the preschool years or even in the womb.

The best opportunity for children to develop their intelligence in various areas will be limited if the development stage for that area has passed. For example, development of spatial temporal intelligence has only a short time period. After the age of two years, a child's development in this area will be very slow. The same applies to social intelligence and linguistic intelligence.

Studies from the Thai Children Research and Development Project in 2003 found that half of children below the age of 3 had typical DQ levels of 90 to below 110. However, 40 percent of older children (3-6 years) had rather low IQs, that is, 70 to below 90. Thus, it appears that most Thai children 6 years old and older have low levels of cognitive intelligence.

Dr. Chanpen Chuprapawan ("Who Says Thai Children Are Dumb?," 2005) points out that the low development of Thai children's intelligence reflects a problem of insufficient brain stimulation.

Developmental quotient and intelligence quotient level				
Percent of development	1 - < 3 years	3 - < 6 years	6 - < 13 years	13 - 18 years
Lower than average (< 70)	2.2	13.3	4.6	7.5
Rather low (70 - < 90)	18.4	42.3	62.9	58.7
Average (90 - < 110)	55.7	29.3	28.3	27.2
Rather fast (110 - < 130)	21.7	7.0	3.7	6.1
Faster than average (≥ 130)	1.6	8.1	0.5	0.5

source : Ladda Mohsuan and Others 2003

Note : In children aged 1- < 6 years old , measure developmental quotient (DQ)  
In children aged 6-18 years old , measure Intelligence quotient (IQ)

### Developmental Quotient Score

Score	Developmental quotient
Less than 70 score	lower than average
70- < 90 score	Rather low
90-< 110 score	Average
110-< 130 score	Rather fast
≥ 130 score	Faster than average

$$\frac{\text{Developmental Age; DA}}{\text{Chronological; CA}} \times 100$$

Source : Nichara Ruangdaraganon 2004

Note: Development quotient measures 2 areas: language and actions.

For a 20-month-old child who can identify or pick at least one correct color every time (which is the capability of a 24-month-old child), calculate as follows:

$$\frac{24}{20} \times 100 = 120 \text{ points}$$

means that that child has rather fast development



## Developmental Quotient (DQ)

In children under 3, measure 2 areas: language and actions. Evaluate problem solving skills by use of hand and eye muscles.

In children aged 3-<6, measure 2 areas: drawing and language skills.

- Drawing is divided into drawing people and shapes. Evaluates intellectual intelligence in specific areas such as sight, memory, and understanding.
- Language skills – use storytelling through pictures and have the child answer questions to evaluate communication skills such as refusal, greetings and praise.



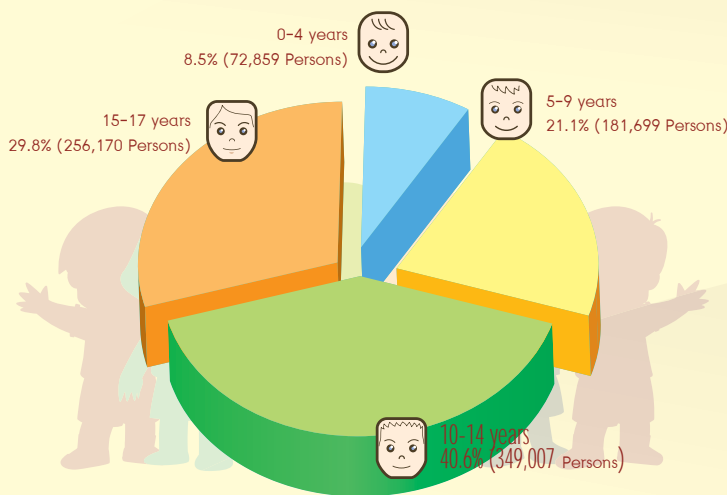
# 9

## Orphans/ HIV Infected Children/ Disabled Children

Prepare by The Thai Health Team

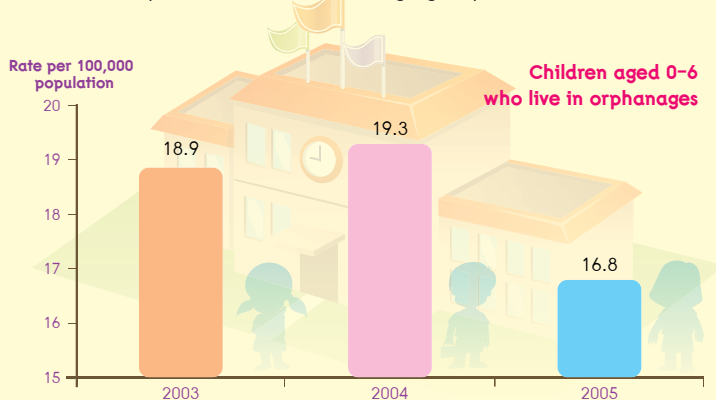
Almost one out of three children infected with HIV are preschool children. Approximately one out of ten preschool children has at least one type of disabling condition. In addition, only 15 percent of preschool children whose parents have a chronic disease (and are thus at risk of becoming orphans) have received basic help.

Percent and number of orphans



source : Strategic Plan for Relieving Problems of Poor and Underprivileged Children (2007-2009), Institute for Population and Social Research 2007

Data from the strategic plan to solve the problems of poor and underprivileged children show that preschool orphans make up 8.5 percent of the total number of orphans, which is less than that for orphan children in other age groups.

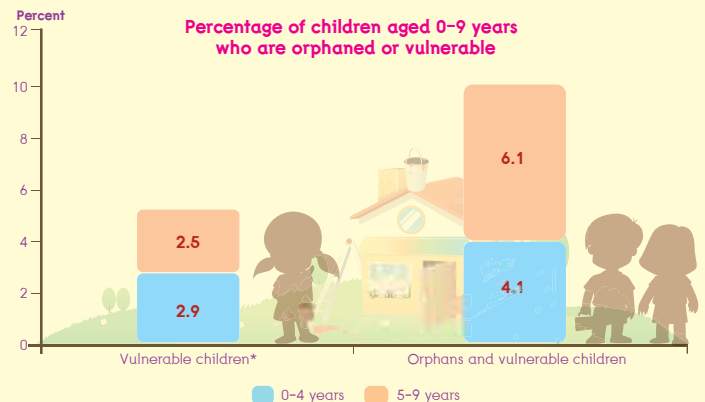


source : The 2006 National Human Security Report

According to the 2006 National Human Security Report, the number of 0-6-year-old children in orphanages during 2003-2005 was 17-19 children per 100,000 population.

Underprivileged children, or children who live in hardship, comprise 12 different groups: poor children, children with drug addiction problems, abandoned children or orphans, abused children, children affected by AIDS or serious infectious diseases, children of minority groups, street children, children forced into labor, children in the sex trade, children in the Observation and Detention Home, disabled children, and children of construction workers.

The main causes of children falling into these difficult circumstances include family problems, social and environmental problems, and problems of individual children themselves. The Institute for Population and Social Research, Mahidol University, the Faculty of Education, Chulalongkorn University, and the Faculty of Social Administration, Thammasat University have together prepared a strategic plan to solve the problem of underprivileged children. It is a 3-year strategic plan to solve the problems of poor and underprivileged children (2007-2009). focusing in particular on 4 groups of children experiencing hardship, namely, poor children, street children, orphans, and children affected by AIDS. Studies should also be conducted to determine whether a large number of preschool children are in this difficult situation.

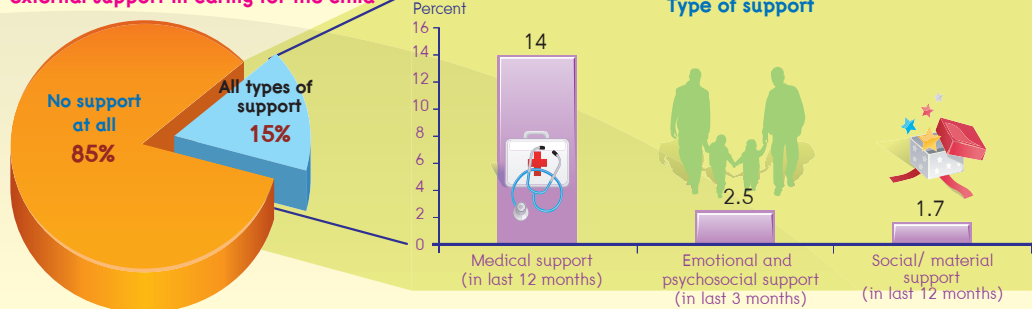


Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology

\* note : vulnerable children means child who has chronically ill parent/ adult in household



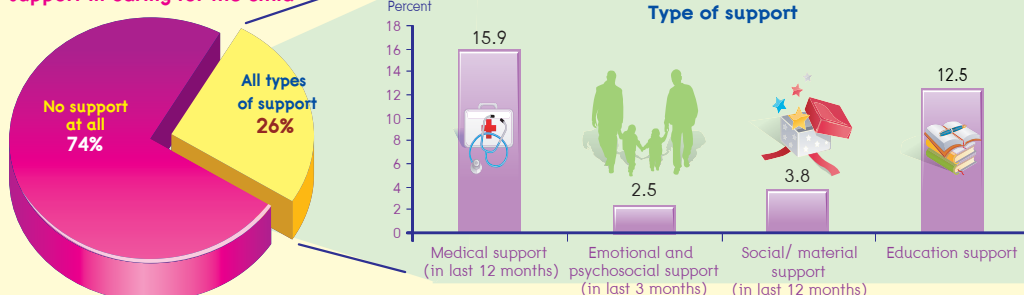
**Percentage of vulnerable children aged 0-4 years whose households receive free basic external support in caring for the child**



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology

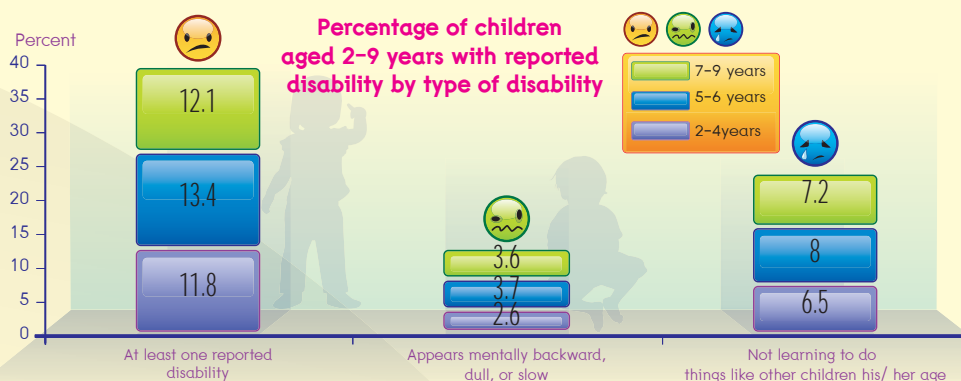
The 2005-2006 survey of children in Thailand showed that the aid given to small children who are orphans or with a parent who has a chronic disease is less than that given to older orphans or children with a parent suffering from a chronic disease. That is, only 15 percent of 0-4-year-old children who are at risk of becoming orphans (that is, who have a mother or father or caregiver sick with a chronic disease) received some kind of help versus 26 percent of children in the 5-9 age group.

**Percentage of vulnerable children aged 5-9 years whose households receive free basic external support in caring for the child**



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology

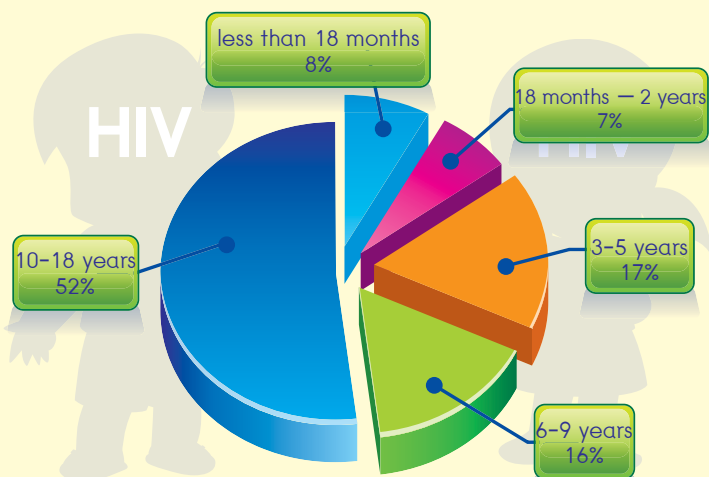
In addition, the situation of orphans and children affected by HIV/AIDS in Thailand (Sirikul et al, 2006, cited in the Institute for Population and Social Research, 2007) shows that almost a third of children infected with HIV are preschool children.



Source : The Multiple Indicator Cluster Survey (MICS) December 2005 - February 2006, National Statistical Office, Ministry of Information and Communication Technology

Note : Reported by their mother or caretaker

**Percentage of HIV infected children, by age**



Source : Sirikul Isaranurug 2006 quoted in Strategic Plan for Relieving Problems of Poor and Underprivileged Children (2007-2009)

Another underprivileged group with a lot of data clearly showing that it is large group are disabled children. The 2005-2006 survey of children revealed that the ratio of disabled children among preschool children is approximately the same as that of other age groups.

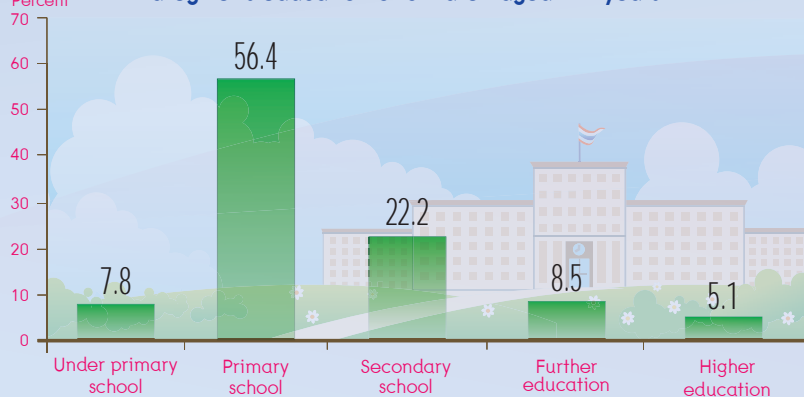
# 10

## Caregiver

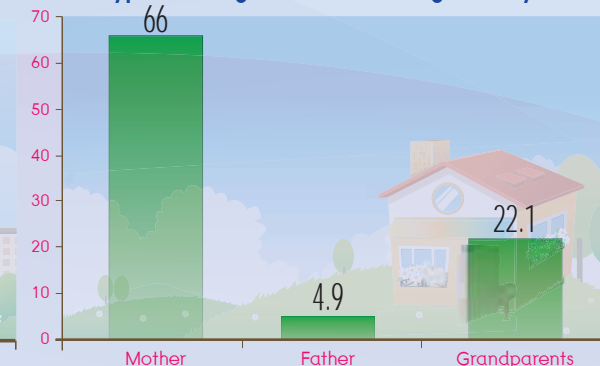
Prepare by The Thai Health Team

Preparedness of the caregiver, whether family members or staff at child centers, is very important. Yet it was found that more than half of caregivers of preschool children have only a primary school education or less.

Caregiver's education of children aged 1-5 years



Type of caregiver of children aged 1-5 years



Source : Ladda Mohsuan and Others, The Thai Research and Development Project in 2003

After birth, babies are helpless and need to be taken cared of. The baby's primary caregiver is the person who mainly influences the child's growth and development. According to data from the Thai Children Research and Development Project in 2003, among two-thirds of children aged 1-5, mothers are the primary caregivers. One out of four have grandparents as the primary caregiver and only 5 percent have fathers as the primary caregiver. The education level of the primary caregiver is rather low, 64 percent of caregivers have only primary school level education or lower. Only 5 percent of children have caregivers with a bachelor's degree level education or higher.

Data on child-rearing of Thai families from the Thai Children Research and Development Project (Sutham Nantamongkolchai, 2004) reveal that the mother's education level along with the amount of time devoted to children influence the care of preschool children in the areas of overall health, intelligence, and emotional development.

Family factors that influence care provided to preschool children

Factor	Overall health	Intellectual health	Emotional health
Mother's education	★	★	★
Mother is main caregiver	★	★	★
Mother's occupation	★	★	★
Type of family	★	★	★
Number of children in family	★	★	★
Home environment	★	★	★
Marital status of parents	★	★	★
No. of people in the house	★	★	★
Father's occupation	★	★	★
Family income	★	★	★
Father's education	★	★	★

Source : Care of children by Thai families: Information from qualitative and quantitative analysis, 2004

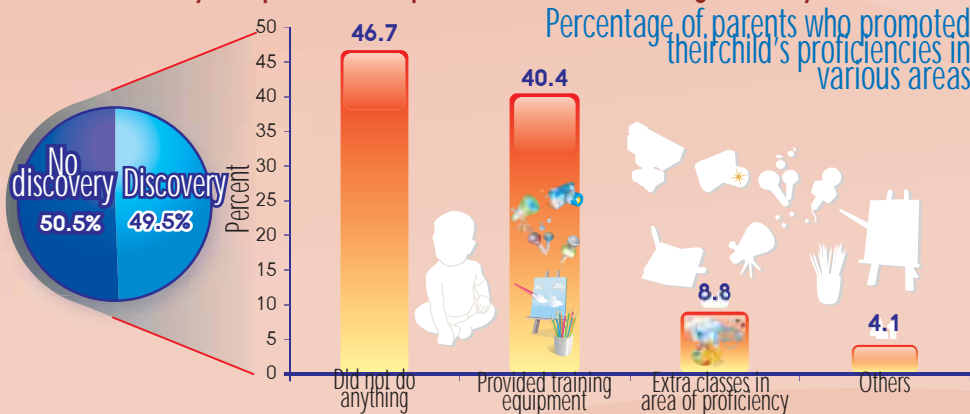
# 11

## Influence of Childcare on Child Development

Prepare by The Thai Health Team

Preschool children spend approximately 1.9 hours a week watching TV, affecting obesity and intelligence levels. Caregivers should expose children to books/picture books at a young age even though children are still unable to read. Showing love through physical contact, verbal communication, and praise also affects children's development.

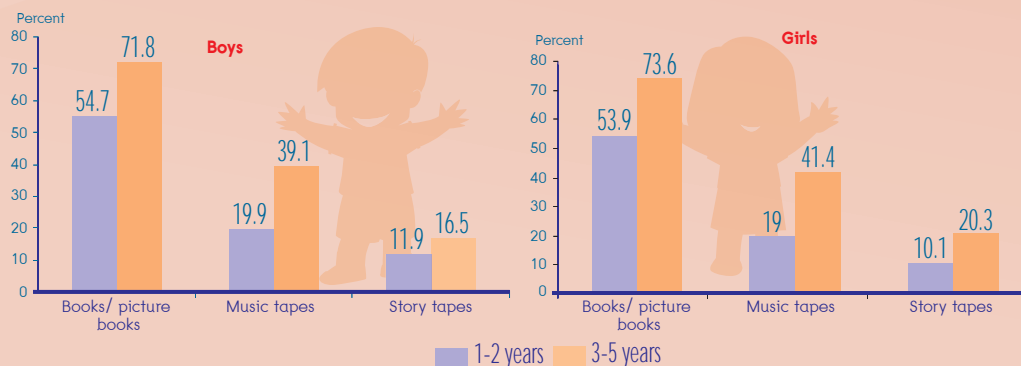
Discovery and promotion of proficiencies of children aged 1-<3 years



Source : Care of Children by Thai families: Information from Qualitative and Quantitative Analysis, 2004

Studies of Thai children's overall development in 2003 showed that almost half of parents had discovered at least one of their child's proficiencies but that 47 percent of these parents did not do anything about this discovery. However, half of these parents did support their child's proficiency in specific areas.

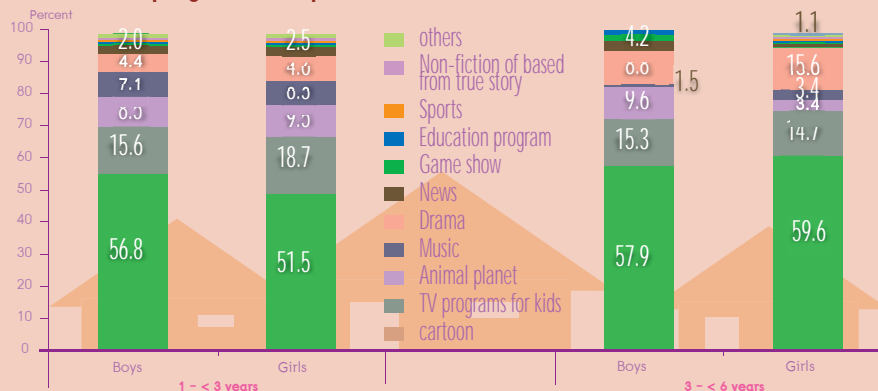
Type of media used in rearing 1-5 year olds



Source : Care of Children by Thai families: Information from Qualitative and Quantitative Analysis, 2004

Important media used as tools in children's development include books/picture books, music tapes, and story tapes. Primary caregivers give more importance to the intellectual development of children aged 3-5 than children aged 1-2, while learning and development begin even while still inside the mother's womb.

TV programs that parents choose for their children to watch

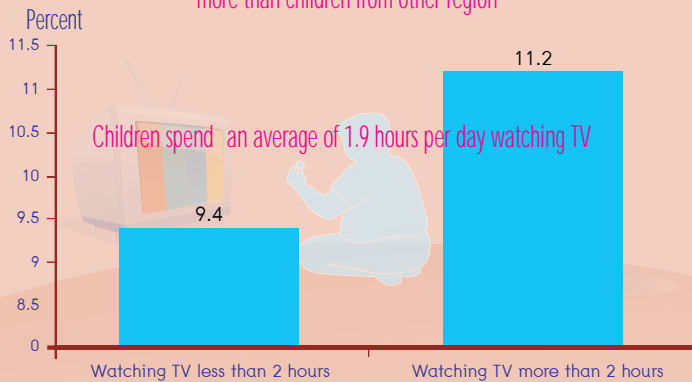


Source : Care of Children by Thai families: Information from Qualitative and Quantitative Analysis, 2004

Besides books/picture books, music tapes, and story tapes, television is another medium that primary caregivers use to develop the intelligence of preschool children. Soap operas or movies are TV programs that primary caregivers choose for older children to watch more than younger children. However, this type of TV program is inappropriate for preschool children.

### Obesity in children under 6 years by television watching behavior

Children who lived in Bangkok spend watching TV 2.1 hours a day more than children from other region

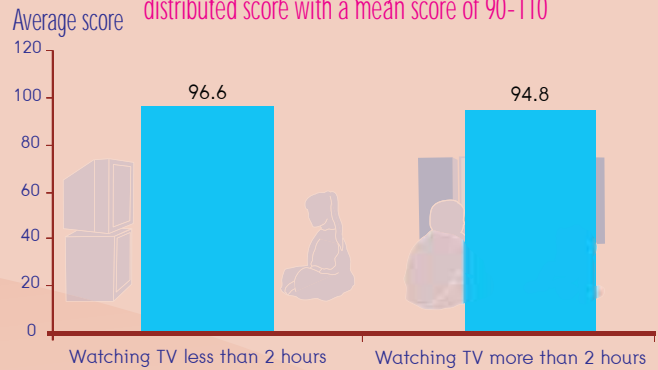


Source : Ladda Mosuwan 2004

Note : The Committee on Communications recommends that parents limit children's television viewing to less than 1-2 hours a day (Quoted in Ladda mo-suwan 2004)

### Average development quotient score of children under 6 years by television watching behavior

A development quotient (DQ) score is a normal distributed score with a mean score of 90-110

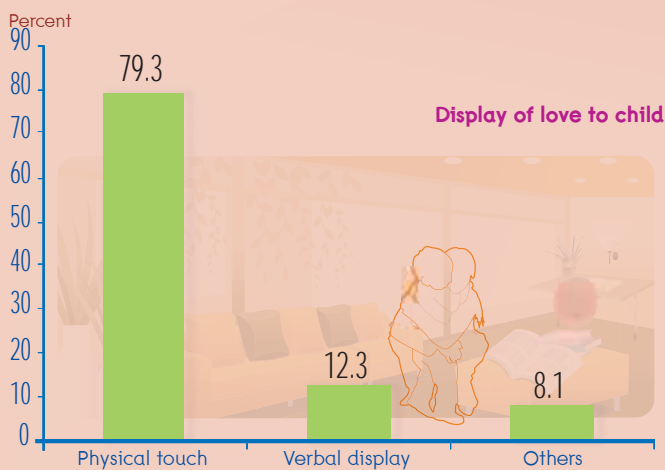


Source : Ladda Mosuwan 2004

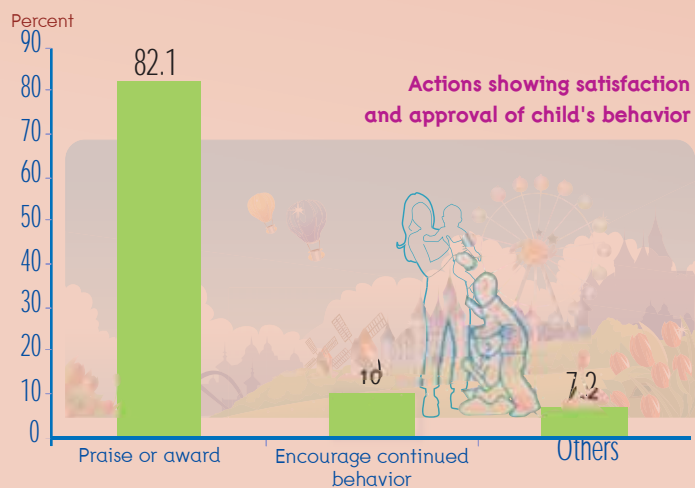
Even more important is the fact that watching TV affects preschool children's development. The more hours spent watching TV, the lower a child's overall development (DQ). In addition, it was found that the number of hours spent watching TV affects the incidence of obesity in children.

Biomedicine informs us that the release serotonin, dopamine, and endorphin puts children in a good mood. These chemicals enhance learning and memory as well as better brain growth. They are released during exercise, during close physical contact, and when experiencing feelings of happiness, enjoying good relationships with others, feeling self-esteem, receiving praise, and feeling proud of oneself. The body will be stronger and immunity will increase. (The Brain and Learning, Kamolphan Cheewaphansri <http://advisor.anamai.moph.go.th/tamara/child/brain02.html>)

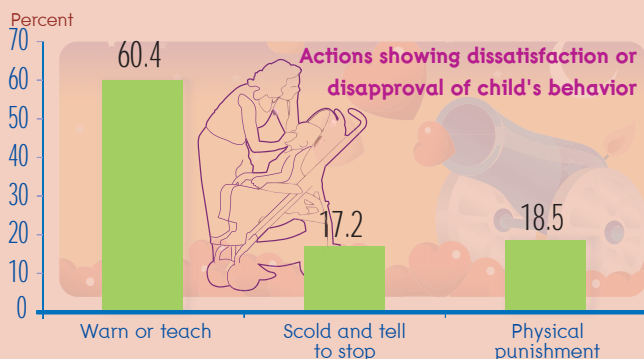
### Actions of Caregivers



Note : Others include No display, Give things that child likes or wants, Teasing, and Play with child



Note : Others include Tell sibling to look as an example; No display; and Hugs or physical touch



Source : Ladda Mo-suwan et al, Thai Children Today: Summary from Survey of the Holistic Development of Thai Children 2003

Almost 80 percent of families show love for preschool children through close physical contact such as hugs. In addition, if caregivers are happy with the child's actions, they will also give praise or awards. If they are unhappy with the child's behavior, the caregivers will give a reprimand. Eighteen and a half percent use physical punishment and 17.2 percent use harsh scolding. These last 2 methods may affect the child's mental health and feelings.

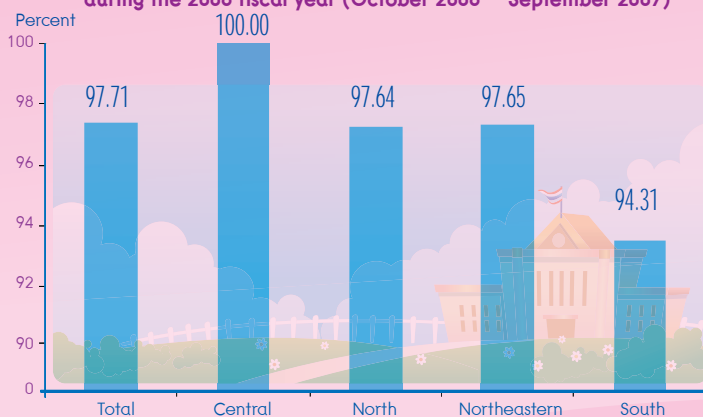
# 12

## Care Provided by Childcare centers

Prepare by The Thai Health Team

The quality of childcare centers still needs to be improved. Even though the number of childcare providers is sufficient for the number of children, most of the toys and equipment are still unsafe. Also, there is lack of control of the quality of food sold in front of childcare centers.

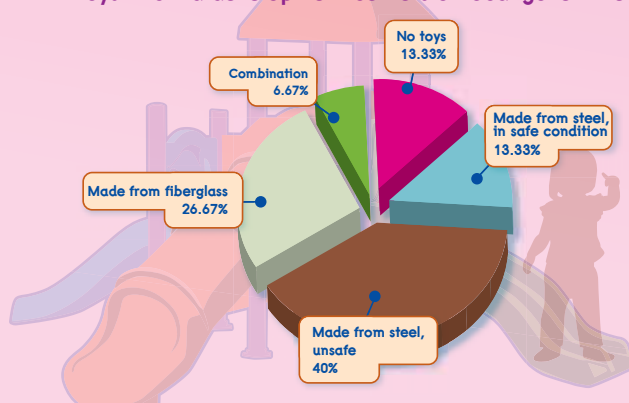
At least one child care center from each district (tambon) must achieve the established standard for child care centers, by region during the 2006 fiscal year (October 2006 – September 2007)



Source : Department of Health, Ministry of Public Health

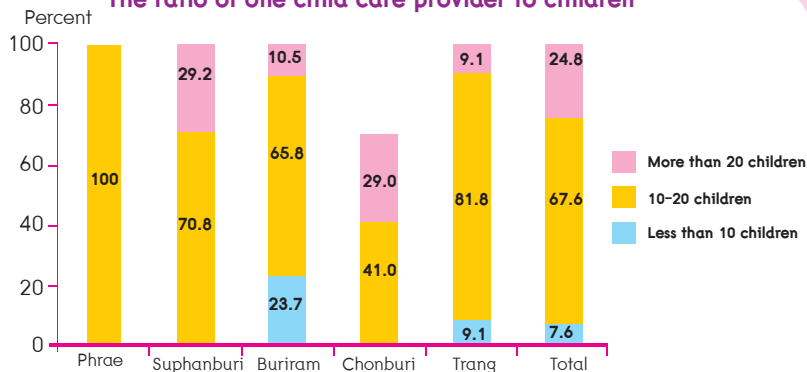
Note : Standard-quality child care centers have environments supportive of good health and appropriate for development creating equal opportunities for children to reach their full growth potential. The standard levels are categorized as fair, good and very good.

### Toys in child development centers of local governments



Source : Sirikul Isaranurug et al, 2007, Evaluation of Services Provided in Child Development Centers of Local Governments

### The ratio of one child care provider to children



Source : Sirikul Isaranurug et al, 2007, Evaluation of Services Provided in Child Development Centers of Local Governments

Childcare services of many government and private organizations are conducted according to their skill and duty to serve the community. The main objective of childcare is to facilitate for working parents who are unable to care for their children during working hours. Many organizations have established childcare, for example, the Nutrition Division of the Ministry of Public, the Ministry of Education, the Ministry of Interior managed by the Community Development Department and the Department of Local Administration, and the Department of Religious Affairs of the Ministry of Culture.

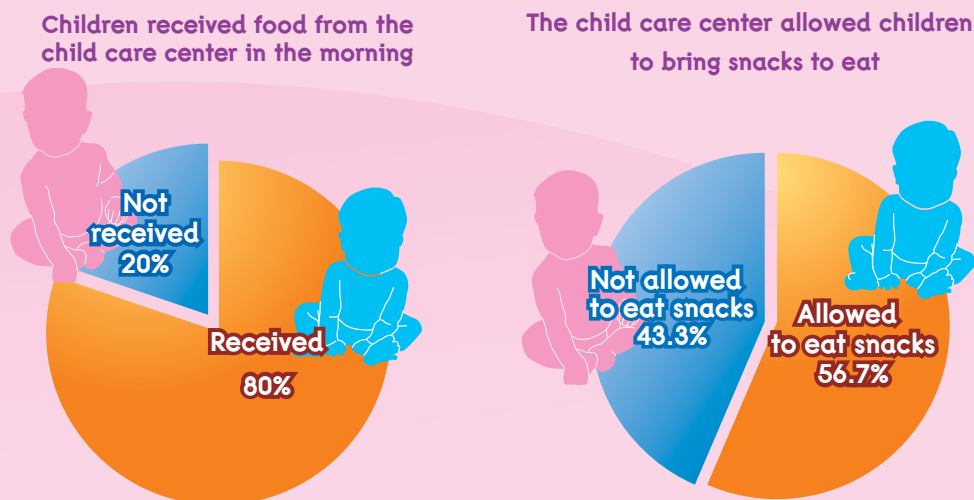
During the 2007 fiscal year, the Ministry of Public Health had as a target that at least one childcare center from each district (tambon) must achieve the established standard for childcare centers. In the Central region, every district had at least one child care center that met the required standard. Meanwhile, the Southern region had the lowest rate. However, with consideration to the overall situation across the country, the Ministry of Public Health's set target was achieved.

Evaluation of the service system in childcare centers of the Tambon Administrative Organization in 2007 showed that the average ratio of childcare providers to children was 1:20, in accordance with the standard (which for children 3 years and older is 1 childcare provider for every 20-25 children). However, childcare providers had many roles such as cook, cleaner, and administrative officer, which were in addition to their primary duty of caring for children.

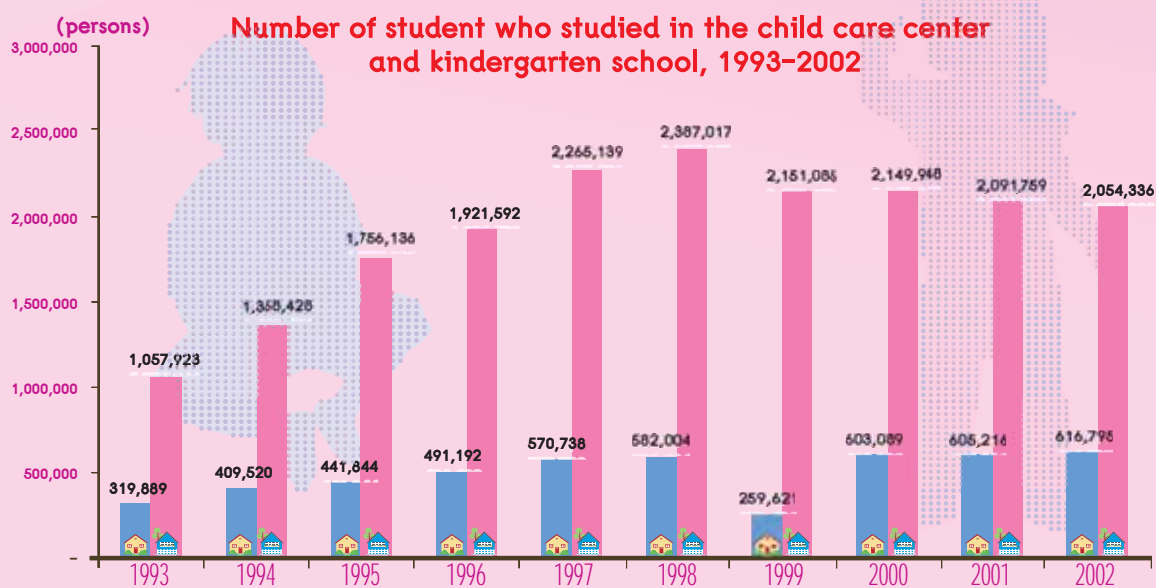
This study also found that at the 30 child development centers that were studied, although there were sufficient toys and equipment, 40 percent of these were in unsafe condition.



With regard to the children's food, most of the children received food from the childcare center in the morning, but still brought snacks to eat. At many childcare centers, even though there are no vendors inside, there are many vendors in front of the center selling fried meatballs, grilled chicken, som tam, fruits, sweets, ice cream, drinks, and various snacks.



Source : Sirikul Isaranurug et al, 2007, Evaluation of Services Provided in Child Development Centers of Local Governments



source : Thai Education Statistics 1993-2002

Note : kindergarten school include Year 1 Year 2 and Year 3

The child care center Kindergarten school

### Standard child development centers are

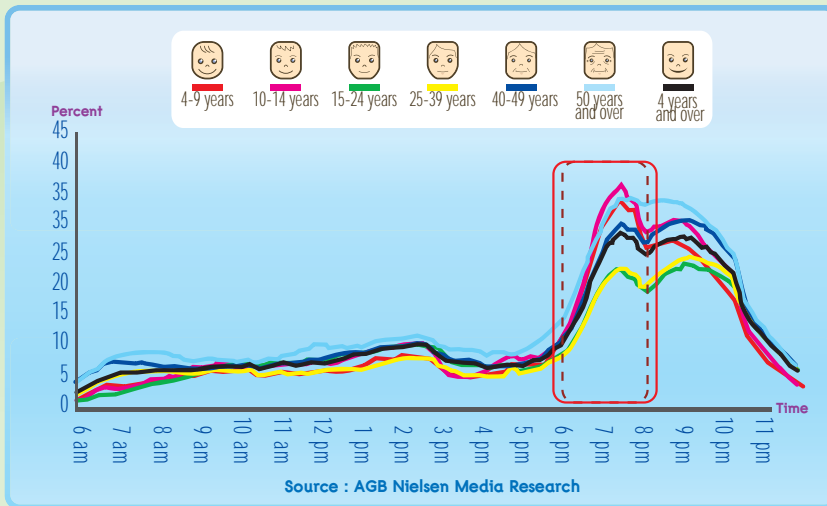
development centers that have collaborated with other units to promote and support supportive factors and eliminate or reduce obstacles to the pleasantness of the child development center so that children can grow physically, mentally, socially and intellectually in an environment that is safe, clean, and promotes health and appropriate development. At the same time, child caregivers constantly receive training to develop their skills. The child development centers are evaluated according to the standards of the Department of Health with the ratings of Meet basic standards, Good, and Very good.

# 13

## Today's Media

Prepare by Ithipol Preetiprasong, National Institute for Child and Family Development , Mahidol University

**Media producers and related agencies should produce and support more creative programs for preschool children aged 3-5. Presently, there is only one such program broadcast during the 4 to 6.30 pm time slot.**



From the survey of AGB Nielsen Media Research in May 2007, the time that young children and youth aged 4-14 like to watch television from Monday to Friday is from 6 to 10pm. The time that most young children watch television is 7 pm. On Saturday and Sunday, most young children watch television in the mornings, from 7 to 10, especially from 8 to 9.

A study of the ratio of programs rated P for Preschool children aged 3-5 (ป) and rated C for Children aged 6-12 (ค) during the 4.30-6.30 pm time slot Monday to Friday in the first weeks of September, October, November, and December 2007 found that there were no P- and C-rated programs in September, 13 P- and C-rated programs in October, totaling 350 minutes or 7.77 percent, 13 P- and C-rated programs in November, totaling 455 minutes or 10.10 percent, and 15 P- and C-rated programs in December, totaling 455 minutes or 10.10 percent.

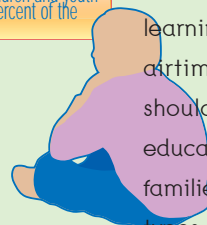
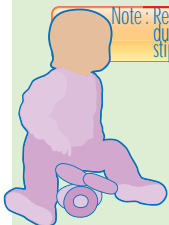
**The total number of P- and C-rated programs was less than 25 percent of the airtime established by the Public Relations Department.**

According to the Cabinet resolution dated November 4, 2003 regarding the government's use of the media to promote education and learning, at least 1-1.5 hours or 15 percent of airtime during the 4-10pm prime time slot should be allocated for programs promoting education and learning for children, youth, and families. TV programming should include the 3 types of programs with a good balance.

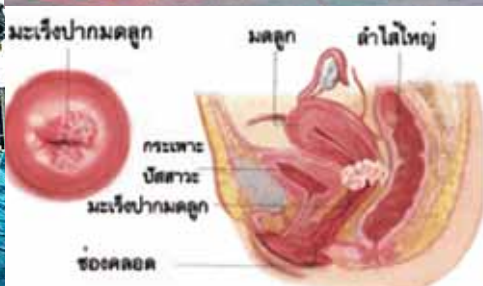
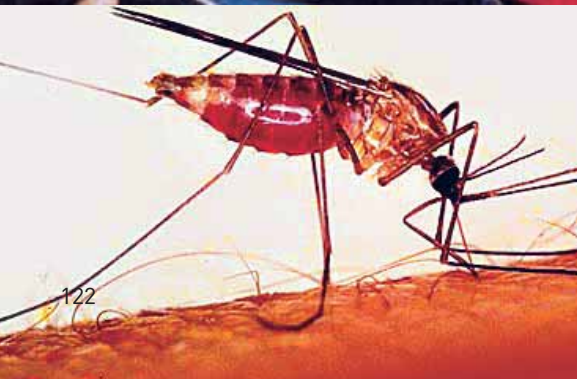
Percentage of programs with **P (ป)** rating for preschool children aged 3-5 and **C (ค)** rating for children aged 6-12 during 4 – 6.30 pm Monday to Friday in the first week of September, October, November and December 2007

Type of program	September	October	November	December
Program for preschool children aged 2-5 years	Total number of programs = 0 Total time = 0 Percentage of time = 0%	Total number of programs = 1 Total time = 20 Percentage of time = 0.44%	Total number of programs = 1 Total time = 20 Percentage of time = 0.44%	Total number of programs = 1 Total time = 20 Percentage of time = 0.44%
Program for children aged 6-12 years	Total number of programs = 0 Total time = 0 Percentage of time = 0%	Total number of programs = 12 Total time = 330 Percentage of time = 7.33%	Total number of programs = 12 Total time = 435 Percentage of time = 9.66%	Total number of programs = 14 Total time = 435 Percentage of time = 9.66%
Total	Percentage in September = 0%	Percentage in September = 7.77%	Percentage in September = 10.10%	Percentage in September = 10.10%

Note : Regulations of the Public Relations Department 1996 regarding percentage of programs for children and youth during 4.30 – 6.30 pm Programs for children and youth should account for 30 minutes or 25 percent of the stipulated time.



However, studies of the TV Rating Committee by the Media Evaluation System found that 96 percent of TV programs from 4 to 10pm were programs designed for the General audience of all ages, rated G or (ก), and programs with Parental Guidance 13, PG-13 or (ก13). Meanwhile, programs for children or youth, that is, programs with P or C rating, accounted for only 3-4 percent of the programs during prime time.

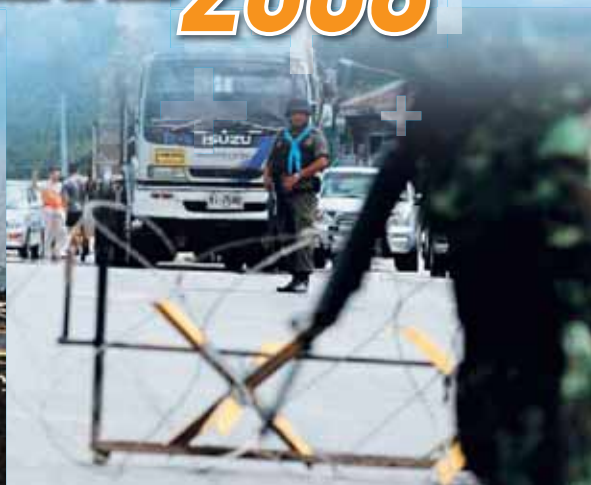
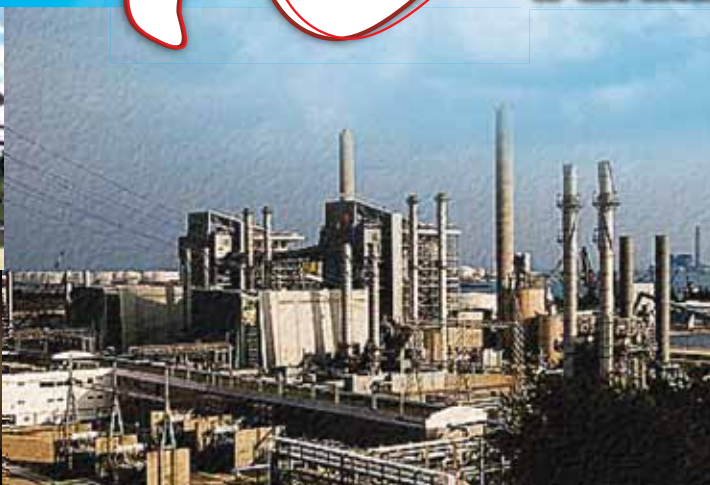




10

Health  
Issues

and 4 Notable Thai Contributions  
to the Health of Thai **2008**



# New Laws to Protect Victims of Violence :

## Another Step towards Stopping Violence against Women



2007 saw remarkable progress in legislation promulgated to address the problem of sexual violence. By year's end, the endeavor that had taken nearly twenty years of advocacy by women's networks to push forward laws on rape finally succeeded. These include amendments to Articles 276 and 277 of the Criminal Code as well as the Domestic Violence Victim Protection Act B.E. 2550, both representing sensitive approaches specially crafted to deal with domestic violence.

### The road to success

In Thai society, the amendment and the enactment of laws to protect victims of violence represent significant steps toward systematically addressing problems concerning violence against women. This success is part of a nearly twenty-year attempt by women's networks to revise laws unfair to women and to draft new legislation to better protect women from sexual abuse. These new laws are designed to protect victims of domestic violence as well as to protect women's reproductive health.

The most difficult part of efforts to amend existing laws centered on the laws regarding rape. The legal profession, especially, voiced strong disagreements with proposed amendments. According to Mr. Wicha Mahakhun, former chief justice of the Juvenile and Family Division of the Supreme Court, "Legally, if a man registers a marriage certificate, the man promptly has the right to rape the woman on the certificate, even against her consent. When I consulted lawyers and people on this issue, they avoided answering, saying it is impossible to amend the law. In fact, the amendment must be the priority. Then we can move on with other problems."



Despite the amendment's approval, opposition, questions, and concerns regarding the wording and sub-amendments remained. On the other hand, the newly *Domestic Violence Victim Protection Act B.E. 2550* was rarely questioned. This might be a result of positive responses from the government over the past decade toward advocacy groups and their efforts to find remedies to prevent violence against women and children. Beginning in 1998, the government agreed on campaigns to halt violence against women. A year after, policies and measures to eliminate violence against women and children were implemented. In November of the same year, the government declared that every November would be Stop Violence against Children and Women Month and that every hospital countrywide would establish children's and women's rescue centers. Along with these new initiatives, the Royal Thai Police also organized training for their staff to better understand and thus better investigate cases of violence against women.

### **Movements in the Surayud's Government**

In the Seminar on the Amendments to Discriminatory Laws against Women, organized by the Office of Women's Affairs and Family Development, Ministry of Social Development and Human Security, at the end of November 2006, questions concerning gaps in the law concerning rape were raised. Such gaps failed to protect wives raped by their husbands, victims of same-sex rape, and victims of non-vaginal rape. The seminar recommended wording changes in Section 276 of the Criminal Code, from "Whoever has sexual intercourse with a woman who is not his wife, against her will ..." to "Whoever has sexual intercourse with another person, being in the condition of inability to resist ..." The aim was to extend effective protection in a world filled with various forms of sexual violence.

The suggestion was then passed on to the Sub-Committee on Women's Affairs under the Committee on Affairs of Children, Adolescents, Women, Elderly, People with Disability, and Human Security, National Legislative Assembly (NLA), which took a whole year to review laws on rape and laws relating to women's quality of life.

On International Women's Day, March 8, 2007, 11 women's organizations and representatives from Action Aid International Thailand, Amnesty International Thailand, and UNIFEM visited the President of the NLA and

demanding the amendment of Sections 276 and 277 of the Criminal Code. Along with the demand, that the following facts were cited: "1) There are women raped by their husbands without any legal protection; 2) Not only are women victims of rape, but also boys and men, either with or without sex reassignment; and 3) Rape can occur, not just between men's and women's sexual organs, but can also involve other organs and other devices." These facts reaffirmed the urgent need for an amendment to existing law.

Other movements also demanded changes in the law. The Thailand Queer Network, for example, suggested an extension of law to include 4 additional forms of sexual abuse, namely, penetration into the artificial female genitals of a sex-reassigned person, insertion of the penis into the anus of a gay man or a woman, forcing a man or a woman to perform oral sex, and rape with a foreign object.

After two decades of advocacy, various networks have finally united to form the ad hoc Stop Sexual Violence Network, which has its own website campaigning for amendments to existing laws and providing information to media, governmental agencies, and the public. The network has also launched seminars to involve people in the amendment process, with the hope of encouraging people to voice their opinions to the parliament.

A petition was submitted by the network to the President and every member of the NLA to provide them with information and an understanding of the necessity for amending relevant statutes. On the Assembly's consideration day, 80 members of the network demonstrated in front of Parliament to promote their position on the amendment of Sections 276 and 277.

Finally, on June 20, 2007, 118 members of the Assembly voted for these amendments. Only 5 members voted against while 4 abstained. Newspapers reported that frank wording relating to sexual acts was widely discussed among the Assembly members. For example, for the amendment to Section 276, the Committee on Affairs of Children, Adolescents, Women, the Elderly, People with Disability, and Human Security defined rape as an act committed to gratify the perpetrator's sexual desire by means of inserting one's sexual organ into another person's sexual organ, anus, or oral cavity, or inserting any other object into other persons sexual organ or anus." This definition ignited strong disagreement



from some Assembly members, who viewed this law as shameful and one that should not be passed. In their view, women could not insert their sexual organ into a sexual organ of any man or woman. They also wondered whether or not a woman could really rape a man and, if so, how. The Committee responded by citing the case of a 12-year-old girl who had committed rape. According to Mr. Wicha Mahakhun, former judge of the Court of Appeal in Region 7, the girl admitted to the Juvenile Court, that she had raped a boy because she had seen it on a website. He further explained that the word “anus” was added because the Committee aimed to cover brutal acts perpetrated by men against women, men against men and women against women.

Reports further said, “Mr. Meechai Ruchupan, President of the Assembly, objected to the definition of the word ‘insert into sexual organ’ because it failed to cover the case of a woman raping a man as well as a woman being raped by another woman because women had no sexual organ with the ability to be inserted into anyone. An exception was possible if a man was spread out and a stick was inserted into his anus. Mr. Borwornsak Uwanno, President of the Committee on the Consideration of the Draft Act agreed to clarify the wording and that the Committee would change ‘insert sexual organ into other person’s sexual organ’ to ‘using the perpetrator’s sexual organ to violate other person’s sexual organ.’”

### **The Success with the concerning issues**

Although people were generally satisfied with the amendment that covered every victim of sexual violence and redefined rape as an act committed not only by inserting a man’s sexual organ into a woman’s sexual organ, concerns over Section 276 and 277 still remain.

#### **• Marriage and penalty avoidance for offenders 18 years old**

In their petition, the Stop Sexual Violence Network also

pushed for the amendment of Section 277 of the Criminal Code. The Committee on Affairs of Children, Adolescents, Women, the Elderly, People with Disability, and Human Security insisted on maintaining the penalty exemption for offenders less than 18 years of age in cases where victims under 15 years of age gave their consent to marriage. (See the comparison between before and after the amendment, p.39-40). The Network considered this resistance a bad solution, which could lead to greater problems in the future due to lack of readiness for such a young person to have a family.

On the contrary, Mr. Wallop Tangkananurak, the Committee member who introduced the problematic clause cited above, reasoned that it was acceptable “to exclude children who have not reached their legal age from being punished as some children are lovers and consent to sex without any benightedness. For those adults who abuse children, they would still go punished without any exemption.”

In response to the penalty exemption, the Network of Children and Youth held a seminar on “Objections to the Law Forcing Child Marriage” and concluded that there was no opportunity provided for victims/survivors of sexual abuse to be involved in the amendment process, particularly for girls who had to get married to men with whom they had had sex, either by being forced or by consent.

Ms. Wassana Prohmsena, a youth representative, said, “For adults, marriage is seen as an act showing responsibility for the long-term offence and as a solution to the problem. In fact, marriage justifies the offender while the person victimized has to live in pain.” Another youth from the Youth Network against AIDS remarked, “I believe that all children have their own ideas and should have the right to make their own decisions. But they must be provided with correct and thorough information to ease the decision.”

#### **• More motives to rape than mere sexual desire**

The Stop Sexual Violence Network also noted that the stipulation “committed to gratify the perpetrator’s sexual desire” in Sections 276 and 277 failed to provide due protection to the victims if the offender had other intentions, such as to get revenge, to show superior power, or to produce pornographic media to arouse sexual desire of viewers.

- **Mitigation of punishment for husbands who rape their wives: Sexual abuse protected by law**

As noted by the Network, Section 276, paragraph 4, reflects a sexual bias in Thai law. The Section allowed for lighter punishments for offenders who were also spouses. This statute made it seem that every wife had a duty to fulfill her husband's sexual desire and that forcing a wife to have sex was not considered a crime.

Such prejudice enshrined in law was a topic of a survey conducted among 728 people in justice administration (judges, prosecutors, lawyers/solicitors, probation officers, correctional officers, and police officers) as well as doctors, psychologists, lecturers, and administrative officers. The survey revealed that "gender" was the sole variable that drew the most comments for amending the law. Most women surveyed agreed with the amendment while few men did.

Some members of the National Legislative Assembly expressed their concern that "probation and lighter punishment than that described in the law may show favor to an offender who happens to be the victim's spouse. What is more, the amendment overlaps with Section 281 and 56 of the Criminal Code." These two sections penalties for rape committed in private places or when the victim suffered serious injury or death.

**This amendment is only the very first step toward legal equality and overcoming discrimination against any person, regardless of sex or status as spouse. To implement the amendment, effective law enforcement is crucial, particularly with regard to problematic issues that also need following up.**



## Clauses of Sections 276 and 277 of the Criminal Code (before and after the amendment)

### Criminal Code (previous)

**Section 276 :** Whoever has sexual intercourse with a woman, who is not his wife, against her will, by threatening by any means whatsoever, by doing any act of violence, by taking advantage of the woman being in the condition of inability to resist, or by causing the woman to mistake him for another person, shall be punished with imprisonment of four to twenty years and a fine of eight thousand to forty thousand baht.

If the offence according to the first paragraph has been committed by carrying or using any gun or explosive or by participation of persons in the nature of destroying a woman, the offender shall be punished with imprisonment of fifteen to twenty years and fined thirty thousand to forty thousand baht or imprisoned for life.



### Criminal Code (current)

**Section 276 :** Whoever has sexual intercourse with another person who is unable to resist or who commits any act of violence or deception (by misrepresenting himself or herself as another person) to do so shall be imprisoned for four to twenty years and fined eight thousand to forty thousand baht.

"Sexual intercourse," referred to in the first paragraph, means intercourse committed to gratify the perpetrator's sexual desire by inserting the perpetrator's sexual organ into another person's sexual organ, anus, or oral cavity, or inserting any other objects into another person's sexual organ or anus.

If the offence described in the first paragraph has been committed by carrying or using any gun or explosive or by participation of persons in the nature of destroying a woman or a man in the same manner, the offender shall be punished with imprisonment of fifteen to twenty years and fined thirty thousand to forty thousand baht or imprisoned for life.

If the offence described in the first paragraph has been committed between spouses and the spouses desire to continue to cohabit, the court may impose a lighter punishment than that proscribed by law as it may be considered as a matter of behavior control instead of punishment. In the case of the

punishment with imprisonment according to the judgment provided by the court and either spouses does not desire to cohabit any longer and desires to divorce, that party shall inform the court and the court shall inform the public prosecutor to proceed with suing for divorce for them.

**Section 277 :** Whoever engages in sexual intercourse with a girl who is not yet over fifteen years old and who is not his wife whether such a child agrees or not, shall be punished with imprisonment of four to twenty years and fined eight thousand to forty thousand baht.

If the offence described in the first paragraph is committed against a girl who is not over thirteen years old, the offender shall be punished with imprisonment of seven to twenty years and fined fourteen thousand to forty thousand baht or imprisoned for life.

If the offences described in the first and second paragraph are committed by participation of persons in the nature of gang-raping a girl and such a child does not consent, or by brandishing a gun, explosive, or any other weapon, the offenders shall be imprisoned for life.

For the offence described in the first paragraph, if the offence has been committed by a man against a girl who is over thirteen years old but not over fifteen years old with the consent of such a child and later the court grants permission for both parties to marry each other, the offender shall not be punished. If such permission for marriage is granted by the court while the offender is being punished because of that offence, the Court shall pardon such an offender.

**Section 277 :** Whoever engages in sexual intercourse with a child who is not yet over fifteen years old and who is not the perpetrator's wife or husband, whether such a child agrees or not, shall be punished with imprisonment of four to twenty years and fined eight thousand to forty thousand baht.

"Sexual intercourse," as described in the first paragraph, means inserting one's sexual organ or foreign object into another person's sexual organ, anus, or oral cavity, for the purpose of sexual gratification.

If the offence described in the first paragraph is committed against a child who is not over thirteen years old yet, the offender shall be punished with imprisonment of seven to twenty years and fined fourteen thousand to forty thousand baht or imprisoned for life.

If the offences described in the first and third paragraph are committed by participation of persons in the nature of gang-raping a girl or a boy in the same manner and such a child does not consent, or by brandishing a gun, explosive, or any other weapon, the offender shall be imprisoned for life.

For the offence described in the first paragraph, if a perpetrator who is not over eighteen years old engages in sexual intercourse with a child who is over thirteen years old but not over fifteen years old with the consent of such a child and later the court grants both parties permission to marry each other, the offender shall not be punished. If such permission to marry is granted by the court while the offender is being punished for that offence, the court shall pardon such an offender.

## Domestic Violence Victim Protection Act

### Why this law?

Domestic violence is different from general physical assault in terms of complexity and the domestic or other close relationship between the perpetrator and the victim. Violence within families needs appropriate legal measures aimed at either rehabilitating the offender or protecting the victim of violence, rather at offering punishments to the offender according to the Criminal Code.

### Major contents of the Act

- Defines "domestic violence" as acts that are intended to or can possibly cause damage to the body, mind, or health of any person living in the family or that involve forcing family members
- Defines "family member" as every person who depends on and lives or used to live with others in the same household regardless of legal status—for example, couples legally married or not, and those who used to live together as spouses
- States that those who have witnessed domestic violence have a duty to report to appropriate officials and such officials have the legal authority to investigate the place the violence may have occurred and to immediately offer the victim protection
- Provides protection for the victim and the perpetrator by prohibiting any disclosure of pictures and other identifying information to the public
- Allows officials or the court to appoint a conciliator, who may be the parents or guardians of the parties but can be any other person
- Grants the court authority to assign rehabilitation, counseling, probation, public service, or parole to the offender and/or to force the offender to pay compensation to the victim
- In case of a settlement, withdrawal of a complaint or case withdrawal, the Act permits the court or police officer to issue a memorandum between the victim and the offender, to prevent the latter from repeating the violence



# 2

## Four Years of Fire in the South...

### More Violence and Brutalities



Although 2007 saw newspapers filled with coverage of intense political rivalry, violence that reached peak levels in the three southernmost provinces featured prominently on the front pages. In reaction to reports of such extreme violence, most people were unhappy with the insurgents. At the same time, however, many also distrusted the government. Under the government's Strategy for Protecting the South initiative, roundups and searches were conducted in target areas. Suspects were arrested, interrogated in military camps, and transferred to occupational training sites. These activities did not to reduce the frequency of violence, moreover they were criticized as violations of human rights. Such violations, real or perceived, generated new conflicts, raising the question as to whether this strategy, overall, was really working.

#### Expectations of Surayud's government

People in the three southern border provinces (Yala, Pattani, and Narathiwat) and Jana, Thepa, Natawee, and Sabayoi districts in Songkhla province had to live under special laws. These laws included the Executive Decree for Administration in Emergency Situations B.E. 2548, first implemented on July 16, 2005 and since extended for an unspecified period.

These people had been familiar with armored tanks and fully armed military personnel. They were terrorized by daily insurgencies that carried out ambushes, arson, and bombings.

Burdened with the expectation of bringing peace back to the South, the government, led by Gen. Surayud Chulanont, applied various measures. Re-establishing the Southern Border Province Administration Center (SBPAC) was one such measure. Bringing in high-ranking Islamic officials, the Army Chief Commander, and the Chairman of the Council of National Security (CNS) (Gen. Sonthi



Boonyaratkalin), and the Minister of the Interior (Mr. Aree Wong-araya) to the government was also aimed to restore peace.

The government perceived villages as critical to effectively addressing the insurgency. Therefore, it restructured media relations at the village level by issuing a Cabinet Resolution on January 16, 2007, allocating 61 million baht to increase the number of assistants to village heads to help with peacekeeping to 1,200 people in 300 villages in the three southern border provinces and in the four districts of Songkhla province.

However, since the beginning of 2007 daily insurgencies, deaths, and injuries have continued. Positive responses to Gen. Surayud Chulanont's solutions to the Southern unrest evolved into questions as to whether there were any "gaps" or lack of readiness in conducting peace operations, even after their restructuring. In response, Gen. Surayud stated that the three years of unrest (since January 2004) might not be resolved in the short tenure of his government (scheduled to cede power to the new government to be formed after the elections of December 23, 2007).

According to Dr. Pravet Wasi, former Vice Chairman of the National Reconciliation Commission, violence in the South had escalated so much that the hope for peace could no longer depend on SBPAC. The violence was too extensive and complicated. In his view, the problem will remain because government strategies lacked unity. He suggested that the Prime Minister and the Chairman of the CNS should coordinate all anti-insurgent activities in a unified effort. He also proposed 7 measures to cope with Southern insurgencies. (See Box p.45)

### **Government's response to inhuman cruelties**

The very deep depression among Thai people began again on March 14, 2007, when insurgents fired on a passenger van in Yala. The vehicle, traveling on the Betong-Hat Yai route, was passing through Baan U-Beng, Moo 4, Patae in Yaha district of Yala province. An insurgent group had blocked the road with a tree, which forced the van to stop. After that, insurgents executed 8 passengers (3 men and 5 women) by shooting them in the head. Two other passengers were injured.

The day after this terrifying incident, the Fourth Army Commander, Lt. Gen. Viroj Buacharoon, issued an order under the authority of martial law prohibiting people in Yaha and Bannang Sata districts of Yala from wearing any

type military uniform or dressing like army personnel. A curfew was set between 8 PM and 4 AM. A ban was imposed on radio communication without permission and information about the incident was requested from local people.

People were given reasons for the curfew as part of a proactive media relations strategy to prevent any misperceptions of its purpose, as had been created in the past by the insurgents. The government employed every possible communication channel, such as the public address speakers in villages, mobile speaker cars, and requests for collaboration from religious and community leaders. The government even went to talk with people in coffee stalls, schools, markets, and mosques. During these field visits, leaflets and photos of suspects were distributed and a hotline set up with the hope of getting information about the terrorists. In addition, the government invited local media and community radio stations to mobile public forums to voice their opinions.

Gen. Surayud Chulanont insisted on peaceful means to cope with the insurgency despite demands by some for extreme measures. Instead of a counterattack on insurgents by the military, he urged more collaboration with residents, whose understanding of the situation and of the government's intent needed to be improved so as to gain their trust and cooperation. However, the government's media campaign and other strategies to gain peace had to take place in an atmosphere of escalating violence. Added to the problem was the fact that leaders and supporters of the insurgency had not yet all been identified.

### **Tragic counterattack**

The savage murder of the 8 van passengers at Yaha, Yala province resulted in new attempts to better deal with the unrest. Two hundred army troops and police officers were deployed for the roundup of possible insurgents and searches of villages suspected of harboring the terrorists. Following the deployment, 3 teenagers were interrogated in a military camp. Thai Army Spokesmen and Director of the Public Relations Center of the Internal Security Operations Command, Col. Akara Thiproj, characterized the arrest as an "Operation Taking the Fish out of the Water" to prevent the violence from escalating.

Nonetheless, violence continued and continued to escalate. On April 11<sup>th</sup>, 2007, a woman named Patcharaporn Boonmas was shot, soaked with oil, and burned to death

at Yupo, Meung district of Yala. On April 18<sup>th</sup>, terrorists set off a bomb at Baan Sapom, Galuwor Nue in Takbai district of Narathiwat. The explosion caused severe leg injuries resulted in the loss of the left hand of Pol. Col. Noppadol Pueksomon, the Narathiwat Deputy Police Chief.

Following the bombing in Narathiwat, Preecha Nuanthong and his son Dusit were shot to death. Their burned bodies were found with their hands and feet tied up on the Toong Nares road, Moo 5, Bangkhao, in Nongjig district of Pattani. The cut-off head of Preecha was thrown in the middle of a nearby village morning market. On May 15<sup>th</sup> Praphan and Chadakarn Polrak were murdered in a similar manner at Baan Tuera, in Bannang Sata district of Yala. Praphan's head was left in the Bannang Sata city market.

On June 11<sup>th</sup>, insurgents invaded a local library and shot two female teachers. Three days later, at Bue Sue, in Bannang Sata district, a vehicle carrying military officials assigned to guard teachers was bombed, after which the officials were shot to death. In yet another instance, an elderly person was killed, his arms and legs chopped off, and then his body burned. On June 19<sup>th</sup>, gunmen planted a bomb that killed Sherif of Mai Kaen district, Chayapan Raksayod, and 3 officials while traveling to investigate the scene of an arson attack. On the morning of June 24<sup>th</sup>, insurgents slaughtered and set fire to the bodies of two rangers in Rue So district of Narathiwat. In the afternoon of the same day, 2 villagers were murdered in Yaring district of Pattani.

The Sunday Times reported after those brutal attacks that *insurgencies in the three southern provinces at the moment have been turned into the most bloodshed in Southeast Asia. There are 4 deaths in these three southern provinces per day. The war is still in the dark, without any information of who did and what they wanted"*

A similar report was published by the Asia Times: *"The insurgency in the three southern provinces has developed into a more terrified direction and some areas are stepping into ... go... without return. General insurgencies have remained, with more barbarous manners, [and] inhuman cruelties ..."*

On September 19<sup>th</sup>, after the insurgency had spun out of control, martial law was declared by Lt. Gen. Viroj Buajaroon in all areas of the three southern provinces and in 4 districts of Songkhla province.

During a search in Khuen Bang Lang, Bannang Sata district on October 2, 2007, officials found video clips in mobile phones of several brutal killings. One clip showed a ranger whose neck was being slit in Ba Joh sub-district, another showed a villager's throat being cut as he was held down by someone's foot on his chest, another showed 7 rangers whose sexual organs were being cut off in Bannang Sata, and another of a hooded bandit holding an HK gun and a head.

Not only were these incidents "horrifying" to local people living in these areas plagued by terrorism, but human rights activists were also horrified and raised questions about the efficacy of "Operation Taking the Fish out of the Water."

### **"Taking the fish out of the water" as a strategy for protecting the south**

The government's peaceful strategy of "group arrest" and "taking the fish out of the water" had a direct effect on innocent villagers. Many times, this approach, though "non-violent," nevertheless generated fear among relatives of those who had been arrested and taken to military camps for interrogation. Mattanee Juenara, Coordinator of the Volunteers for Peace Project, gave an explanation about Operation Taking the Fish out of the Water as follows :

The operation was a part of the 'Strategy for Protecting the South' that employed both politics and media relations. In other words, the operation utilized a coalition composed of army personnel, police, and administrative agents to conduct the roundups and searches within target groups. In this process, targeted people would be invited for interrogation in army camps and voluntarily transferred to 3 military district camps in Ranong, Surat Thani, and Chumpon. Thus, in the eyes of villagers, the operation was seen as the arrest of suspects for interrogation.

Interrogation of those suspected of violence would classify suspects into four groups: 1) Those suspected of serious offences and with clear evidence against them were to be charged according to law; 2) Those suspected of being involved in an offence but where there was insufficient evidence to proceed with the case were to be held for a follow-up process and/or deported to other areas for voluntary occupational training; 3) Those charged with only petty offences and willing to help officials were to be sent to voluntary occupational

trainings; and 4) Leaders of the insurgency without any evidence against them to support charges made against them were to be politically and socially pressured. Concrete policies imposed on the fourth group would be discussed among security affairs agencies.

The Executive Decree for Administration in Emergency Situations Decree B.E. 2548 and the Martial Law Act B.E. 2547 were specially devised for the Strategy for Protecting the South. Under the two laws, neither arrest warrant nor search warrant was required. In addition, these laws permit detention up to 37 days for interrogation without charge (7 days allowed by Martial Law plus 30 days allowed by the Decree).

**An atmosphere of fear spread over the southernmost provinces when more and more villagers were rounded up, when searches became more frequent, and when searches extended to other villages.**

### Rising paranoid

The impact of Operation Taking the Fish out of the Water affected hundreds of villagers who were detained, interrogated, and made to attend “voluntary” occupational training. Such “forced” volunteering due to fears turned into a new contentious issue. The aims of the training programs were :

- (1) To separate the suspects from people or “take the fish out of the water.” Suspects were then deported to non-southern province areas and prohibited from communicating. The separation was believed to be a means to put an end to anti-state power.
- (2) To provide an opportunity for officials to restore law and order, ease tensions, and assist innocent people without the continual threat of terror attacks
- (3) To raise people’s sense of pride in being Thai through relationship building, occupational training, and behavior modification
- (4) To turn those taking part in trainings into leaders and role models once they return home and to make those involved in the insurgency find channels to live with innocent people again

After the number of those interrogated dramatically increased, around 90 villagers whose relatives had been detained asked for assistance from the Cross Cultural Foundation, Working Group on Justice for Peace, The

International Commission of Jurists, and the Center for Muslim Lawyers. Their requests were then filed with the provincial courts in Chumpon, Ranong, and Surat Thani. On October 30, 2007 all courts ordered the release of detainees detained in the training camps. The courts declared that there was no law supporting the detention and that the detention violated people’s right to liberty and was thus against the Constitution.

In spite of this ruling and the suspects’ release, the Fourth Army Commander, Lt. Gen. Viroj Buacharoon, announced on July 20<sup>th</sup> that those released were banned from entering Yala, Pattani, Narathiwat, and Songkhla for 6 months. As a result, 384 people ended up staying temporarily in a mosque in Surat Thani. Later, the Working Group on Justice for Peace released a statement demanding urgent solutions to the Southern insurgency from the Prime Minister, Army Commander, and Fourth Army Commander.

The situation was eased somewhat after the retirement of Gen. Sonthi Boonyaratklin. Gen. Anupong Phaochinda, the new Army Chief, took over addressing the problems in the South. As reported by Isra News, the Army Chief was unhappy with the ban ordered by the Fourth Army Commander and on November 16<sup>th</sup>, the Fourth Army Commander Lt.-Gen. Viroj Buacharoon finally issued a new announcement canceling the ban.

### Fire continues to rage in the South

In 2007, veiled women and children became absent from the gathering and violence was reduced at year’s end. However, the insurgents invented new bombs, very small in size, similar to a cigarette pack. They would also detonate one bomb to gather villagers, tourists, or targeted groups together before triggering a second bomb to kill them, and then a third bomb aimed at the bomb squad.

After four years of violence, there were 2,923 casualties, with the violence reaching a peak in 2007, during which the highest numbers of deaths and insurgencies occurred. In 2,475 incidents, 2,861 people were victimized, including 1,017 who died and 1,844 who were injured. These incidents included 1,308 ambushes, 492 bombings, 359 cases of arson, and 214 other incidents of support of terrorist attacks such as scattering nails on roads, and acts of agitation such as burning the flag (see Table for numbers of incidents, p.45).

In 2007, the number of teachers attacked and schools burned down increased considerably compared to the previous three years. Between January 1<sup>st</sup> and December 27<sup>th</sup>, 26 teachers and educational personnel were killed and 22 injured. One hundred forty-eight schools experienced arson attacks– 45 in Yala, 56 in Pattani, 30 in Narathiwat, and 17 in Songkhla.

Despite increased numbers of death and injuries, both the Army and police agencies still saw themselves on the right track. According to Deputy Royal Thai Army Spokesperson Col. Sirichan Nathong, the Army Chief said that the roundup and search policies were effective and were able to halt daily attacks and resulted in the arrest of some key leaders of the insurgency.

According to the Director of the Public Relations Center for the Internal Security Operations Command Region 4, Col. Akara Thiproj, in 2004 the government still had not discovered who all was behind the insurgencies. The next year, the government and insurgents engaged in more attacks against each other. In 2006, some suspected insurgents and their supporters were arrested and some pleaded guilty. In 2007, officials were able to arrest some perpetrators not long after their attacks. So far in 2008, more collaboration and clues have been received from local people to assist in investigations, searches, and arrests. It was believed that the situation would improve throughout the year.

Surachart Bamrungsuk, a lecturer and expert in security issues noted that the insurgency in the three southernmost provinces began in early 2004. It has since escalated in violence, thus discrediting the Thai government. The insurgency has destroyed social harmony, created widespread fears between officials and local people and among people of different religious beliefs. It has also ruined the economy of the three provinces. These problems remain a threat to the security of Thailand. **The government's main approach to solving such problems has been to try to identify the key to successful strategies, such as "winning the support" of local media. In other words, the government must achieve a "political victory," not just a "military victory."**

### 7 suggestions for stopping the southern violence proposed by Dr. Pravet Wasi

1. If daily killings are not stopped after direct attacks by terrorists, everything will worsen.
2. The reduction of violence and restoration of peace are possible if all local young men are deployed into the peace troop.
3. If local business is supported, local people will have jobs and income, their pressure to the violence can be decreased.
4. Promote the establishment of a Council of Community Leaders, who would be able to express themselves directly, and not have to rely on representatives or intermediaries.
5. Promote similar culture-based councils in provinces nearby. They can be organized as large administration zones. Their names could be, for example, Lanna Region, Northern I-San Region, and so on. There could be as many as 14 or 15 such regions. Their purpose would be to manage the local economy, society, communication, and safety in accordance with their local cultures. Under this system, the large administration zone would be a factor to absolutely and permanently end all bloodshed and separatism.
6. Promote understanding of the Muslim world so that they will perceive good intentions, justice and peace.
7. Negotiate on disarmament and co-development. Such negotiation would help armed local people rethink about the positive aspects of development rather than killing each other.

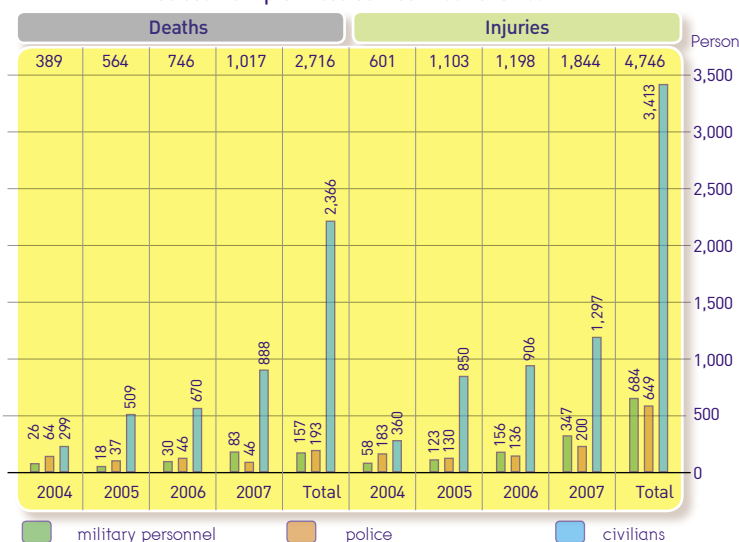
Source : "Pravet proposed 7 choices to stop the southern fire". Thairath. 27 February 2007.

Summary of insurgencies and violence in the three southern provinces between 2004 and 2007

No.	Incidents	Number of incidents			
		2004	2005	2006	2007
1	Shootings	531	905	1,040	1,308
2	Attacks	53	52	39	41
3	Arsons	232	308	281	359
4	Bombings	76	238	327	492
5	Thefts of arms, electric cords, sim cards, and telephones	25	140	10	3
6	Protests	2	-	14	45
7	Agitations such as scattering nails, etc.	33	422	219	214
8	Beheadings	-	12	3	13
9	Hostage taking	-	1	1	0
Total		952	2,078	1,934	2,475

Source : Thai Health Year Book, Institute for Population and Social Research, 2007 (Calculation from data of the Royal Thai Police Operation Center, Yala)

Comparison of death and injury numbers from insurgencies in the three southern provinces between 2004 and 2007



Source : Thai Health Year Book, Institute for Population and Social Research, 2007 (Calculation from data of the Royal Thai Police Operation Center, Yala)



# 3

## It's Time to Prevent and Effectively deal with Unsafe Abortion



Raids on abortion clinics or outlets and arrests of people associated with abortion are nothing new. Nearly all of these incidents have captured front-page attention in newspapers. However, after so much initial attention, it seems that further related details on these stories are never published. None of these reports on arrests, prosecution, court cases, and final adjudication have been followed up in the press. The question remains, what have been the social consequences resulting from such arrests?

### "Illegal abortion numbers found high in the city" — Sparked by news and blown out by policies

Widely known in Thai society as illegal and facing sporadic campaigns to wipe it out, abortion in 2007 made big news, which could be a first step in changing its illegal status. Following continuous news reports on abortion, policies and measures were launched by the government.

On April 27, 2007, newspaper headlines read "Grieved, infant cemeteries horrify Bangkok, 30 bodies found in 2 years" and "MOPH concerned over high abortion rate, gives warning about uterine perforation," referring to the story of villagers along Baan Ma canal in Bangkok district of Bangkok. This tragic story told about more than 30 fetuses that had been found floating in the canal over the previous two years. The day after, newspapers reported, "Outcry against lack of attention from police on infant cemeteries," which in turn stimulated a police investigation, reported in the newspapers with headlines such as "Metro police wake up to illegal abortion outlets" and "Police speeding up the search for illegal abortion clinics."



**Thus, the news reports are what, at least in no small part, got the police to investigate this problem.**

Days after the initial news stories broke, investigations between May 1-5 were highlighted in newspapers with the headlines “Famous hospital pays off commission for abortion,” “Spoiled girls reveal rotten life of over two abortions,” and “Gearing up to investigate 8 girls suspected of dumping dead infants into canal.” After the appearance on the front page, news on May 6, 2007 carried stories about the collaboration between the Royal Thai Police and Ministry of Public Health, namely, that *“MOPH circulated letters to provincial and district health offices nationwide to urgently search for abortion clinics in their areas and to inform the Ministry, which would to pass on the information to police.”*

Newspapers kept reporting arrests in raids against illegal abortion clinics in Bangkok and provinces until the end of 2007 as a result of this collaboration. They reported that police investigations resulted in the arrest of both medical and non-medical doctors who performed abortions.

### **50 years of law enforcement on illegal abortion and deaths of women with unwanted pregnancy**

In the Thai Criminal Code, which has been enforced since 1957, there are 5 Sections containing punishments for abortion. Sections 301 to 303 cover punishments for self-abortion and for procured abortion, namely, that if the abortion causes grievous body harm or death to the woman, the offender shall be punished with a longer prison term and a higher fine. Heavier punishments are imposed on the offender who procures the abortion for a woman without her consent. If the abortion causes death to the woman, the procurer shall receive the heaviest punishment of five to twenty years and fined ten thousand to forty thousand baht.

Section 304 provides an exemption on punishment for a pregnant woman if the abortion attempt is not accomplished, regardless of her consent. Similarly, Section 305 exempts medical practitioners from punishment, saying that *“if it is necessary for the sake of the health of such woman or the woman is pregnant on account of the commission of the offence as provided in*

*Section 276, 277, 282, 283 or 284, the offender is not guilty.”*

However, very few cases have ever gone to trial even after 50 years of enforcement. According to Dr. Vitoon Eungphrabhuntha, a senior medical doctor, since 1994 Section 305 allows any doctor to perform an abortion on a pregnant woman for the sake of her health or if the pregnancy has been caused by rape. **But this allowance creates problems in both interpretation and practice.** As a result, most doctors refuse to perform abortions even in these extenuating circumstances. If the abortion is procured, doctors will construe the law in a very narrow manner to avoid prosecution.

More than ten thousand of people per year have been hospitalized in state’s health centers throughout the country for complications brought on by illegal abortion. According to MOPH statistics, anti-abortion laws do not contribute to a reduction of illegal abortions. A survey conducted in 2000 by the Health Department, MOPH found that among the 45,990 women who had suffered miscarriages and who were surveyed, the death rate after abortion went as high as 300/100,000. On the other hand, women’s death rate after delivery was as low as 20/100,000. Widely admitted by doctors, harm from unsafe abortions has always been among the top health problems of the country.

For 50 years, many Thai women have fallen into unwanted pregnancy and have wanted to get an abortion. However, many of these have also ended in death or grievous injuries because women could not access places providing safe abortion. The next crucial question is **why are women’s death and injuries from unsafe abortion still unsolved health problems?**

### **Law enforcement and real problems**

Findings on abortion problems in Thai society reveal similar results, namely, that the primary reason for abortion comes from economic problems. Very few women blamed health problems or rape, which are the allowable conditions for abortion according to the Criminal Code.<sup>13</sup> Therefore, law enforcement against abortion is in the opposite direction of the root cause. Consequently, **the more the law is enforced, the higher the number of dead and injured people.** This is



because, again, doctors can legally perform an abortion only if the pregnancy threatens the health of the women and the pregnancy is due to rape.

The law makes abortion clinics illegal and so safety standards of procured abortions are unmet. Patients are also denied reasonable costs. As expected, women can suffer from injuries, sickness, disabilities, or can even die from abortion complications, such as hemorrhage, infection, and uterine perforation. In terms of expenditure, the country has to cover costs associated with treatment related to abortion, around 20,000 baht per person or more than 300 million baht per year.

Similar situations are also disclosed by the World Health Organization and the Guttmacher Institute. In countries where abortion is prohibited by conditions or laws, abortion is often unsafe and contributes to deaths and injuries from complications caused by lower medical standards.

### Attempts to solve law-related problems in the past

In the past 20 years, there have been more than ten meetings and seminars organized to analyze weaknesses of laws against abortion and to find solutions to abortion in Thai society. The House of Representatives, Ministry of Justice, Ministry of Public Health, and Medical Council of Thailand have all been involved in searching for such solutions and have suggested the addition of conditions to the existing law. For example, they suggested adding clauses about abortion after birth control failures and pregnancy in women with HIV/AIDS. However, these additional suggestions were not translated into law. The reason given was that amending the Penal Code was impractical since abortion was a sensitive moral issue,

and such an amendment could result in eliciting more opposition more than support.

But public health professionals, doctors, and women's organizations, all of whom were concerned over the rate of deaths and illnesses from pregnancy, were still determined to find solutions to abortion problems. Following a survey on the abortion situation in Thailand in 1999 conducted by the Ministry of Public Health, the Medical Council of Thailand in 2000 appointed a Sub-Committee on the Study on Amending the Criminal Code, Section 305. The Sub-Committee agreed to redefine "health" in Section 305 (1) as what "is necessary for the sake of **the health of such woman**" to include **"physical and mental health of such woman."** The new definition was agreed to by the Council of State and accords with how "health" is defined by WHO and other countries.

This definition was used in a new regulation, called the "Thai Medical Council's Regulation on Criteria for Performing Therapeutic Termination of Pregnancy, in Accordance with Section 305 of the Criminal Code of Thailand B.E. 2548." This regulation provides detailed procedures and practices, particularly item No. 10, which gives doctors confidence that they are performing abortions according to the law. Regulation No. 10 states that **"the medical practitioner who performs therapeutic termination of pregnancy in accordance with this regulation shall be deemed as having conformed to Section 305 of the Criminal Code."** (See Box, p.50)

In May, Dr. Prat Boonyawongwiroj, MOPH's Permanent Secretary, and Police Major General Wongkot Maneerin, Deputy National Police Chief, met to discuss measures to deal with illegal abortion clinics. They concluded that *"abortion is against the law for whatever reason, even under the Thai Medical Council's Regulation on Criteria for Performing Therapeutic Termination of Pregnancy, in Accordance with Section 305 of the Criminal Code of Thailand."*

This conclusion had been expected. In an academic meeting on "New Directions of Services for Family Planning and Sex Education: The Solution to Unwanted

Pregnancy,” co-organized by Srinakharin Wirot University and Institute for Population and Social Research, Mahidol University on October 3, 1994, Mr. Kitipong Kitiyarak, Director of the Criminal Code Institute at the time said, *“The interpretation of ‘health’ that covers both physical and mental dimensions, without law amendment, may not contribute solutions to abortion. What is more important in law philosophy is to what extent the action is considered necessary. Without an amendment, the redefined concept of ‘health’ continues to cause problems in interpretation. This is because judges will make their judgments according to law philosophy, not health philosophy.”*

### Preventing and solving problems related to illegal abortion

Abortion is regarded as a public health problem, and, if it remains unsolved, this means that people’s fundamental right to health cannot be protected. If the anti-abortion law is not an effective tool for reducing the numbers of women harmed by illegal abortion as well as the numbers of abortions themselves, it should be repealed. The repeal can relieve police officers from being burdened with unnecessary duties and reduce the state’s budget for case proceedings that produce very little success. In the meantime, the state also has to provide for patients suffering from complications from unsafe abortions.

Prevention measures and solutions to illegal abortion and its impacts should cover the following dimensions:

#### (1) Reduce numbers of abortion by reducing numbers of unwanted pregnancies

The abortion rate is not based solely on the law. Rather, *it is directly linked to the number of unwanted or unplanned pregnancies*. As is happening in countries such as Chile, Peru, Nigeria, and the Philippines, anti-abortion laws and high numbers of unplanned pregnancies relate to high abortion rates. On the other hand, in Western European countries, very low rates of abortion and unplanned pregnancy are found.

In Thai society, unplanned pregnancies result from “ineffectiveness of sex education in people of all

ages and the unavailability of effective birth control services to all people.” To effectively respond to these problems of **birth control and family planning services need to be extended** to all those in need of such services—not only married women of reproductive age but also in teens, both boys and girls, and singlemen and women.

Following such extension of services, **detailed sexuality education should be provided to young boys and girls**. Such education can contribute to their knowledge of sexual health, particularly for women and teen girls, whose bodies are often abused.

#### (2) Reduce numbers of those injured and killed from unsafe abortion

Various measures should be implemented to reduce morbidity and mortality among women who receive abortion. **A good start would be to repeal Sections 301-305** of the Criminal Code that views people who undergo abortion as criminals. According to global findings, very low rates of harm from unsafe abortion are found in countries where abortion is legalized and safe abortion is accessible to all. In countries where abortion is prohibited by conditions or laws, abortion is often unsafe, which contributes to deaths and injuries from complications brought on by low medical standards.

South Africa and Nepal are good case examples. In South Africa, amendments to legalize abortion in 1996 produced positive impacts in 2000, when the number of women who underwent abortion decreased by half from what it was in 1995. Similarly, in Nepal, after its anti-abortion law was amended in 2002, abortions decreased. Prior to the amendment, Nepal was among the countries with a high rate of deaths from unsafe abortion.

Thus as a first step, the repeal of anti-abortion laws can change abortion problems into health problems. Such repeals will result in women who want to terminate an unwanted pregnancy as being considered simply as patients with health problems. Abortion is not always the only solution. From studies, only 30 percent of unwanted

pregnancies end in abortion while for planned pregnancies the figure is 1.3 percent.

Once women are freed from legal sanctions with regard to abortion, **a universal service system for sexual and reproductive health** of everyone, both single and married, should be implemented. This will reduce the numbers of those taking advantage of others and should be composed of the following services :

- Family planning and birth control counseling services, including the provision of both male and female condoms.
- Counseling for women with unwanted or unplanned pregnancies. such a service would offer options to abortion and would respect the decision of clients. Services would focus on self-rehabilitation and healthcare during pregnancy, delivery, and after delivery.
- Safe abortion services that include post-abortion services, such as counseling and care for women who have experienced spontaneous abortion.
- Prevention, care, and treatment of sexually transmitted diseases. The prevention would include newly developed prevention methods for HIV transmission such as microbicides.

**Table: Numbers of abortion reports on the front page of newspapers between 2004 and 2007**

Contents	2004	2005	2006	2007
<b>1. Arresting abortion providers</b>	<b>1</b>	<b>7</b>	<b>5</b>	<b>8</b>
(Bangkok)	0	4	1	1
(Outside Bangkok)	1	3	4	7
<b>2. Results after illegal abortion</b>	<b>16</b>	<b>32</b>	<b>22</b>	<b>25</b>
(Bangkok)	6	10	8	7
(Outside Bangkok)	10	22	14	18
<b>3. Other abortion-related reports</b>	<b>21</b>	<b>44</b>	<b>20</b>	<b>31</b>
<b>4. Abortion overseas</b>	<b>8</b>	<b>6</b>	<b>10</b>	<b>8</b>
<b>Total</b>	<b>46</b>	<b>89</b>	<b>57</b>	<b>72</b>

**Source :** Kritaya Archavanitkul et al, 2008. Project on Sexuality Database, Institute for Population and Social Research, Mahidol University

### **Main points of the Thai Medical Council's Regulation on Criteria for Performing Therapeutic Termination of Pregnancy, in Accordance with Section 305 of the Criminal Code of Thailand B.E. 2548**

#### **A. When a pregnancy can be terminated**

1. When necessary to protect the physical health of the pregnant woman.
2. When necessary to protect the mental health of the pregnant woman; such cases need to be certified or approved by at least one medical practitioner other than the one who will perform the medical termination of pregnancy. There shall be clear medical indications. The examination and diagnosis shall be recorded in the medical record and kept as evidence.
3. In the case of discovering that the fetus has, or has a high risk of having, a severe disability, or has a high risk of having a severe genetic disease, and that the pregnant woman has severe stress as a result. The woman in such cases must be examined and receive genetic counseling and be regarded as having a mental health problem.
4. In the case of pregnancy due to rape, which has to be certified or facts (a notification is not needed).

#### **B. Premises and the gestational age for pregnancy termination**

1. A state or private hospital or a medical clinic that has beds for patients is allowed to perform therapeutic termination of pregnancy at every gestational age.
2. A medical clinic that has no beds is allowed to perform therapeutic termination of pregnancy where the gestational age is not over twelve weeks.

#### **C. Regulations on the therapeutic termination of pregnancy**

1. In accord with the Medical Premises Act, hospital administrators at hospitals at which therapeutic termination of pregnancies will be performed pursuant to the Thai Medical Council's Regulation on Criteria for Performing Therapeutic Termination of Pregnancy, in Accordance with Section 305 of the Criminal Code of Thailand B.E. 2548, shall register using a form determined by the Medical Council.
2. The medical practitioner who performs therapeutic termination of pregnancy shall be trained to perform such medical termination of pregnancy.
3. The therapeutic termination of pregnancy shall be recorded and kept as evidence for inspection for at least 5 years .
4. The medical practitioner who performs therapeutic termination of pregnancy shall submit a report of such termination(s) in a form determined by the Medical Council every 3 months.

**The medical practitioner who performs therapeutic termination of pregnancy in accordance with this Regulation shall be deemed as having conformed to Section 305 of the Criminal Code; and shall not be deemed in violation of this section of the Code**



# 4

## Dengue Spreads

### Due to Global Warming



In 2007, Southeast Asia experienced the worst outbreak of dengue in a decade. In Thailand, there were 60,625 cases and 83 deaths. This increase comes as a result of global warming, which enhances the proliferation of mosquitoes. In response to the growing threat, Mahidol University has successfully developed a tetravalent dengue vaccine.

#### The 2007 Dengue Crisis

The unseasonal outbreak of dengue at the beginning of 2006 was a warning signal for Thai society to prepare for the return of dengue, a disease about which Thailand has more advanced knowledge than do most other countries.

As soon as analysis showed that the dengue outbreak was from a severe strain of the virus, the Ministry of Public Health established a dengue war room to closely monitor the situation in outbreak areas. The Ministry also coordinated with local agencies to quickly control the disease and campaigned for the elimination of dengue mosquitoes in villages through its network of more than 700,000 health volunteers nationwide.

Despite these efforts, the Communicable Disease Epidemiological Section reported 46,829 cases of dengue (equivalent to 74.78 patients per 100,000 population) and 59 deaths in 2006. Even though the number of cases is less than in the year 2001, which had an infection rate of 224.3 per 100,000, due to the severity and continuity of the outbreak into 2007, the Ministry of Public Health had to carefully monitor the situation.

In the first 3 months of 2007 alone, dengue cases jumped to 3,305 with 2 deaths. As a result, the Ministry of Public Health issued a warning to the Thai people to take precautions against dengue fever and disseminated information about mosquitoes, the carriers of the dengue virus (see figure). In addition, the Ministry campaigned for the eradication of mosquito breeding sources every week even though it was not the outbreak season since mosquito eggs can withstand dry and arid conditions from 6 up until 1 year.

By early May 2007, which is the rainy season, dengue cases had increased to 6,070 with 4 deaths. Within a mere 2 weeks, the number of cases had risen by almost 1,000. Though the situation at the national level was not considered severe, many provinces already had outbreaks. The Ministry of Public Health had to explicitly instruct Provincial Public Health Offices to jointly work with local administrations to control and prevent the spread of dengue. The Ministry also adjusted the operations of the mobile teams in every province (each province has approximately 10 such teams) to control the disease within a radius of 50 meters (the normal flying range for mosquitoes) of a patient's home even though there might be only 1 patient in the area. A 24-hour hotline was also set up to provide advice and handle emergencies.

During that time, the Provincial Public Health Offices employed numerous strategies to provide knowledge and preventive measures to villagers in their area of responsibility. Particular importance was given to the weekly eradication of mosquito breeding areas. For example, Surat Thani Province organized a fancy motorcycle rally to fight dengue. Songkhla Province campaigned through various media such as radio, stage performances, and public relations events in schools and communities. Chiangrai Province arranged for the spraying of smoke to kill dengue mosquitoes, the fumigation of all houses, and a mobile medical team to search for infected persons in villages with abnormal outbreaks of dengue. In Tak province, chemically coated mosquito nets were handed out to villagers in 20,000 households near the Thai-Myanmar border. Villagers were instructed as to how to soak their own mosquito nets with chemical repellants so that mosquitoes clinging to the chemically coated net would be killed but people would not be endangered. In Bangkok also, mosquito eradication teams were sent out. However,

despite all these precautions, the number of infected patients continued to rise. Many hospitals experienced an overload of patients, especially Bamrasnaradura Institute in Nonthaburi province. So many patients, mostly children, came for treatment at Bamrasnaradura Institute that the Institute had to expand its facilities to include another building. Dr. Kumnuan Ungchusak, Director of Bureau of Epidemiology, Department of Disease Control, the Ministry of Public Health, acknowledged that "the dengue situation this year is worse than in 2006."

Most importantly, not only was Thailand experiencing dengue outbreaks, but all of Southeast Asia was being threatened. The World Health Organization warned that "Southeast Asia may be experiencing the worst outbreak of dengue it has seen in the past 10 years."



### **A Borderless Virus**

Among Thailand's neighbors, Cambodia experienced the most severe dengue outbreak, reaching crisis levels until it had to send an official letter asking for assistance from the Thai government. In the first 6 months of 2007, the number of dengue patients in Cambodia escalated to 30,000 with more than 200 deaths, and the situation seemed to be worsening. The Thai Ministry of Public Health and the Ministry of Foreign Affairs provided assistance by sending doctors, nurses, and medical equipment worth 20 million baht to Cambodia in accordance with the Memorandum of Understanding for the Mekong Basin Disease Surveillance Network.

As Thailand has a border with Cambodia, the Thai government promptly announced measures to fight the spread of dengue in areas around the Thai-Cambodian border. The Cabinet appointed a disease control committee for the border area with the Provincial Governor as Chairman. Members of the committee consisted of representatives from various organizations

in the area. In addition, Surveillance and Rapid Response Teams (SRRT) were set up at the provincial, district, and local levels. When an outbreak was detected in Cambodia, the SRRT would immediately go to fumigate the area in order to contain the disease by eradicating dengue mosquito larvae.

However, dengue inevitably spread across the border from Cambodia into Thailand. An average of 2 Cambodian dengue patients per day crossed over from Panom Preuk District, Pratabong province for treatment at Soi Dao Hospital in Soi Dao District, Chantaburi province, which is approximately 20 km from the Cambodian border. According to blood tests, almost 40 percent of those seeking treatment had dengue fever, and most were children 5-10 years old who suffered worse symptoms than Thai patients. At the end of 2007, Ngan Chanta, Head of Cambodia's Anti-Dengue Program of the Ministry of Health, revealed that Cambodia had had the worst dengue outbreak in 10 years, with 40,000 cases and 407 deaths.

### Dengue and Global Warming

Thailand's response to the dengue outbreak arose not only from the public health sector. Researchers who had been studying climate change due to global warming had warned about the spread of many diseases, including dengue. For example, Kampol Ruchiwit of Thammasat University's Faculty of Allied Health Sciences told a seminar on the social and economic effects of global warming on 11 January 2007 that during the previous 3-4 years, the number of dengue patients, especially in Bangkok, had increased. This incidence is in line with supporting research from abroad. In metropolitan areas such as Bangkok, the amount of carbon dioxide in water is higher than in rural areas, thus speeding up the incubation period for mosquito larvae, increasing the mosquito population, and leading to dengue outbreaks.

Global warming has been cited as a direct cause of diseases, particularly dengue, that depend on mosquitoes and other insects as carriers. Dr. Montira Thongsari, Deputy Director of the Health Department, notes that before 2003 outbreaks of dengue would be severe only every 3 years and that the disease would affect mostly children. After 2003, it was found that dengue occurred throughout the year and was especially high during the rainy season. Dengue occurred not only in children, but also in people of all ages. According to



research, it is expected that this is a result of global warming.

Studies of genetically modified mosquitoes have provided very interesting information. For example, Dr. Padet Siriyasatien states that, originally, the mosquitoes that carried the dengue virus were female. When these mosquitoes bit people, they would transmit the dengue virus, making people sick with dengue. However, at present, male mosquitoes also carry the dengue virus. Therefore, female mosquitoes can receive the dengue virus immediately from mating without having to bite a person infected with dengue, as in the past. Most important, male mosquitoes can mate many times, meaning that the dengue virus can easily spread in this manner. Furthermore, higher temperatures due to global warming allow mosquito larvae to mature faster. The incubation period of 7 days has decreased to only 5 days.

Due to the change in the dengue virus, the Thai public health sector has recorded that in mountainous areas where there were previously no dengue outbreaks, now there are. There were around 50 dengue patients per day in the Akha tribal community in Zacha Village, Mae Rai Sub-district, Mae Chan District, Chiangrai Province, and the hospital was overflowing with dengue patients. Likewise, dengue patients have also been found in the very mountainous country of Bhutan.

The United States is another country that is carefully monitoring the dengue situation, which is now a big problem around the US-Mexican border. Dr. Anthony Fauci, Director of United States National Institute of Allergy and Infectious Diseases, wrote an article in the *Journal of the American Medical Association* stating that global warming and ineffective control of the mosquito population are factors speeding up the spread of dengue into the United States.





Dengue is a disease for which the World Health Organization must search for measures to fight against in order to reduce its death rate. To address the issue of the expanding area affected by dengue, a meeting to formulate a Strategy on Dengue Prevention and Control in the Asia-Pacific Region 2008-2015 was held in Phuket on September 19, 2007. Representatives from 16 countries and approximately 70 dengue experts participated in the meeting, which was the first meeting between these 2 regions. Strategies identified at the meeting were as follows :

1. Increase effectiveness in searching for dengue patients in the area of an outbreak.
2. Emphasize quality of examination and treatment of dengue patients.
3. In the area of control, focus on social measures such as promoting learning in order to communicate preventive measures to the general public.
4. Encourage all sectors to be part of the dengue prevention network; in particular, the academic sector should give more importance to research and more modern methods.
5. Combine methods to control the carrier (that is, the dengue mosquitoes).

### **Fighting Dengue with a Cocktail Vaccine**

The Director General of the Medical Science Department, Dr. Paichit Varachit, stated that the severity of dengue fever depends on the strain of the dengue virus, of which there are 4 strains. If a person is infected with a certain strain of dengue virus, he or she will have permanent immunity against that strain, but will have only short-term immunity, approximately for 6-12 months, against the other 3 strains.

Finally, Thai researchers development of a dengue vaccine appeared on the world stage again on January 14, 2008. Professor Suthee Yoksan from the Institute of Molecular Biology and Genetics, Vaccine Development Center for Research, Mahidol University held a press conference on the successful development of the dengue vaccine to prevent infection from all four strains of dengue virus using only 1 dose. Results from laboratory tests and human trials showed that high immunity could be developed for as long as 5-10 years. The appropriate age to administer the dengue vaccine is after a child is 6-12 months. Adults can also take the vaccine shot in order to stimulate immunity against strains that they have not been previously exposed to.

The vaccine has been under development for more than 28 years. Dr. Thawat Suntrajarn, Director-General of the Disease Control Department, said, "The development has been immensely worthwhile because the risk of dengue will be reduced to only 10 percent. From now on, we must proceed to establish a plant to produce the vaccine in Thailand." Amid the good news that we may be able to prevent dengue with a cocktail vaccine, we have to continue to follow news of the results of the final research stage.

In addition, there is another development that has caused worries. The outbreak of dengue from a virus strain called Chikungunya has infected 1.4 million people in India. Meanwhile, in Italy, 200 people have taken ill with a disease exhibiting symptoms of fever and joint pain. Even though the death rate of this disease is less than typical dengue, the symptoms are more severe. Most important, Thailand does not yet have any ways to detect this virus.

As of early 2008, there were still Thai people dying from dengue even though it was not the season for dengue outbreak. Michael Nathan, a mosquito-borne disease expert at the World Health Organization, warned that the Chikungunya virus strain is spreading in some Asian countries and might spread faster and more severely in a wider circle. There is also a high possibility that it might





spread to Europe and the United States since mosquitoes have mutated and can survive in cold countries.

**How far will the Thai Ministry of Public Health's efforts to "defeat" dengue go? Will the dengue vaccine be really effective? Will the call to establish a "National Vaccine Center" to advance the work of Thai researchers and create public health security be successful? These are all challenges of Thai society amid changes in the global climate that affect the lives of everyone.**



### Dengue in Thailand

The first outbreak of dengue in Thailand was in 1958. Statistics from the Ministry of Public Health indicate that during 1977-1998, there were approximately 50,000-170,000 dengue cases per year and approximately 100-400 deaths. But outbreaks of dengue in the past few years have started to show an uncertain pattern. Dengue patients were found throughout the year but were mostly found during the rainy season. Previously, the majority of dengue patients were children. However, today, more adults are infected with dengue.

#### The Carrier

In Thailand, there are 2 species of mosquitoes that are carriers of dengue. The *Aedes aegypti* mosquito is most common in urban areas and the *Aedes albopictus* mosquito is most common in rural and highland areas. The female mosquitoes of both species dislike sunlight, strong winds, and like to feed during the daytime by biting people. However, if they are not full, they may also feed during the evening if the room still has enough light. Dengue mosquitoes usually bite people during the hours of 9-10 am and 4- 5 pm. Mosquitoes use their antenna to smell and like to bite people who perspire a lot, people who are hot or have high skin temperature, and people who breathe hard because the released carbon dioxide attracts mosquitoes. Dengue mosquitoes like to bite children more than adults, females more than males, and people who wear dark clothes more than people who wear white clothes. Mosquitoes can spread the dengue virus for 7-10 days after it has bitten an infected person and the dengue virus will remain in its body throughout its life.

#### Symptoms

The time between the bite of a mosquito carrying dengue virus and the start of symptoms averages 3 to 15 days. The symptoms are divided into 3 stages :

- (1) **The fever stage:** The patient will have high fever for 2-7 days, red face, headaches, loss of appetite, abdominal pain under the right rib cage, enlarged liver which hurts when pressed, vomiting, muscle pains, and red spots on the skin or other organs. Children may experience convulsions.
- (2) **The crisis stage:** The fever usually falls rapidly and may cause shock. The patient will feel uncomfortable and have cold hands and feet, rapid weak pulse and falling blood pressure.
- (3) **The recovery stage:** The patient will start to have better appetite, increased urination, and lower heart rate. There may be rashes.

**Important warning** In the treatment of dengue patients, never give fever-reducing medicine such as aspirin. Use paracetamol instead.

#### Most effective method to prevent dengue

Control the spread of dengue through the elimination of mosquitoes.

**Source :** Modified from "Dengue Virus Infection: Recent knowledge and a trend of change". Article. Faculty of Medicine, Chulalongkorn University

# 5

## Computer Crime Act :

### A Restriction of Freedom in the Cyber World?



Freedom of expression is a part of a healthy society and a fundamental democratic right guaranteed by the constitution. However, it seems that such a right and freedom now comes under the control of the Computer Crime Act B.E. 2550, which potentially threatens millions of computer and Internet users in Thailand.

#### From draft to the Computer Crime Act

Starting on December 15, 1998, the Cabinet authorized the National Information Technology Committee (NITC) to begin examining laws proposed by the Ministry of Science, Technology and Environment (MSTE). Six laws were eventually approved, namely, the Electronic Transaction Law, the Electronic Signatures Law, the Data Protection Law, the Computer Crime Law, the Electronic Funds Transfer Law, and the National Information Infrastructure Law (which according to the Section 78 of the Constitution, grants universal access to information technology infrastructure).

According to the Computer Crime Law, computer crimes are defined as follows ;

1. Crimes targeted at the computer, computer cases, computer programs, and computer data
2. Crimes that use the computer to commit an offence
3. Computer-related crimes such as money laundering, money smuggling, and dissemination of pornography

4. Crimes resulting from widespread and acceptable use of computer such as forging or copying computer programs, violating copyright, and forging equipment
5. Forcing or threatening through the computer such as threatening or trespassing on the victim's computer system and using computer data as evidence
6. Committing crimes against or disturbing computer networks

In 2000, the National Information Technology Committee approved a draft of the Computer Crime Act and to submit it to the parliament. However, the submission was suspended because of the coup on September 19, 2006, followed by the new government under Gen. Surayud Chulanont. But before the end of 2006, the draft became the first law under consideration of the National Legislative Assembly (NLA) who passed it on May 9, 2007.

### Civil society's support and opposition

The Campaign for Popular Media Reform (CPMR) and the Freedom Against Censorship Thailand (FACT), both working on media rights, issued the following statement on the enforcement of the Computer Crime Act: "We realize the importance of its measures in preventing crimes committed through the computer but we strongly disagree over its enforcement, which is meant as a tool to control people's rights and freedom of communication." Two critical issues were raised :

- (1) The law gives authorities too much power to access data. It also requires Internet Service Providers (ISPs) to maintain data records for 90 days. Without any acknowledgment of the access, the data owner's house can be searched without either a search warrant or advance notice. Such access deprives people of their right of communication.
- (2) The government drafted a law to suppress certain acts but which deprived people of their rights rather crafting a law aimed at protecting private data.

One month after the Computer Crime Act was published in the gazette, a hacker invaded the official website of

the Ministry of Information and Communication Technology, colored its homepage background black, and posted a picture of former Prime Minister Thaksin Shinawatra waving his hands in the middle. Under the waving Thaksin was Gen. Sonthi Boonyaratklin, Chairman of the National Security Council (NSC) and an impolite message expelling the Council.

Such an act was a challenge to the Computer Crime Act B.E. 2550, as noted by Mr. Sitthichai Pokaiyaudom, Minister of the Information and Communication Technology at the time. The hacking was considered a violation of national security. Concerned officials were ordered to trace up hacker and to have him/her punished according to the Act.

However, there was no report of the arrest of any hacker<sup>7</sup> found on any newspaper despite the complaint, and all related evidence remains in the hands of the police.

### Section 14 enforced

Sections under Chapter 1 clearly identify computer-related offences. Section 5 specifies a ban of hacking into a computer system and Section 6 prohibits any access via unauthorized use of a password into a computer system created specifically for another person. Section 7 prohibits unauthorized access to computer data, in accord with the Electronic Transaction Law, and Section 8 prohibits unauthorized access by any electronic means to computer data being transmitted within a computer system. Section 9 and 10 prohibit creating any computer viruses or worms while Section 11 forbids all persons from sending junk or spam emails and faking the source or IP address. (See more, p.60)

But clauses in Section 14 are designed to control people's expression and computer, rather than to seriously deal with hackers or cyber crimes. Citizens critical of the Act are concerned that it may be applied as a tool to bar people from voicing their opinions on the Internet.

To worsen the concern, the Financial Times weekend edition of September 1-2, 2007 quoted a high-level official saying that two Internet users had been arrested under the Computer Crime Act B.E. 2550. However, Mr. Sitthichai Pokaiyaudom, Minister of Information and Communication Technology, held a press conference on



September 2 in which he denied knowing about the arrest and saying that he would not be informed of any report despite the fact that the arrest was performed under the Act.

Prachatai, the only media outlet to follow up the case, was told by Sombat Boon-ngamanong, an activist detained in Bangkok Remand Prison, that he was denied bail after being arrested on a complaint made by Gen. Saprang Kalayanamitr and Gen. Sonthi Boonyaratglin for defamation because of a mock art game with the National Security Council members as targets. He had organized the game at Sanam Luang and believed it was justified.

In Sombat's words, he met and chatted with another accused person, alias Phrayaphichai, in the prison. man showed desperate fears and was not allowed to see his relatives and was not assigned a lawyer.

"He was terribly afraid and unable to exercise any fundamental rights. He also barely knew about any computer law," reported Sombat, who volunteered to be an intermediary and report his name and address to Prachathai, who later contacted his relatives. The man was finally released on bail on September 6, 2007.

"Phrayaphichai" was a 37-year-old Thai man and founder of the "Propaganda" website established in June 2007. He was arrested by the police at his house for violation of Section 14 (1) and (2) of the Criminal Code. Together with the arrest in the afternoon of August 24, 2007, all of his PCs and notebook computers were also seized.

A source said "Phrayaphichai" refused to give any news of his arrest after being ordered by the police not to give an interview to any news reporters. This report went along with Sombat's report about the technique used by the police to elicit a confession from the accused. That is, if the accused agreed not to talk to the press, the police would recommend to the court only a 4-month-



sentence, the lightest penalty possible under the law. On September 7, 2007, Jon Ungpakorn, former senator and founder of Prachatai, received a complaint from a person whose relative was arrested for violating the Computer Crime Act and who was being detained in the Women's Correctional Institution. The detainee was a 37-year-old woman, known by her pseudonym "Ton Chan," and believed by the police to be the owner of the "Guillotine" web log. Twenty police officers came to her bedroom and arrested her on the morning of the same day that Phrayaphichai was arrested and was charged with violating the same statute. The officers also seized her notebook computer and modem. She was then detained for 6 days at the Police Crime Suppression Division Office before being transferred to the Women's Correctional Institution, from which she was bailed out on September 17<sup>th</sup>.

Phrayaphichai and Ton Chan went before the Criminal Court on October 12<sup>th</sup>. However, since the case had not been submitted by the police, the state prosecutor did not proceed on the charges against them. But since this "crime" has a ten-year statute of limitations, they may be charged anytime during this period.

### **Freedom of communication is not a crime**

just three months it had begun to be enforced, it was obvious that the Act was being used as a tool to attack those expressing their opinions or criticism on "precarious" issues, not a tool to go after hackers, cyber criminals, or pornographic site owners as the Act firstly intended.

Witnessing ambiguous enforcement of the Act, CPMR and its ally, FACT, submitted a petition to the Prime Minister and Minister of Information and Communication Technology on September 19, 2007, the one-year anniversary of the coup. The letter presented three demands ;

- (1) The government and MICT must clarify the arrest of the two Internet users and reveal all truths to the public
- (2) The government must guarantee the arrested person's right to due process within the justice system



- (3) The government must not prosecute any person who is exercising his/her freedom to send, receive, or disseminate information via online media until Section 14 is amended, by excluding freedom to communication from the computer crime.

Communication and expression of opinions via cyber media is a basic right of all citizens, insisted the two media groups. Without the government's understanding of the difference between freedom of communication and computer crimes, law enforcement will aggressively threaten the rights and freedoms of online media users in Thailand.

In an interview with the Thai Health Promotion Foundation (ThaiHealth), Supinya Klangnarong, Secretary of CPMR, discussed MICT's response and administration of justice after the enforcement of the Act. She reiterated the ambiguity of Section 14.

*It provides an opportunity to the state to exercise power to arrest any person using a computer and internet that could undermine national security or go against good morals. The clause is too broad without a clear definition. In fact, Thai Criminal Code already covers these computer crimes, including defamation, lese majeste, and pornography. This Act makes it clearer that these are on online media. Instead of crime suppression, it seems that the Act intends to assert more control over activities via computer and online media. We also have not yet witnessed any computer crime arrests, such as arrests of hackers, virus disseminators, or terrorists.*

She further pointed out that nowadays countries worldwide are paying close attention to the Internet, but that most countries allow for freedom of expression, in contrast to Thailand's Computer Crime Act. Other countries focus on computer crimes and avoid controlling information on online media (with the exception of child pornography, which is forbidden in every country). Thus, if the state continues to enforce the Act in the way it has done so far, chatting or posting comments on the Internet would be viewed as a computer crimes, which goes against international practice.

Chiranuch Premchaiporn of Prachatai, another activist for free cyber speech, told ThaiHealth that Section 14 is unnecessary as part of the Computer Crime Act as its content was already covered in other laws. In her opinion, if defamation was committed via the Internet, the law on defamation would be applicable and the Computer Crime Act could be applied in order to search for the offender.

Most importantly, Section 15 could turn Internet service providers into suspects if they allowed any of their subscribers to commit any offence according to Section 14, thus placing the burden on the ISPs to screen information posted on individual websites maintained by their subscribers.

As explained by Chiranuch, "To protect themselves, ISPs would need to screen all data or perform self-censorship. This would mean that they themselves would be the controllers of information that could be accessed by users, and so avoid interference from officials."

As allowed by the new constitution, people and organizations campaigning for freedom of communication in cyberspace can gather 10,000 signatures of their supporters to have the Act amended so as to ensure more appropriate enforcement.

**The Computer Crime Act, aimed at dealing with computer criminals, has become a tool for controlling people's expression via online media. It is, therefore, crucial for people's movements to work toward changing it.**



### Specific offences and maximum punishments according to the Computer Crime Act B.E. 2550

Section	Offences	Imprisonment	Fine
5	Illegal access to a computer system that has specific security measures that are not intended to allow access to an unauthorized person	6 months	10,000 Baht
6	Having knowledge or the security measures to access a computer system created specifically by another person and disclosing, without authorization, such security measures in a manner that is likely to cause damage to another person	1 year	20,000 Baht
7	Illegal access to computer data that has specific security measures intended to deny access to unauthorized persons	2 years	40,000 Baht
8	Illegal interception, by any electronic means, of computer data of another person that is being transmitted within a computer network-data that is not for the benefit of the public or is not available for other persons to utilize	3 years	60,000 Baht
9	Acting in a manner that causes damage, impairment, deletion, alteration, or addition either in whole or in part of the computer data of another person	5 years	100,000 Baht
10	Acting in a manner that causes suspension, deceleration, obstruction, or interference of a computer system of another person so that it cannot function normally	5 years	100,000 Baht
11	Sending computer data or an electronic mail to another person while hiding or faking its sources, in a manner that interferes with such another person's normal utilization of the computer system	-	100,000 Baht
12	If the offences under Section 9 or 10 (1) result in damage to the general public, whether the damage takes place immediately or afterwards (2) are committed in a manner that is likely to cause damage to computer data or computer systems relating to national security, public safety, economic stability, or public utilities, or involves computer data or a computer system that is available for the benefit of the public if the offence under (2) causes death to another person	10 years 3-15 years 10-20 years	200,000 Baht 60,000 - 300,000 Baht -
13	Selling or disseminating a program specifically designed for the purpose of committing offences under Section 5 to Section 10 or Section 11	1 year	20,000 Baht
14	Committing any of the following acts: (1) inputting into a computer system wholly or partially fake or false computer data that is likely to cause damage to another person or the public (2) inputting into a computer system false computer data in a manner that is likely to undermine national security or to cause public panic (3) inputting into a computer system computer data that is an offence against national security or terrorism according to the Criminal Code (4) inputting into a computer system pornographic computer data that is accessible to the public (5) publishing or forwarding any computer data with the full knowledge that such computer data is under paragraph (1), (2), (3), and (4)	5 years	100,000 Baht
15	A service provider's intentionally supporting or giving consent to the commission of an offence under Section 14 in the computer system in his control	5 years	100,000 Baht
16	Inputting into a computer system that is available to the public photographs of another person that are developed, edited, enhanced, or altered by electronic or any other means in a manner that is likely to impair the reputation of that other person, exposing that other person to hatred, contempt, or humiliation	3 years	60,000 Baht

Source : <http://www.ratchakitcha.soc.go.th/DATA/PDF/2550/A/027/4.PDF>

# 6

## Mab Ta Put

### ...Full of Misery, Infulxes of Pollution



Map Ta Put Industrial Estate of Rayong Province, with its severe industrial pollution leading to irrevocable environmental deterioration and the accompanying health problems, is once again a hot issue in the newspapers. According to statistics, the cancer rate among people in Rayong is much higher than the rate among people from other provinces. This has resulted in Mab Ta Put's being designated as a special pollution control area. It is time that the government review whether the benefits of economic and industrial growth are worth the environmental degradation and the decrease in people's quality of life that so often accompany such trends.

#### From prosperity to industrial pollution

The discovery of natural gas in the Gulf of Thailand and its retrieval for commercial use in 1981 not only brought prosperity for Thailand but was also an important force that changed some areas around the Gulf of Thailand into an industrial region, in line with the Eastern Seaboard Development Program under the 5<sup>th</sup> National Economic and Social Development Plan (1982–1986).

Since natural gas is first brought ashore at Mab Ta Put Sub-district in Rayong province, Mab Ta Put Industrial Estate was established as the center for all industries related to natural gas, such as petrochemicals, plastics, gas separation, and oil refining as well as all industries that use hazardous chemicals in their manufacturing process. Mab Ta Put Industrial Estate was first developed in 1982, has passed the 2<sup>nd</sup> development phase, and is now in the 3<sup>rd</sup> development phase. Today, on the 20,000 rai of Mab Ta Put there are no traces of the fishing village, orchards, rubber plantations, and cassava fields that were once found there.



Initially, the name Mab Ta Put was associated with modern industries and investment figures. But not long after, Mab Ta Put and nearby industrial areas became associated with less positive aspects of development. This came as a result of several events, namely, a mercury leak from PTT's gas pipeline and gas separation plant in 1989, a protest by villagers from Pluakdaeng, Mab Ta Put District against the construction of an industrial waste disposal plant by Genco Company in 1995, and Genco's continued illegal dumping of hazardous waste. What really got people's attention were the harmful odors and toxic fumes from Star Petroleum Refining, which made teachers and students at Mab Ta Put Phanpitayakarn School sick, to the point that in 1997 the school had to be relocated. Other deleterious environmental effects include oil spilling into the sea, chemical trucks overturning, waste water being released into natural water sources, and fires breaking out at plants, all of which continue to occur periodically.

### Air pollution reaches critical levels

At present, the greatest concern at Mab Ta Put is air pollution, especially from Volatile Organic Compounds (VOCs) and hazardous smoke from factories and power plants, namely, sulfur dioxide and nitrogen dioxide. From air samples taken during October–November 2005, the Pollution Control Department found more than 40 types of VOCs, with more than 20 types known to cause cancer.

What is frightening is that the concentration of **19 cancer-causing chemicals found in Mab Ta Put Industrial Estate was higher than the United States Environmental Protection Agency's screening levels**. For example, acrolein was 693 times higher than the screening level, trichloroethylene 498 times higher, ethylene dichloride 256 times higher, chloroform 238 times higher, vinyl chloride 45 times higher, and benzene 31 times higher (details in Table 1). In addition, most people are unaware

**Table 1: Health effects from VOCs found in Mab Ta Put**

VOCs	Health Effects
Acrolein	<ul style="list-style-type: none"> <li>● Cancer-causing compound that destroys the liver and affects blood flow to the heart, lungs, eyes, and kidneys</li> </ul>
Trichloroethylene	<ul style="list-style-type: none"> <li>● Cancer-causing compound, exposure to which at high levels will cause eye and skin irritation and may damage gastrointestinal system, liver, and kidneys</li> <li>● Prolonged inhalation or absorption into the body will affect the central nervous system</li> </ul>
Ethylene Dichloride	<ul style="list-style-type: none"> <li>● Cancer-causing compound in animals, causes irritation to the respiratory system, headaches, nausea, and vomiting</li> <li>● Frequent and prolonged exposure will destroy the liver and kidneys and can cause jaundice, low blood pressure, skin inflammation, and anemia</li> </ul>
Chloroform	<ul style="list-style-type: none"> <li>● A likely cancer-causing compound and a cause of deformities in babies in the womb</li> <li>● Frequent or prolonged exposure to the gas may damage the central nervous system, heart, liver, and kidneys</li> <li>● Contact with the substance in liquid form will cause skin dryness, inflammation, and chronic irritation</li> </ul>
Vinyl Chloride	<ul style="list-style-type: none"> <li>● Cancer-causing compound that affects the growth of babies in the womb</li> </ul>
Benzene	<ul style="list-style-type: none"> <li>● Cancer-causing compound that causes lymph node cancer, lung cancer, bladder cancer, and blood cancer</li> <li>● Causes irritation to the respiratory system that affects the central nervous system and causes headaches and vomiting</li> <li>● Exposure to benzene at high concentration levels may affect the reproductive system</li> <li>● Causes abnormalities of the white blood cells, destroys blood cells, affects the immune system, and causes anemia as it destroys bone marrow, which is responsible for producing blood cells</li> <li>● Prolonged exposure will cause rashes and skin dryness/inflammation as well as affecting nerve endings and the spinal cord, causing headaches and memory loss</li> </ul>

**Source :** Decharut Sukkumnoed, Suphakij Nuntavorakarn and Wipawa Chuenchit, 2007. And Kesa Nimrahong, 2007.



that each year factories in Mab Ta Put use approximately 610,000 tons of vinyl chloride, more than 600,000 tons of benzene, and more than 250,000 tons of ethylene dichloride.

Meanwhile, data on actual emission from factories indicate that, at certain times, concentrations of sulfur dioxide and nitrogen dioxide are higher than air quality standards allow. Five or six power plants release 80 percent of the total sulfur dioxide from all factories. The worse case is BLCP's coal-fired power plant, which emits 1,000 grams of sulfur dioxide per second, equivalent to half of the total sulfur dioxide emission in Mab Ta Put.

BLCP's coal-fired power plant also emits the greatest amount of nitrogen dioxide, at a rate of approximately 680 grams per second, accounting for one-third of the total nitrogen dioxide emission in Mab Ta Put. The second-largest nitrogen dioxide polluter is the natural gas-fired power plant of the Electricity Generating Public Company Ltd. (EGAT), which emits 458 grams of nitrogen dioxide per second, equivalent to 21 percent of the total nitrogen dioxide emission in Mab Ta Put.

Fumes from burning not only create respiratory problems for the villagers but also affect nearby communities in the form of acid rain. A farmer who has lived in Rayong all his life has observed, "Mango and lychee trees have flowers that sprout, but no fruit. The flowers of marian plum trees become black only after 3 days. When it rains, even though only a little bit, the leaves of plants like basil are burnt black like they've been scorched with hot water."

In addition, there is pollution in the form of fly ash. Villagers living around Mab Ta Put believe that this is a result of using coal to power the industries in the area.

## Water quality in serious threat, toxic waste everywhere

The second environmental problem in terms of severity is water pollution. Though Mab Ta Put Industrial Estate has a water treatment system, the quality of natural water sources, both surface water and coastal water, has been significantly defiled. Monitoring of surface water quality by the Pollution Control Department has shown that the amounts of BOD and heavy metals such as copper, manganese, nickel, and arsenic were higher than standard levels.

Dr. Arpa Wangkiat from Rangsit University has studied heavy metal contamination in water sources of 25 communities in Mab Ta Put. Analysis of 77 water samples from shallow well ponds and artesian wells on 26-27 November 26-27, 2005 and February 4-5, 2006 show that heavy metal contamination was higher than standard levels (Table 2).

Acid rain and wells that have been contaminated with heavy metals send a warning signal that natural water sources in Mab Ta Put are no longer suitable for consumption. Penchom Sae Tang, the Coordinator of the Campaign for the Alternative Industry Network, has noted that, "Water is a basic necessity for living. The fact that 25 communities in Mab Ta Put have to buy drinking water and do not have pipe water reflects unfairness in society."

Heavy metal contamination in fresh water sources inevitably affects the quality of coastal water, which in turn affects sea creatures, creating the problem of accumulation of heavy metal in benthos, shellfish, and fish and plankton boom.

**Table 2: Amount of heavy metal in water samples from Mab Ta Put communities, Muang District, Rayong province**

Type of metal	No. of samples with heavy metal contamination above standard	Amount (Milligram/Liter)				Times over average (calculated from highest contamination value)
		Standard value*	Contamination mean	Highest contamination value	Lowest contamination value	
Cadmium	65	0.005	0.023	0.030	0.0030	6
Iron	40	0.5	2.969	75.717	0.0139	151
Manganese	29	0.3	0.610	10.301	0.0050	34
Lead	28	0.05	0.108	2.329	0.0007	47
Zinc	1	5	0.762	49.237	0.0009	10

**Note :** \* Standard value is water quality standard used for consumption in rural areas recommended by the Committee Overseeing Clean Fresh Water Project in Rural Areas Throughout Thailand, 1988.

Toxic waste is another form of pollution that cannot be overlooked. Mab Ta Put Industrial Estate creates more than 22,000 tons of hazardous solid waste per month. This problem is worsening as there are only a limited number of waste disposal sites in Mab Ta Put, and correct disposal of hazardous waste is very costly. Furthermore, insufficient control of dumping means that illegal industrial waste is dumped in public areas, both in communities surrounding Mab Ta Put and areas further away, such as Sri Racha District, Chonburi province.

Thus, **Mab Ta Put is the most hazardous industrial pollution area in Thailand.** Even so, Dr. Samarn Thangtongtawi, Deputy Governor (Special Affairs) of the Industrial Estate Authority of Thailand has asserted that “Mab Ta Put has never had water pollution problems. As for air pollution, not even once have measurements been over the standard level. I think the air in Mab Ta Put is cleaner than in Bangkok.”

#### **Besieged by cancer, quality of life under attack**

Huge amounts of money from industrial development have boosted Rayong's GDP per capita to rank as the nation's highest (in 2007), at 850,253 baht, approximately 8 times higher than the nation's average of 109,440 baht. But the quality of life of the people of Rayong is declining. Both the environment and people's health have suffered severely.

Studies of the incidence of cancer during 2001-2003 state that cancer cases have increased 1-2 times since the 1997-2000 study. Statistics from the Muang District area show that most of the people with cancer had lung cancer, followed by liver cancer, esophageal cancer, bladder cancer, and leukemia.

Dr. Petcharin Sriwattanakul, Advisor of the National Cancer Institute who conducted the study, acknowledged that “cancer has many causes - food, genetics, and health behavior. But the environment and air pollution are also important factors contributing to increased illness. Volatile organic compounds and chemicals from industrial factories put Rayong people at higher risk than those living in other areas.”

In addition to cancer, industrialization has brought increased birth defects and deformities for Rayong. **Cases of chromosome irregularities have increased more than threefold from 1997 to 2005. These abnormalities are related to exposure to VOCs.**

In addition, sexually transmitted diseases in Rayong are on the rise. The rate of new AIDS cases is 5 times higher

than the national average. The number of gonorrhea cases is the third highest in the country and 4 times higher than the national average. Furthermore, the number of mental patients is increasing and **the suicide rate in Rayong is 72.17 per 100,000, the highest in the country** and 11 times higher than the national average.



#### **Treatment for Mab Ta Put: Continued care or no treatment?**

Industrial pollution has prompted the Ministry of Natural Resources and Environment to propose that the National Environment Board designate Mab Ta Put District as a special pollution control area in the hope that this would lead to regulations to control the problems that are becoming even more severe.

In a special meeting of the National Environment Board on January 11, 2007, two subcommittees were appointed in response to the severity of the problems. Their task was to study the relation between people's health and the amount of VOCs released from Mab Ta Put Industrial Estate. The subcommittees would also set a safe VOC standard, a work plan, a timeline for completion of the assessment, an evaluation system, and specific measures to reduce VOCs. It was agreed that if the targets were not achieved within one year, the National Environment Board would designate Mab Ta Put as a special pollution control area.

But the government's response was completely different from what the villagers wanted, namely, for the government to quickly designate Mab Ta Put as a special pollution control area without having to wait for the study results, given the immediacy of their ongoing health problems.

In early February 2007, Mr. Kosit Panpiemrat, Deputy Prime Minister at that time, announced the halt of 10

new investment projects in and around Mab Ta Put Industrial Estate that were waiting for the approval of their Environmental Impact Assessment report as well as the delay of the Phase 3 Petrochemical Industry Expansion Project for an indefinite period.

At the end of February, the National Environment Board set the following standards for 9 types of VOCs :

- 1) Benzene must not be over 1.7  $\mu\text{g}/\text{m}^3$
- 2) Vinyl Chloride must not be over 10  $\mu\text{g}/\text{m}^3$
- 3) Dichloroethane must not be over 0.4  $\mu\text{g}/\text{m}^3$
- 4) Trichloroethylene must not be over 23  $\mu\text{g}/\text{m}^3$
- 5) Dichloromethane must not be over 22  $\mu\text{g}/\text{m}^3$
- 6) Dichloropropane must not be over 4  $\mu\text{g}/\text{m}^3$
- 7) Tetrachloroethylene must not be over 200  $\mu\text{g}/\text{m}^3$
- 8) Chloroform must not be over 0.43  $\mu\text{g}/\text{m}^3$
- 9) Butadiene must not be over 0.33  $\mu\text{g}/\text{m}^3$

Rayong's pollution reduction and elimination plan for 2007-2011 was approved with a budget of 22.772 billion baht. The first lump sum received was 9.834 billion baht, of which 1.033 billion baht was from the government, 6.222 billion baht from the private sector, and 80 million baht from the Industrial Estate Authority of Thailand.

However, in less than one year, on May 23, 2007, General Surayud Chulanont, Prime Minister at that time, visited Mab Ta Put Industrial Estate and declared, "Rayong Province will not be declared a special pollution control area because there may be more negative consequences than benefits." He also said that pollution had fallen to levels lower than the target and that, therefore, new projects could be approved for investment, but that pollution reduction must continue until 2011. A few days later, the National Environment Board released a resolution similar to the Prime Minister's statement, greatly disappointing the Rayong people who were waiting for a serious and concrete solution to the problem.

With no hope from the government, more than 5,000 Rayong people gathered on Sukhumvit Road on September 4, 2007 to protest against IRCP Public Company Limited's coal-fired power plant bidding. The protest and roadblock ended the following day when the Ministry of Energy confirmed that the project had not yet been approved and the Rayong Governor volunteered to communicate the villagers' proposal to IRCP's management.

Most recently, the government has moved ahead with the Phase 3 petrochemical expansion, approving 12 new

projects to be constructed in the area as well approving construction of Glow Company's coal-fired power plant.

At the end of 2007, Supat Wangwongwatana, Director-General of the Pollution Control Department, said that pollution control in Mab Ta Put had progressed a lot. The VOC concentration levels in the atmosphere had clearly fallen. He claimed that sulfur dioxide and nitrogen dioxide levels would fall in 2008 following the pollution emission conditions that state that new projects or expansion projects can only emit pollution not over 80 percent of the amount of pollution reduced. He further asserted that the pollution problem in Mab Ta Put would improve within three years.

Suthi Atchasai, coordinator of the Eastern People's Network, had opposing views. "In the past year, reduction of pollution in Mab Ta Put has made no progress. Pollution has not been reduced as the government agencies have announced. Villagers are still at risk of exposure to VOCs. The subcommittees have no clear answers. The Pollution Control Department announced that sulfur dioxide and nitrogen dioxide emitted from factories has been reduced by 60-80 percent. But in reality, there are still pungent odors at night."

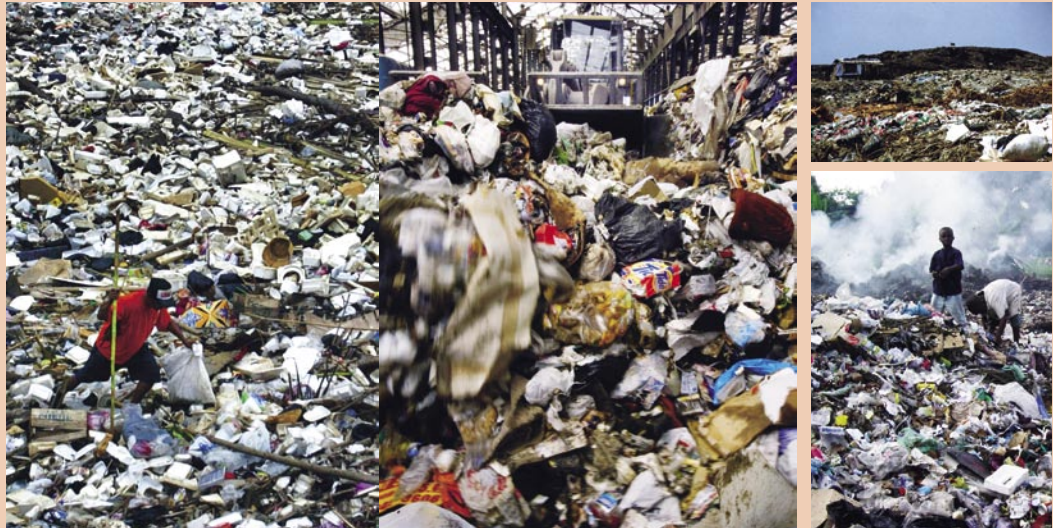
The only hope left for villagers is the decision from the Rayong Administrative Court on the complaint filed on October 1, 2007 against the National Environment Board for failing to declare Mab Ta Put a pollution control area.

**Mab Ta Put today provides an important lesson regarding pursuing economic development through industrialization, as if it were the only choice for the country's development. It was never examined whether the prosperity that was hoped for at the start of the project was worth the local people's health that was sacrificed in return and whether the locals would gain much from the impressive economic growth figures. The locals never had a say in this development direction that was chosen. What is saddest is that Mab Ta Put industrial sector's pulse of growth today has been gained at the expense of the health and well being of the people in Rayong.**





## Thailand to Be Flooded with Garbage within the Next 3 Years



Although several campaigns for reducing and sorting garbage have been ongoing, the amount of garbage is still increasing, especially in big cities and at tourist attractions. Moreover, the diverse types of garbage make disposal all the more difficult while the effort of managing enormous amounts garbage obviously leads to conflict within affected communities. If the situation continues, within the next three years Thailand will face an even worse problem of excessive garbage.

### Garbage cycle

At the beginning of 2007 the Asian Development Bank (ADB) warned that “garbage” would cause more and more serious problems in the Asian region. “Large cities in Asia are confronting garbage problems including the increase of toxic waste that directly affects people’s quality of life. The only way to solve this problem in the long term is to change people’s behavior with regard to their having adopted Western patterns of consumption, which has such a significant environmental impact.”

Thailand cannot escape from the spiral of increasing garbage. Mr. Supat Wangwongwattana, the Director General of the Pollution Control Department, Ministry of Natural Resources and Environment, explicitly stated that the garbage problem was regarded as an urgent issue because the quantity of garbage of Thai people in 2007 was estimated to reach 14.85 million tons per year or 40,690 tons per day, which is approximately 0.25 million tons more per year than in 2006. But Thailand has the capacity for handling only 14,790 tons per day, a mere 36%.

Certainly the “leftover garbage” in many areas becomes a serious problem, similar to the practice of garbage burning on the ground, due to its impact on environment and health, including **polluted air** from outdoor garbage burning and the resultant smoke and air pollution, **contaminated water** from the leftover garbage on the ground, which contaminates rain water flowing into surface waterways, **vector sources**



from rats and flies living in garbage piles, and **irritating and unpleasant** conditions from smelly leftover garbage.

### Urban garbage: Changing quantity and composition

Consumption stimulation is one of the economic development schemes under capitalism. More consumption encourages mass production in order to reduce costs and offer cheaper prices to buyers. In addition, business operators adopt marketing strategies to boost product purchasing through advertisements on radio, television, websites, giant billboards, leaflets, coupons, and sample products. When people see the arrival of new products every day, they tend to assume that new things are good whereas older items are considered, outdated, leftover, damaged, malfunctioning, ugly, or somehow bad. Such thoughts devalue old products resulting in transforming them into garbage quickly.

Garbage, which is likely to grow dramatically, is found mostly in crowded areas, department stores, markets, business areas, industrial cities, and tourist cities. Garbage per person in cities is on average almost twice as high as garbage per person for rural people. In Bangkok, it is even higher, with the average amount of garbage per person at 1.5 kgs. per day, while upcountry it is only 0.4-0.6 kgs. per day. In Pattaya, it is even higher, at 2.6 kgs. per person per day. And in some industrial cities such as Phra Pradaeng, Samut Prakan Province it is 4.3 kgs., which is 6.6 times higher than the country's average figures (see table right) :

The Pollution Control Department (2003) indicates that when the average income of the population rises, garbage quantity per person also increases. Therefore, garbage and "development" (as measured by people's income) cannot be separated although there are exceptions. For example, Phuket, a tourist city, has the highest amount of garbage per person despite its overall lower income compared to some other cities.

### Danger signal from modern garbage

The present garbage problem that city people are encountering and will be likely to face in the future is aggravated by a lack of an efficient waste treatment. A problem especially worth mentioning is **electronic garbage**, namely, mobile phones, electronic accessories, computers, music players, televisions and video equipment, electrical appliances, etc., which always seem to be going out of date once a new model is launched.

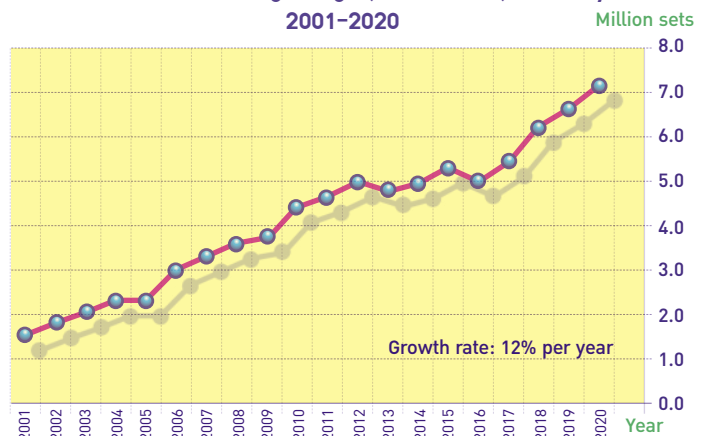
Garbage quantity (kgs./person/day) of each city in 2003

Area	Garbage quantity (kgs./person/day)
<b>Average figures</b>	0.65
<b>Main cities</b>	
Bangkok	1.5
Chonburi	1.5
Pathumthani	1.4
Songkhla	1.2
Chiang Mai	1.1
Samut Prakan	1.1
Nonthaburi	1.1
Nakhon Ratchasima	0.9
Khon Kaen	0.9
<b>Tourist cities</b>	
Pattaya, Chonburi	2.6
Patong, Phuket	5.0
Cha-am, Phetchaburi	1.7
<b>Industrial cities</b>	
Prapadaeng, Samut Prakan	4.3
Omnoi, Samut Sakhon	3.4
Mabthaphut, Rayong	3.2
Laem Chabang, Chonburi	2.8

Source : The Pollution Control Department(2003)

When these appliances break, malfunction, or become obsolete, they become high tech garbage, which gradually increases in quantity day after day. The Pollution Control Department estimates that in 2007 garbage such as televisions, refrigerators, washing machines, air-conditioners, computers, and monitors reached 3.37 million tons. The amount of electronic garbage and electrical appliances is likely to increase by 12% per year. It is expected that this will rise to more than 5 million tons by 2012. (see figure)

Estimated electronic garbage (million tons) for the year 2001-2020



Source : Adisak Thongkaimook (2006)



For mobile phones alone, official registration of all networks in 2006 accounted for 33 million numbers. And when these phones are eventually tossed into the garbage so are the heavy metals they contain, namely, lead, cadmium, nickel, bromine, arsenic, lithium, and beryllium. Such garbage is harmful to living things when disposed of improperly since these substances are then released into the environment, the ecosystem, and the food chain. When they accumulate in the human body, they affect the neural system, blood circulation, kidney function, the reproductive system, child development, and pregnancy. Similarly, if uninformed or careless people burn the garbage containing hazardous chemical substances, such as dioxins, carcinogens are released into the air.

Secondhand products or **imported garbage** rapidly flowing from overseas, namely, electrical appliances, bags, clothes, shoes, are expired products from developed countries and have become popular cheap items among Thai people. Garbage exporting to developing countries is an easy way for developed countries to dispose of garbage that may be difficult to dispose of otherwise, especially toxic materials. One example of such international garbage disposal took place in 2002, but Thais just found at the beginning of 2003 that hundreds of imported containers that had been left at Khlongtoey Seaport for about 2 months were full of 23 tons of old batteries, tires, computers, and other electronic component. They were all **hazardous international garbage**.

Another type of garbage is **Infectious garbage**, which is produced by healthcare units, including hospitals, clinics, and health centers. Basically, healthcare units need to separate cottons, gauzes, absorbing tissues containing blood and other bodily fluid, liquid contaminated cloths, and syringes from general garbage and deliver it to authorized hazardous biological waste garbage trucks for proper disposal by burning. In 2006, Thailand possessed more than 56 tons of infectious garbage or about 28,000 tons per year, of which 65% was incinerated by infectious waste incinerators at hospitals,

7% disposed of by private companies, and 28% managed by Local Administration Organizations. As for treatment by Local Administration Organizations, only 10% was properly treated whereas the remaining 18% was burned along with general garbage in the community's incinerators as well as being secretly dumped into deserted areas in other provinces.

Another type of often-ignored "garbage" is **sky garbage** or giant billboards on both sides of main roads, especially in Bangkok, where they seem to be increasing. Presently there are 785 billboards on expressways and 538 billboards on buildings. Moreover, it is a cause for concern that only half of them have the proper permits. These sky billboards have started to have a health impact on Bangkokians. Many are not installed properly and easily collapse when it's windy, especially during the rainy season. Some people consider them real eyesores, given their vivid colors, ambiguous messages, unsuitable pictures, and untidy appearance. In addition, some reduce drivers' visibility and thus constitute a safety hazard. Furthermore, some of these billboards are not removed by owners even after the advertised events are over. Instead, they are left to deteriorate.



### Bangkok still faces garbage disposal problems

Bangkok seems to have better garbage disposal capability than other areas, but the city needs to find effective ways to cope with 1 kg. of garbage per person per day produced by Bangkokians on average. Despite having two areas, namely Kampaengsan district, Nakhon Pathom province and Panom Sarakham, Chachoengsao province, for garbage disposal, Bangkok still faces disposal problems due to its failure to implement an effective garbage sorting campaign.

Bangkok's disposal problems have been aggravated even more by the removal of trashcans from main streets in Bangkok (until they can be replaced by "transparent"

trash cans) in response to the New Year's Eve 2006 explosions from bombs placed in trashcans. The result has been a decrease of garbage pickups from public places by almost 20%, from 10,000 tons to only 8,300 tons per day.

An even more serious problem in Bangkok is hazardous waste that is dumped along with general garbage and which amounts to 25 tons per day. Few people know that hazardous waste disposal capability of Bangkok is limited to only 150 kgs. per day. Undoubtedly, hazardous waste has significantly affected people's health as well as causing environmental pollution particularly in water resources.



### Increasing amounts of garbage upcountry

Some rural areas produce little household garbage, but some rural people living in large communities with modern household appliances have been generating more and more garbage. The Pollution Control Department has reported that rural people produce about 0.7 kgs. of garbage per person per day and that most garbage treatment systems are operating in accordance with sanitation rules. Instead, garbage is mainly disposed of by open-air burning, burying, or by just being left on the ground. However, some areas have been allocated a budget for garbage disposal and possess their own incineration plants. yet these plants often face system maintenance problems due to a lack of trained operators.

Because proper garbage disposal is expensive, especially for hazardous waste, it causes just as many problems in rural areas and tourist spots as it does in cities. For example, Phuket faces problems caused by the 500 tons of garbage it produces each day. The problem becomes even worse during peak tourist season. The 129-rai landfill has almost exceeded its capacity. In addition, incinerators that can burn 250 tons of garbage per day

can no longer handle all the garbage that is generated. Consequently, the Phuket Provincial Administration Organization has asked for funds to build a second incinerator plant. But the Pollution Control Department has suggested in response that, for the next few years, garbage should be initially sorted by type in order to reduce its overall quantity before disposal.

One more aspect of the garbage crisis is cross-border dumping. Lampang Province, for example, has been a depository for garbage from neighboring Chiang Mai province. Mr. Kriengsak Suttipak, a member of the Lampang Environmental Committee, has revealed that garbage was secretly dumped in Lampang especially during the Royal Flora Ratchapruek 2006 ( November 2006 through January 2007), amounting to not less than 400-800 tons per day. Furthermore, it was found that some people benefited from this illegal activity. Some senior government officials were even forced to resign for facilitating garbage smugglers and getting paid around 2,000-3,000 baht per truck per day. At present, there are approximately 15-30 garbage trucks per day.

Apparently, the Royal Flora Ratchapruek garbage dumping scandal has alerted neighboring provinces to increase surveillance to prevent such illegal dumping. One example is Phayao province, which has posted security guards consisting of villagers, community guards, and civil defense volunteers. Similarly, Chiang Rai Province has asked police to monitor trucks traveling along the Chiang Mai-Wiangpapao route that are suspected of carrying garbage.

Cross-border garbage dumping occurs in many areas, especially in areas next to industrial estates, which generate hazardous waste. News reports of hazardous waste dumping have appeared all over the country, including news of protests against incinerator plants in Muang District, Prachuab Khirikhan province, and Kangkoy District, Saraburi province.

### How to cope with an avalanche of garbage in the city

The garbage problem is not only subject to the increase in amount of garbage generated, but also related to the efficiency of garbage management. Although high-income countries generate more garbage, in line with higher consumption, their garbage management tends to be more efficient than that of low-income countries. Comparatively, garbage treatment in developed cities is



almost complete at about 95-100% whereas for less-developed cities the rate is below 70%.

Current garbage problems arise from both excessive garbage quantity and existing treatment technology, which cannot meet the more complicated requirements for hazardous waste disposal. As a result, hazardous garbage such as chemical substances or old electrical appliances are illegally dumped in remote areas, public lands, or rural zones. It could be said that all these problems occur under an economic system aiming at the stimulation of production and consumption stimulation.

**Since society at large is involved in the increasing amounts of garbage, the solution should come not only from the government but from all sectors of society.**

**Individuals and families** should start to change their consumption behavior by using environmentally friendly products, reducing environmentally hazardous packages like plastic, and foam and carton boxes. Such packaging should be recycled as much as possible. In addition, general garbage should also be separated from hazardous waste and old items in good condition donated to needy people.

**Manufacturers or operators** should take an important role in reducing and disposing of garbage as they are major garbage producers. They should also launch products made from recycled or environmentally friendly material, reduce the use of plastic bags and foam, and promote the packaging returns by lucky draw. As for electronic items that are difficult to dispose of, especially short-cycle products, dealers or producers should agree to take them back for proper disposal once they can no longer be used and offer containers for depositing hazardous waste such as electric light bulbs, dry cells, batteries, CDs, etc.

**The government sector** should play three important roles: (1) enforce the laws to punish illegal garbage and hazardous waste dumping and strictly control the import of second-hand products ; (2) enhance people's knowledge concerning proper waste disposal and management, , for example, by instructing them in how to prepare organic fertilizer from leftover food, how to produce "fragrant" garbage, how to make "value-added" products from recycled material, how to sort garbage by type, and how to prevent improper disposal of harmful toxic waste; (3) support recycling businesses, garbage collectors, and cleaning/sanitation personnel by lifting

their status in society.

**Learning from role models to escape the proliferating garbage cycle:** Local Administration Organizations should take the lead in formulating guidelines for garbage reduction and impressing upon people the seriousness of the hazardous waste situation. It is crucial that projects initiated by Local Administration Organizations get positive feedback from citizens as well as the private sector, so that garbage reduction targets can be met. Effective community projects might include the establishment of "garbage banks" in schools, universities, and communities. Such projects could operate in cooperation with recycling businesses, all of which would help educate people concerning the value of "garbage" and the necessity to separate hazardous waste for safe disposal.

Several small communities are already managing garbage treatment simply but effectively, for example, the Bridge of Merit Project initiated by Suan Kaew Temple. The project asks for old items to be made into new usable items, leading to job opportunities and income generation for poor people. The first Community Recycling Center in Thailand, located on Soi Ladprao 101, Bangkok, was created by various community networks and focused on garbage sorting. The Center not only helps reduce garbage, but also generates income for the community. Rung Arun School, located in Bangkhuntien, Bangkok, can dispose of an amazingly large pile of garbage by implementing Zero Waste Project etc.





# 8

## "TV Ratings"

### Adults' Responsibility toward Young Viewers



In an era when the majority of TV programs are produced for adult entertainment, it is of great concern that young viewers who spend 3-5 hours a day watching TV may be surrounded by inappropriate content that may lead to inappropriate behavior. It is about time that TV ratings were put into place to help parents and guardians protect children from low quality "material," motivate producers to increase the number of programs for children, and adjust programming schedules so that programs geared for adults air at more appropriate times.

#### The beginning of TV ratings

The "TV rating system" classifies programs that are broadcast on TV according to their appropriateness for different age groups. This is not something new as 30 countries across the world, such as Great Britain, Ireland, the United States, Canada, Australia, South Africa, China, Vietnam, and Malaysia, have used TV ratings to classify TV programs for a long time.

Thai TV viewers were first introduced to the TV rating system in December 2006 after all TV channels collaborated with the Public Relations Department's Office of the National Broadcasting Commission to do a trial classification of TV programs. The TV programs were classified into 7 types as follows :

1. Programs for preschool children aged 2-6 years using the Kor "ก" (P) and smiling face symbol
2. Programs for children aged 2-12 years using the Dor "ด" (C) and jigsaw symbol
3. General programs for all ages using the Tor "ท" (G) and house symbol
4. Programs that require parental guidance using the Nor "น" (PG) and check mark and X symbol

5. Programs that require parental guidance, unsuitable for children under 13, using the Nor13 “น13” (PG13) and check mark and X symbol
6. Programs that require parental guidance, unsuitable for children under 18, using the Nor 18 “น18” (PG18) and check mark and X symbol
7. Special programs for viewers aged 18 and above only using the Chor “ฉ” (S) and lightning symbol

During the trial period, the Public Relations Department asked the TV stations to consider the ratings of programs by themselves as well as to provide an opportunity for family, child, and youth networks to monitor the appropriateness of the ratings assigned by the TV stations by sending in their comments.

After 6 months of the TV rating trial period, Khunying Dhipavadee Meksawan, Minister to the Prime Minister's Office at the time, revealed that the ratings assigned by the TV stations varied. As a result, the Public Relations Department promptly produced a TV program rating guidebook for the TV stations to use in evaluating the content and quality of the programs.

### Reactions from society

At the beginning of June 2007, the Cabinet agreed with the drafting of the TV program rating guidebook, which would include a system to evaluate the content quality, a system to categorize the content according to age, and guidelines for determining the time period appropriate for broadcasting each type of TV program.

Less than one month later, producers and people related to the television industry opposed the draft of the TV program classification guidebook. The majority agreed with the TV rating system, **but disagreed with using TV program ratings to determine airtime.**

Takonkiet Viravan, a famous soap opera producer, worried that soap operas shown at 8PM would be moved to the 10 PM-4 AM slot if there were any fighting or killing scenes.<sup>6</sup> Meanwhile, Pravit Maleenont, Channel 3 Executive, worried about the problem of future interference with the media.

The opinions of people in the TV industry greatly differed from those of the viewers. An ABAC poll conducted by Assumption University from June 30 - July 2, 2007 on the behavior and opinions of children, youth, and parents towards TV ratings and violence on TV found that among

2,486 responses, 88 percent agreed with assigning TV ratings. More than half the children aged 3-12 watched TV during the 6-8 PM time slot, while more than half those aged 13-18 watched TV between 8-10 PM.

The 8-10 PM and 6-8 PM time slots are the two time slots with the most TV programs containing violent content considered inappropriate for children, accounting for 69 percent and 23 percent of the programs in these slots, respectively. Eighty-six percent of the people think that programs with the most violence and inappropriate content are soap operas.

Dr. Yongyuth Wongpiromsarn, one of the members of the Safe and Creative Media Committee, said that this issue is a case of dictatorship but a concern for everyone in society and noted that a TV rating system is in place in many countries worldwide. He was confident that if TV stations and producers receive correct information, this incidence would not occur.

Meanwhile Dr. Panpimol Lortrakul, a member of the government's TV rating panel, explained that the rating system will still allow TV dramas to be aired. Dramas that teach about goodness and ethics can be broadcast during the times most children watch TV. TV soap operas with scenes of violence and rude language could aired after 10PM in order to protect children from imitating the bad behavior of the TV characters, since children have different levels of maturity and perception.

Khunying Dhipavadee Meksawan confirmed that classification of program content and stipulation of air times for certain types of programs must go hand in hand. The opinions of all parties were to be presented at a meeting of the TV rating committee as input for the drafting of the TV program rating guidebook.

### TV program rating guidebook

After being improved to be more effective and suitable practical use, the new TV program rating guidebook from the original version. Trial use of the new version at the end of 2006 with changes as follows :

- (1) Three forbidden criteria were established, called “-3,” including sex, language, and violence, which will be assessed from pictures, content, camera angle, production, and sound in order to classify the program content suitable for different age groups.

- (2) Knowledge in 6 areas was added, called “+6,” including academic knowledge, logical thinking, ethics-morals, living skills, social variety, and family relationship development. This will be used to consider the quality of the content and how it educates the viewers.
- (3) Change from the Kor “ก” programs for preschool children aged 2-6 years to the Por “ป” programs for preschool children aged 3-5 years since the research of the International Pediatric Association advises that children below 3 should not be allowed to watch TV as it affects their brain development.
- (4) More definite airtimes for the Nor “น” and Chor “ฉ” programs were established. Nor “น” programs for children aged 13-18, which require parental guidance as they might contain inappropriate content relating to sex, language, and violence, can be aired from 9 AM-4 PM and 8 PM-5 AM. Chor “ฉ” programs for adults older than 18 can be aired from 10 PM-5 AM only.

Stipulating airtime of programs for children and youth according to their viewing behavior is an international concept which many countries use as a tool to protect children and youth from viewing programs inappropriate for their age. For example, in Great Britain, programs inappropriate for children under 15 cannot be aired before 9PM. In the United States, programs inappropriate for children under 14 must be aired after 9PM and programs for adults must be aired from 10PM onwards.

- (5) Viewers have an opportunity to review the quality of the program content and evaluate the appropriateness of the program after it is broadcast. This is referred to as post-rating.

At first, only the producers and TV stations were responsible for considering the appropriateness of the program content, called “pre-rating.” At present, post-rating by the public works in parallel with pre-rating. This will lead to information exchange and accommodation by both sides so that their rating standards fall more in line with each other. In addition, the public will become stronger and will be able to keep up with the tactics of the media. Those interested in post-rating can send in their comments anytime via SMS at 4863333 or the

internet at [www.me.or.th](http://www.me.or.th).

During the trial stage of implementing the TV rating system, Mahidol University’s National Institute for Child and Family Development, in collaboration with the Communications Faculty of 12 other institutions, the Northern Youth Council, the Southern Youth Council, and the Network of Volunteer Families to Monitor Media established a program post-rating project in order to promote “information exchange” between viewers and producers in using the TV program rating guidebook. The project discovered 3 facts, as follows :

- (1) There were very few Por “ป” and Dor “ด” programs, especially between 4-6PM. From all six stations examined, Monday to Friday, Por “ป” and Dor “ด” programs accounted for an average of only 1.6 percent of the time slot, compared to 25 percent, as stipulated by the Public Relations Department.
- (2) The majority of the programs were Tor “ท” programs that target the general audience. The main target audience was not children.
- (3) The main difference between pre-ratings and post-ratings centered on sex, especially the values and customs related to sex. Almost all of the programs that elicited different pre-ratings and post-ratings were soap operas.

### **The second step and following steps**

The new draft TV program rating guidebook has already been in trial use for 4 months (September – December 2007), without stipulating the airtime for each type of program.

Pramote Ratvinij, Director-General of the Public Relations Department at that time, signed a new Public Relations Department decree regarding TV program ratings on January 18, 2008, to go into effect on February 19, 2008. (See table, p.74)

Bavorn Techa-in, chief of the National Broadcasting Commission, said that the announcement required TV stations to categorize programs in terms of appropriateness according to the regulations issued. Violations will result in a warning, and an official warning letter will also be sent, or the station may be asked to stop airing the program altogether. However, there is no fine or threat of imprisonment. In the past, an official warning letter to the TV station director has been effective in receiving cooperation.

**Airtime appropriate for programs with different ratings  
according to the TV program-rating decree dated  
January 18, 2008**

Program Type	Airtime	Airing Days
1. Por "ป" and Dor "ด"	4-8.30 PM	Everyday
2. Nor13 "น13"	8.30 PM-5 AM	Everyday
	9 AM-4 PM	Monday - Friday, except public holidays
3. Nor18 "น18"	9 PM-5 AM	Everyday
	9 AM-4 PM	Monday - Friday, except public holidays
4. Chor "ฉ"	10 PM-5 AM	Everyday
	9 AM-4 PM	Monday - Friday, except public holidays

**Source :** "Public Relations Department issues 2 announcements 'TV ratings - Snack advertising control' effective 19 February," Krungthep Turakij. 25 January 2008

Establishment of TV ratings and stipulating airtimes for different types of programs in line with the viewing behavior of young TV viewers is an important mission that should help improve the quality of the "material" that is broadcast via the TV screen. In addition, such a system should help children's intellectual development more than in the past.

In the next step of TV ratings, the Public Relations Department, the government agency responsible for this matter, has to follow up and evaluate whether the content of TV programs has improved in essence. The Public Relations Department should cooperate with civil groups such as family-consumer networks, which are the main force in post-ratings. It should also quickly create understanding of the TV rating system among the general public, increasing campaign continuity along with the present coverage. These measures will help to improve the quality of Thai TV programs. At the same time, it will improve the status of viewers from merely "consumers" to "citizens" who can voice their real needs with regard to TV programs.

Under the TV rating system, which consists of +6 gauges, there has been an in programs that promote education and learning for viewers in Thai society. These programs should be supported so that they might increase in number and improve in quality. Therefore, government and state enterprise support and the establishment of the creative media fund in order to support programs in the +6 group should not be neglected, hindered, or overlooked.

Finally, TV ratings are merely a tool for adults to choose programs appropriate for children of different age groups. **Providing advice while children watch TV is still the responsibility of parents and guardians.** If adults at home do not change their behavior and let TV be their children's babysitter or do not care to sit and watch TV with their children, the TV rating system, established with good intentions and efforts for two years at this point, will not achieve its desired results.

Producers, production houses and people in the television industry should use the television media in a creative way and consider the benefits for viewers. Even the advertising agencies, an important variable, should change their concept in supporting programs by not just using quantitative ratings but also qualitative ones.

**All this is to create support for programs that enhance learning for Thai society, especially for viewers who will grow up to be tomorrow's adults and upon whom our nation will depend.**





## Symbol

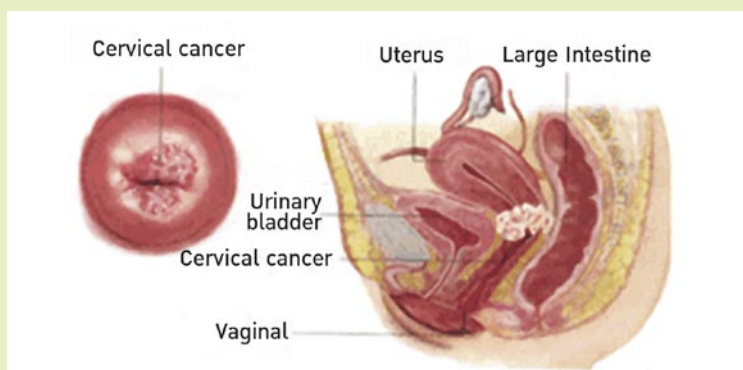


### Thai TV Ratings

The Thai TV program rating guidebook classifies programs into 6 types, as follows:

1. **Por “u” programs** are TV programs for preschool children aged 3-5 years. These programs must have content that promotes multiple intelligence development, is age-appropriate, teaches morals and ethics, promotes understanding of differences, promotes the learning of skills necessary for development at each age, and instills love among family members. Inappropriate content related to sex, language, and violence is prohibited as children this age can quickly absorb and copy inappropriate behavior.
2. **Dor “n” programs** are TV programs for children aged 6-12 years. These programs must have content that promotes multiple intelligence development, provides academic knowledge for development, teaches morals and ethics, inspires children to behave morally and ethically, promotes understanding of differences and living in harmony, and promotes the learning of necessary living skills and the importance of the family institution and one's role in the family. Inappropriate content related to sex, language, and violence is prohibited as children this age can quickly absorb and copy inappropriate behavior.
3. **Tor “n” programs** are TV programs for the general audience aged 3 and above. These programs must have content that supports the development of systematic and logical thinking, provides integrated academic knowledge, and teaches morals and ethics as well as inspiring children to behave morally and ethically. Content should also promote understanding of differences, living in harmony and solving problems arising from differences, and the learning of necessary life skills, the importance of the family institution and one's role in the family. Inappropriate content related to sex, language, and violence is prohibited.
4. **Nor13 “u13” programs** are TV programs for audiences aged 13 and above and require viewing discretion. For children under 13, these programs require parental guidance. The content of these programs must support knowledge in 6 areas, called “+6”. These programs may contain low to mid levels of inappropriate content related to sex, language, and violence. In the case of demonstrating the effects of bad behavior, the presentation must be well balanced, and the cause and effects of the behavior must not be too far apart.
5. **Nor 18 “u18” programs** are TV programs for audiences aged 18 and above and require viewing discretion. For audiences under 18, these programs require parental guidance. The content of these programs must support knowledge in 6 areas, called “+6.” These programs may contain inappropriate content related to sex, language, and violence.
6. **Chor “a” programs** are TV programs for adults older than 18. Children and youth should not watch these programs. The content of these programs must support learning and knowledge in 6 areas, called “+6” for adults as well as present appropriate guidelines to solve problems. These programs may contain high levels of inappropriate content related to sex, language and violence.

## Ensuring that the War against Cervical Cancer Goes in the Right Direction



Cervical cancer is the leading cause of cancer deaths among Thai women, killing over 3,000 women per year, or an average of 9 women per day. Each year, approximately 6,000 women are diagnosed with cervical cancer, the majority in the 35-50 age group. The cost of treating cervical cancer patients amounts to approximately 350 million baht per year. In response, the Ministry of Public Health and the National Health Security Office have joined forces to declare a war against cervical cancer with a free cervical cancer checkup program at public hospitals in 76 provinces from 2005–2010.

### Declaring a war against cervical cancer

It is well known that Thai women feel uncomfortable about internal check-ups. National Statistical Office survey results from 2006 show that 50 percent of women aged 35-50 have had internal check-ups while 37 percent have never had one. The largest number of women who have never had internal check-ups are in the 55-59 age group, followed by the 50-54 age group. More rural women have had cervical cancer check-ups than urban women. As part of the war against cervical cancer, the National Cancer Institute manages a program through which women aged 35-60 who have a Gold Card can get a free pap smear at public hospitals in every province and know the results within 1-4 weeks.

Meanwhile, the Department of Health provides cervical cancer diagnostic services by employing a simple method using vinegar. While not all doctors have accepted this method, at present, officers in 13 provinces and 5 districts have been trained and are able to use this technique to detect cervical cancer. The advantages of this technique are that results can be known within 5 minutes, it is appropriate for limited resource settings, and it is cost effective (costing only 245 baht, compared to 875 baht for a pap smear). On the other hand, if the cervical cancer remains undetected and has begun to spread, the cost for treatment is at least 20,000 baht per person.

### Thai women have been scared off by cervical cancer

The Ministry of Public Health and the National Health Security Office have periodically publicized the nationwide cervical cancer checkup policy since 2006. However, the media have chosen to write headlines about the scariness of this disease instead. Some sample headlines are :

- 7,000 females a year diagnosed with cervical cancer. Samutsakorn the champion for cervical cancer deaths
- Cervical cancer kills 9 women of “housewife age” daily
- Cervical cancer kills 9 young females per day
- Cervical cancer, a deadly disease killing Thai women

Moreover, public health officials have given interviews blaming the reason for the high number of deaths on women’s shyness to go for internal checkups. They also reported that in 2005, only 450,000 women went for cervical cancer checkups in hospitals across the country, while the government had a target of 700,000 women. The technique of “scaring” utilized by both the public health sector and the media, especially local newspapers, further increased the misunderstanding that cervical cancer is like other types of cancer that are hard to prevent, cause suffering, cause death once one is diagnosed, and are incurable. Therefore, women only know that the government is campaigning for internal checkups and that if they are diagnosed with cervical cancer, their lives will be over.



### The battle between information and marketing of cervical cancer vaccine

While the government sector was seriously promoting cervical cancer checkups, information came out sporadically in newspapers and health magazines in 2006 about the production of cervical cancer vaccines by

pharmaceutical companies in the United States. However, this information was limited to the medical and health professions.

After the Thai Food and Drug Administration certified the cervical cancer vaccine in March 2007, there has been a barrage of publicity and advertisements about the benefits of the vaccine. A famous celebrity, Pawarisa Penchart, was the presenter for the vaccine, being the first Thai woman to receive the vaccine from a well-known private hospital. The vaccine was also publicized in newspapers and through interviews on talk shows.

Consequently, the cervical cancer vaccine became well known among Thai women overnight. Slogans such as “Victory of Women Worldwide with HPV Vaccine” and “An Innovation to Prevent Cervical Cancer . . . The Number 1 Cancer Found Among Thai Women” became familiar during the publicity campaign for the vaccine against HPV. From all this publicity, Thai women received information they had never known before, such as the fact that cervical cancer is caused from Human Papilloma Virus (HPV). There are approximately 20 different HPV types that trigger the cells around the cervix to become cancerous, with HPV types 16 and 18 together causing about 70 percent of cervical cancers. HPV can be easily transmitted through sexual contact. Through one time sexual intercourse with a partner who has the virus, the risk of HPV infection is approximately 50-65 percent. Eighty percent of women who have had sexual intercourse will be infected with HPV.

Due to the HPV vaccine advertising blitz, the cause of cervical cancer is now better understood. **However, these advertisements and announcements do not often disclose the vaccine’s limitations.** For example, HPV vaccine can only prevent infection from HPV types 16 and 18 and does protect against other HPV types that cause the other 30 percent of cervical cancers. Furthermore, it is a vaccine to protect those who have not yet been infected. In addition, the vaccine is useless if the cells around the cervix have already become cancerous. Therefore, even though a person has received the HPV vaccine, it is still necessary to have cervical cancer checkups to protect against the other HPV types that cause 30 percent of cervical cancers. Most important, the HPV vaccine does not directly prevent against cancer, but advertisements have jumped to the conclusion that it is a vaccine to prevent cervical cancer in order to lure more people to pay for the vaccination.





**Even though it is very easy to get an HPV infection, in 70-90 percent of women, the infection usually goes away on its own within 1-2 years, and cells around the cervix turn cancerous in only 10-30 percent of cases. This usually takes around 10 years. (For infected men, by the way, the only symptoms are genital warts.) Therefore, cervical cancer is not as lethal as many believe. Women have enough time to protect themselves against cervical cancer by being screened for cervical cancer by means of a pap smear. If cervical cancer is still in the early stages, it is curable.**

#### **Proactive marketing targeting office women**

Given the extremely high price of the vaccine, which varies by hospital, ranging from 4,000 to 7,000 baht per dose and requiring 3 doses, amounting to approximately 12,000-21,000 baht, marketing of the vaccine has targeted office women who have high purchasing power. Various channels have been employed including promotions with credit cards such as "Receive chicken essence pills with the purchase of 3 vaccine doses" or "Promotional price for 3 HPV vaccine doses only 13,500 baht, originally 17,700 baht, 3 monthly installments with 0% interest with KTC, today until 29 February 2008." In addition, postcards have been sent to customers inviting them to have "Free consultations with specialists at the HPV Vaccine Hotline" as well as enjoying discounts "From the regular price of 7,000 baht/dose (3 doses required) to a special price of 5,600 baht/dose (not including medical fee)" with emphasis on the wonders of the vaccine, "The World's First HPV Vaccine ... A Vaccine to Protect against Cervical Cancer."

#### **Reactions to exaggerated advertising**

The tone and rhetoric of the news releases, news reports, and advertisements, which started by creating fears and then moved to promote the wonders of the vaccine as a miracle preventative against a deadly disease, may or

may not be coincidental in benefiting the pharmaceutical and hospital businesses. On August 6, 2007, the Thai Food and Drug Administration (FDA) issued a statement that the HPV vaccine is new and is still undergoing a two-year monitoring process to detect any negative side effects. In the meantime, Advertisements targeted to the general public are prohibited.

The Secretary-General of the Thai FDA has stated that the HPV vaccine advertisements of hospitals are only half-truths. For example, the advertisements assert that the vaccine provides 100% prevention against cervical cancer while in reality it can only prevent the strains of HPV that are responsible for 70 percent of cervical cancers. These false, exaggerated claims call to mind the false advertising by low cost airlines that advertise air tickets costing 5 baht, but which in reality cost the consumer much, much more since the unrealistically low price does not include airport taxes and many other surcharges. More accurate and detailed news items, press releases, and information are often buried in the inside pages of newspapers or not reported at all. Thus, warnings from the FDA and the Director of the National Cancer Institute that the vaccine protects only against those strains of HPV that are responsible for 70 percent of cervical cancers, that vaccination is most effective for women who have never had sexual intercourse, and that safe sex and pap smears are the best ways to prevent cervical cancer often go unnoticed. In the face of aggressive marketing by pharmaceutical companies, the FDA's response has so far not been very effective.

#### **Government support for the vaccine: A proposal for pharmaceutical companies or the health of Thai women?**

At the end of 2006 and throughout 2007, meetings related to cervical cancer were more frequent than in the past. These include the Meeting of Alliances to Fight Against Cervical Cancer in Thailand on October 20, 2006, organized by MSD (Thailand) Company Limited, which is the distributor of HPV vaccine in Thailand. This meeting was followed by meetings organized by Family Health International, such as the Prevention of HPV Infection and Cervical Cancer in Thailand Meeting on May 14, 2007, the Consultation Meeting on Working in Communities: Prevention of Cervical Cancer and HPV Infection in Thailand on July 16, 2007, and the International Meeting on Developing Policies and Support to Improve Cervical Cancer Prevention in Thailand on September 21, 2007.



In all three meetings, participants stressed the importance of cervical cancer screening with the use of pap tests in addition to raising the issue of **equal access to HPV vaccine. It was suggested that the government should represent the public in negotiating with the HPV vaccine manufacturer for low-priced vaccines through guaranteed purchases.**

The issue of equal access to HPV vaccine and recognition of the importance of women's health may be a factor that led to the study "The Development of a Strategy and Policy for Cervical Cancer Prevention and Control." The International Health Policy Program and the Health Intervention and Technology Assessment Program presented their research results and held a brainstorming session with medical and public health experts and top management and representatives from vaccine manufacturers on December 25, 2007.

The meeting concluded that cervical cancer prevention should continue on course. That is, the Ministry of Public Health and the National Health Security Office should expand coverage and improve the quality of screening for cervical cancer, as this method is cost-effective when compared to administering expensive HPV. Providing vaccines with support from the government budget to women of reproductive age was deemed an inappropriate policy choice.

### **Solution to cervical cancer problem must focus on reproductive health policy**

The media blitz and aggressive marketing of vaccine companies and private hospitals in 2007 caused worries among public health agencies and health-related civil society groups. Though the use of the phrase "cervical cancer vaccine" increased public awareness and interest in cervical cancer, it may also have brought about negative results since it may cause women to believe that once they are vaccinated, they will never get cervical cancer and that there is no longer a need to go for internal checkups, even though such examinations also help diagnose other types of infections.

Stipulating that the term "HPV vaccine" be used instead of "cervical cancer vaccine" should be a good measure in reducing misunderstanding. In addition, consumers' rights must be carefully taken into consideration. Doctors who provide vaccination services must provide information regarding both the benefits and limitations of the vaccine. In addition, the FDA must require doctors to inform women before and after the vaccination that screening for cervical cancer is still necessary as the

vaccine does not provide 100% prevention against cervical cancer.

It is time for the public health sector to review those problems that it has not yet solved. Increased emphasis on pap testing has not solved the problem of women's shyness and unease in receiving internal checkups. We have to get down to the root of the problem, which is not merely women's shyness, by understanding the negative attitude towards sex in Thai society, which is an obstacle to solving the problem of cervical cancer. Moreover, we have to promote the whole system of Thai women's reproductive health. Thai society has different standards for men and women when it comes to the topic of sex. While Thai society constrains women's learning about sex in all its aspects, men can be involved in sex without damaging their reputation or being considered as promiscuous. This attitude can even be found in the cervical cancer information that has been distributed. Most information states that the risk factors for cervical cancer include women having sexual intercourse at a young age, having many sex partners, or frequently changing partners. Only a few information sources state that **if a woman has sexual intercourse with a person who has had many sex partners or has had sexual experiences from a young age, she is also at risk of HPV infection.**

Social and cultural factors teach women to "be quiet" regarding the topic of sex. As a result, women are afraid to learn about and explore their body because they are afraid of becoming bad women. Consequently, almost all women find it hard to talk about or consult others about their sexual health problems. In addition, information from many meetings reveal that women believe that they do not have the right to make decisions regarding their own bodies. Some women have to go for internal check-ups without letting their husband know because if he knows he will comment that she likes to have other people see her private parts.



Women have been taught that a good woman should not talk about sex. This topic is for men. After she learns that sex is not a dirty topic and that women can also talk about it, she dares to go for an internal check-up. When the doctor asks about her condition, she can talk about it.

Uttaradit Provincial Public Health Office encourages women to go for cervical cancer screening. Women who do not want to have internal check-ups in their area due to shyness can go for a check-up in another locality. This is an easy way to solve the problem, but it can help immensely women who live in communities where the idea of women talking about the topic of sex is considered taboo. If public health officials understand this prejudice faced by women, they will understand the reason why women feel uncomfortable going for internal checkups and will also know that merely convincing women not to be shy is not enough given the entrenched nature of traditional values.

Solving this problem requires cooperation from everyone in society. There needs to be comprehensive sex education in both school and non-school systems. Information and services sensitive to women's sexual lifestyles and devoid of any bias should be provided. Moreover, health policies should consider women's differences and their changing sexual lifestyles. For example, due to changing social conditions, the age for free pap smears should be reduced. If women start having sexual relations at the age of 20 and get an HPV infection, they should receive internal check-ups 5-10 years after their first sexual intercourse. Therefore, setting the age for free pap smears at 35 may not be applicable for all female groups. In addition, HIV-infected women are at higher risk of cervical cancer than other women and may have to have a pap smear more often than every 5 years. Also, the free cervical cancer screening policy should be publicized so that women know about this right.



The government should quickly strengthen its public health system and understanding of women's reproductive health in order to deal effectively with medical businesses that have targeted women. First of all, the Thai FDA should monitor whether hospitals are providing correct and complete information to women to assist their decision making. In addition, institutes that train health professionals should quickly produce more doctors who can read pap smear results so that women do not have to wait so long for their test results that some die from cervical cancer by the time they receive the results.

**To counterbalance the commercial interests of doctors, medical institutions, and pharmaceutical companies, Thai public health organizations must place due emphasis on women's sexual and reproductive health. Not only will this help protect Thai women from cervical cancer, but it will result in their better holistic sexual and reproductive health.**

Statistics of cervical cancer patients 2001-2006

Year	No. of patients	Illness rate	No. of deaths	Death rate
2001	6,517	11.81	1,081	3.5
2002	8,124	14.80	1,258	4.0
2003	9,159	16.36	1,636	5.2
2004	9,774	17.56	1,573	5.0
2005	10,515	18.59	1,484	4.7
2006	12,584	22.10	1,639	5.2

**Source :** 2001-2006 Health Statistics, Health Data Center, Office of the Permanent Secretary, Ministry of Public Health



## Health Center Transfer to Local Administrative Organizations : Returning Health to People



On November 30, 2007 Thailand took the first step toward decentralization of health services. It began with a hand-over ceremony of health centers chaired by Minister of Public Health Dr. Mongkol Na Songkla, marked the beginning of the transfer of 22 health centers in 16 provinces to Tambon Administration Organizations (TAOs) and municipalities according to the Determining Plans and Process of Decentralization to Local Government Organizations Act B.E. 2542. It is, therefore, interesting to keep an eye on how the new relationship between health centers and local government organizations (LGOs) will work out. To help the process along, it may be necessary for us to give them support and provide solutions to problems to achieve the goals of decentralization.

### Decentralization as a mandate under the Constitution

Section 78 of the Constitution states that "the state shall decentralize power to localities for the purpose of independence and self-determination in local affairs, develop local economies, public utilities and facilities, and local information infrastructure equally throughout the country ... while exhibiting regard for the will of the people in that province." Furthermore, Section 284 allows all local government organizations to enjoy autonomy in laying down policies for their governance, administration, personnel administration, and finance, and to have specific powers and duties of their own. The statements above had bearing upon subordinate legislation, for instance, the Determining Plans and Process of Decentralization to Local Government Organization Act B.E. 2542. The Act brought in changes in localities, particularly in the hand-over of the state's duties to local organizations. Such duties are intended to boost localities' self-reliance and autonomous decision-making in public affairs and in improving public services.

To foster this decentralization, the Committee on Decentralization for Local Government Organization was then established and chaired by the Prime Minister. The Committee consisted of 36 members from related government agencies, local government





organizations, and experts. Their responsibilities were to manage an action plan for concrete decentralization to local government organizations, systemize public utility services, differential duties, and income, and to oversee standardization in the process of transferring functions from the central and provincial bureaucracies to local government organizations and provide budgetary provision and financial maintenance of local government organizations. The Committee's term will be for four years for well-prepared local organizations. For those unprepared for the transfer, it will be 10 years.

Finalized in 2001, the action plan for decentralization to local government organizations identifies the transfer of 245 jobs under 6 functions namely: 1) building infrastructure, 2) improving quality of life, 3) organizing communities and maintaining peace and order, 4) planning and promoting investment, commerce, and tourism, 5) managing and conserving of the environment and natural resources, and 6) fostering culture, tradition, and local wisdom. Since the plan's beginning, 50 state departments of 11 ministries have gotten involved. Since 2006, 180 jobs have been transferred to local governments, with 65 remaining to be transferred.

### **MOPH's mission to transfer functions**

In the action plan, decentralization begins with the establishment of an Area Health Board (AHB) for health center transfers. The transfer mainly focuses on network transfers (clusters). As stated in the action plan, the completion of universal health insurance (the 30-bath scheme) transfer was scheduled by 2003. Uncomplicated operations under the scheme would be directly transferred to LGOs. More complicated aspects would be handled by the AHB, which would then make the transfer to LGOs.

Public health functions to be transferred include medical care, health promotion, disease prevention, and rehabilitation. Every function encompasses health services for both individuals and families. Other



transferable duties in the community are also included, for example the improvement of the environment for disease prevention and health promotion. In addition, agencies under the Ministry of Public Health (MOPH) are required to perform as academic mentors working on quality control, health service inspection, and transfer preparation.

Transfers of public health services to LGOs mentioned above include 34 functions of 7 MOPH departments. However, by February 2005 only 7 functions<sup>4</sup> had been transferred. One of them was MOPH's subsidy for the development of healthy living habits. The other 6 transferred functions belonged to the Health Department, such as promoting healthy lifestyles, addressing the problem of underweight children, and procuring clean water. With all transferred, the budget of 1.6 billion baht was also released. However, the transfer of health center networks under AHB's responsibility has not been proceeding in a timely fashion since it has not been considered an urgent matter given of the issues of health insurance reformation under the Universal Health Care Coverage scheme and the reformation of the bureaucratic system in accordance with the Amending Ministry, Sub-Ministry and Department Act B.E. 2545.

### **Reaching the transfer goals**

Between the end of 2005 and early 2006, the process and guidelines for transferring health centers to LGOs became more explicit. Brainstorming meetings on decentralization consideration were organized 4 times with the involvement of concerned parties. Results after the meetings were proposed to the Decentralization to Local Government Organizations Committee for consideration. On March 15, 2006, the Committee approved transfer methods that were based on localities' preparedness, appropriations, and situation. They are :

#### **(1) Fragmentation transfer**

This transfer is meant for the handover of health service centers to LGOs at all levels, for example



the transfer of a health center to a Tambon Administration Organization (TAO) and the transfer of hospitals to municipalities or provincial administration organizations.

## (2) Network transfer (cluster of health services at all levels)

Network transfer is the inclusion of local health centers and hospitals as a network to be transferred, after which this network will be transferred to the LGO or AHB. This transfer allows for LGO administration.

## (3) Establishment of autonomous public organizations

Autonomous public organizations involve LGOs in their administration. The organization can be comprised of either health service centers or a health service network. The establishment of AHB as a public organization is also possible.

## (4) Establishment of service delivery units (SDUs)

Each hospital can be a service delivery unit (SDU) under the Health Facility Authority (or Hospital Authority), which is also a public organization under MOPH. The SDU allows the LGO participate in its administration.

Along with the emphasis on a flexible, dynamic, and participatory system, the transfer process has 4 categories intended to produce the most benefits for people. These categories are: **1) the LGO as the buyer of health services, 2) LGO collaboration with MOPH and health centers/local hospitals in the transfer of administration, 3) partial administration of transfer of functions by the LGO, and 4) LGO administration of transfers by itself.**

At the end of 2006, MOPH established the Committee on Mechanism, Regulation Revision and Evaluation for Preparation of Local Government Organizations, chaired by Dr. Suwit Wibulpolprasert. The Committee included three sub-committees, whose job was to collaborate in drafting guidelines for the transfer of public health functions to LGOs. A research plan to identify lessons learned after the transfers was also drafted. To draft the guidelines, the Committees conducted pretests in 10 areas, which were followed by meetings to elicit opinions in order to revise as necessary to produce the most practical guidelines. Guidelines covered the transfer process itself, mechanisms for supervision of transfers, supporting procedures for transfers, working procedures, transfers of property and personnel, and mechanisms for evaluation after transfers had been completed.



## First batch transferred

The first batch of transfers started shortly after the draft guidelines were finalized at the start of 2007. During this first year, despite the fact that there were a total of 9,765 health centers at the sub-district/village level, only health centers under the TAO were selected as pilot health centers ready for the transfer. These selected health centers had to be qualified in terms of good governance, good public administration, and participation in the Project on Community Health Funding under the National Health Security Office. They also had to have experience in public health management covering administration and revenue allocation. Furthermore, people's opinions regarding the readiness of their local government organization were also taken into consideration. This meant that 50 percent of staff of these health centers should be voluntarily transferred.

At the local level, the Committee on the Promotion of Public Health Function Transfer to Local Government Organizations at the Province Level, appointed on July 20, 2007, got involved in transfer activities. Its duties were to lay down policies on transfer administration to LGOs, evaluate readiness of LGOs, establish criteria for services provided by health centers, and evaluate these services after the transfer.

Pilot health centers that passed the above criteria consisted of 35 health centers in municipalities in 23 provinces. After two years of continuous preparation, 22 health centers in 16 provinces were finally prepared enough for the transfer of functions, budget, properties, and personnel to their LGOs (See list in the Table, p.85). Four other provinces continued to prepare themselves, namely, Surat Thani, Chiangmai, Chumpon, and Krabi. Suphan Buri, Nakhon Ratchasima, and Kalasin provinces were unwilling to transfer health services.



On November 30, 2007, Minister of Public Health Dr. Mongkol Na Songkla in the signing ceremony for the Transfer of Health Center's Function to Local Government Organizations stated that *"the agency under MOPH overseeing health centers cannot know how well these centers work, while the local government organizations are closer and can better understand any problems. The transfer of authority to the grassroots level is to foster participation in the operation. There are over 100 health centers volunteering to be transferred to local government organizations. However, local government organizations must be selected on the basis of their strength, willingness to accept transfers, and other required qualifications. Also, health centers and people must be strong. Those 35 health centers have met these requirements"*

### Health centers and TAOs in their newly wed life

Along with great changes in decentralization to localities, there appeared a news item that created joy and generated smiles. It was a report of the "wedding" of two local organizations. The "wedding" began with a procession bearing matrimonial gifts by Ban Prok TAO, or the "groom," in Samut Songkhram province, to meet Ban Prok Health Center, or the "bride," and propose "marriage." The "dowry" given to the Health Center amounted to 1.3 million baht and included a bucket of Thai rolled wafers. Approximately one hundred eyewitnesses walked along with the procession. The "wedding" ceremony, which began with the "marriage proposal," proceeded with the registration of the "marriage" (that is, the ritual handover of the health center). The "bride" was represented by Samut Songkhram Provincial Chief Medical Officer Veerachai Peetawan. The Provincial Governor, Second Lieutenant Opas Sawetmanee, presided at the wedding as the witness.

On behalf of the "groom," Ban Prok TAO Administer



Chana Intarachote provided background explanation for the "wedding" by pointing out that *"as the Ministry of Public Health must hand over health centers to TAOs, the Decentralization Committee has agreed on the transfer of 22 health centers in 16 provinces nationwide and Samut Songkhram, or Ban Prok, is one of these 16 provinces. However, the transfer should be a bit colorful. I therefore simulated the wedding to induce merriment and a festive spirit. The dowry comes from the budget for dental center construction and public health promotion projects. I also donated a bucket of rolled wafers for free, to replace the 150-baht-weight of gold"*

### Questions concerning health center transfers

MOPH has a lot of questions to answer concerning these great changes. For example, the question about the law on medical profession on health center personnel is one that requires an answer. Section 26 of the Medical Profession Act B.E. 2525 forbids any health center staff member who has a health personnel certificate or public health officer certificate or public health certificate or nurses aid and midwifery certificate from performing any procedures reserved for the medical profession. Contrary to the Ministry of Public Health's regulation, health center personnel are allowed to provide certain fundamental health procedures, for example, dispensing medicine and performing antivenin injections, and urinary catheterization.

To clear up any confusion brought about by conflicting regulations, the Law Advisory Committee, chaired by Dr. Wichai Chokewiwat, and other committee members, namely, Dr. Witoon Ungpraphan, a representative from the Council of State, a representative from the Office of the Decentralization to Local Government Organization, representatives from the legal profession and the Office of the Permanent Secretary of the Public Health Ministry requested that MOPH issue a Ministerial Announcement.





In accordance with Section 24 (4) of the Medical Profession Act, such an announcement was drafted, intending to identify Tambon Administration Organizations as the agencies able to assign certain personnel to perform certain medical procedures under supervision of the official of the transferred health center. This official could be the provincial chief medical officer or the director of a regional, general, or community hospital. Benefits are also a concern for staff who are transferred to a LGO. These people will be granted at least same benefits as before, in terms of career security, wages, welfare, and other benefits. They are eligible for membership in the Government Pension Fund, the Funeral Welfare Service, and the Saving Co-Operative Limited of the Ministry of Public Health. Moreover, they will also receive an annual bonus and reimbursement for health treatments, although these benefits will come from the local financial administration office.

**Another issue has to do with local government organizations, particularly those that have not prepared themselves for community public health responsibilities and burdens. These organizations need to have professional expertise in specific operations, for instance, the management of epidemic and severe transmitted diseases and patient referrals to hospital under other local government organizations. The concern has to do with capacity building in health centers in terms of new technology, drug quality, medicine supplies, and politics or power relations among localities. All such issues and problems, if unresolved, could cause the transfer irresolution and worries among health centers, which are also provided by MOPH an opportunity to return to their previous affiliations.**



List of health centers transferred to local government organizations

Province	TAO (Tambon Admin. Organization)	Health Centers
Kamphaengphet	Wang Khaem TAO	Wang Khaem and Bor Thong
Tak	Wang Man TAO	Wang Man and Wang Whai
Lampang	Lampang Luang TAO	Ban Lampang Luang
Uthai Thani	Had Tanong TAO	Had Tanong
Phra Nakhon Sri Ayutthaya	Bang Nom Ko TAO	Bang Nom Ko
Lopburi	Khao Sam Yod municipal	Khao Sam Yod
Kanchanaburi	Wang Sala TAO	Wang Sala
Chanthaburi	Koh Kwang TAO	Koh Kwang
Phetchaburi	Ban Mor TAO	Ban Mor
Pathum Thani	Bueng Yee Tho municipality	Bueng Yee Tho
Buriram	Nong Waeng municipality	Rhong Ta Yao and Ban Nong Wha
Ratchaburi	Dan Tap Tako TAO	Ban Kroke Sing Khon
	Ban Kong municipality	Ban Kong
Samut Songkhram	Ban Prok TAO	Ban Prok
Nakhon Sri Thammarat	Nakhon Sri Thammarat TAO	Ban Sala Bang Poo and Pak Poon
Udon Thani	Udon Thani TAO	Na Poo
Sra Kaew	Klong Hin Poon TAO	Na Kan Hug and Klong Hin Poon
	Pra Plueng TAO	Pra Plueng



# Four Notable Thai Contributions to the Health of Thais

## UNESCO Rewarded a Young Thai Scientist for Solutions to Plant and Animal Extinction

Anuttara Natalang, a young researcher from the National Center for Genetic Engineering and Biotechnology, was among ten scientists awarded the "2007 UNESCO Man and Biosphere Program Young Scientist's Award." Her study, *"The Relationship between Plants and Animals under Climate Change,"* was conducted in Mor Sing To area of Khao Yai National Park.

Finding ways to cope with weather changes caused by global warming was the objective of this research. The assumption was that some plants and animals would become extinct regardless of whether the climate got warmer or cooler. To collect data, the researcher measured the trunk of every tree in the research area. She also studied seed breeding to examine the distance of growth radius of the tree's main trunk. Data gained from this technique facilitated the comparison with the dispersal of species after a given change in weather occurred. In this research, the study of behaviors of gibbons and birds with re-productive potential was also included. The study revealed how gibbon's behaviors and plant propagation related to each other.

These findings will pave the way for further studies by researchers in the fields of biology, ecology, and the environment in order to prevent extinctions in the future.



## Health Insurance Scheme Granted Patients with Kidney Disease the Right to Kidney Dialysis and Transplantation Free of Charge

Kidney disease is a chronic disease that not only causes patient suffering but also involves high costs and the need for long-term treatment. Poor patients and those who lack access to treatment often die as a result. In Thailand, there are approximately 15,000 patients in the final stage of renal disease. But these sufferers still cannot access all the treatment they need due to its high cost (at 2,000 baht per treatment). Some have to spend 4,000 to 6,000 baht per month for life-long treatment. This places great financial burdens on a lot of patients, and as a result many die 4 to 5 months after being diagnosed.

However, in 2007 Thai public health benefits were extended to patients suffering from kidney disease. A Cabinet Resolution on October 30, 2007 extended coverage under the Universal Health Coverage Scheme and established free services for kidney dialysis, hemodialysis, and transplantation for all patients with kidney disease and hold their gold cards. Pilot services in 23 hospitals nationwide were launched on January 1, 2008, and expansion of services throughout the country is scheduled by October 1, 2008.

Once covered by these services, kidney disease patients can access better care and treatment and thus extend their lives. Their families will be spared financial burdens from having to pay for kidney dialysis and hemodialysis every month. Furthermore, health staff from health centers/hospitals near patients' homes can educate patients and their relatives about self-peritoneal dialysis at home. This home care is supplemented by doctor visits, thus saving patients the time and trouble involved in visiting the hospital.



## Thai People Developed the "Strip Test for Alpha Thalassemia Detection," the World's First Successful Detection Method for thalassemia

Developed by a group of researchers from the Biomedical Technology Research Unit, Chiang Mai University, this "IC Strip Test for Alpha Thalassemia Detection" is credited as the world's first rapid and accurate thalassemia detection device. Taking only 2 minutes, the test provides nearly 100-percent accuracy and reduces the steps involved and thus simplifies detection. The test kit is set at a reasonable price and can be used with large numbers of people.

Thalassemia is a genetic transmitted disease and a genetic disorder that produces abnormal hemoglobin. Its symptoms, for example, pale skin, abdominal distention, and retarded growth, normally occur from young ages.

To control the disease, doctors recommend a blood test for spouses before having a child. The test is meant to detect the recessive gene that causes the condition. Generally, the person carrying the gene is healthy and has no physically abnormalities. However, the person's child will have thalassemia. The Level of severity of the disease ranges from fetal death in utero to growth retardation in babies who survive and who will need long-term treatment for their physical disorders until they grow up.

According to the Ministry of Public Health, there is a huge number of Thai people carrying the thalassemia gene, as high as 30- 40 percent or approximately 18–24 million people. That is to say, 600,000 Thai people nationwide require blood transfusions for this condition and 34 babies are born with thalassemia every day. The government spends more than 5 billion baht per year for the treatment of thalassemia. In addition to this, the detection of thalassemia has traditionally been complicated and costly. It requires laboratories, takes a long time to complete the analysis, and appropriate detection equipment adequate for a large population has been lacking.

To remedy these problems, researchers at the Biomedical Technology Research Unit, Chiang Mai University, led by Dr. Wachara Kasinrerk, in collaboration with I-Med Laboratory



Company, Ltd., developed the "immunochromatographic strip test." The test takes only 2 minutes, is 99 percent accurate, and can be read by the naked eye.

For people with thalassemia, this innovation can treat their disorder as well as improve their quality of life, in addition to preventing transmission of the condition to one's children. This new detection device will not only reduce government expenditures on thalassemia, but can also be a source of income from export to other countries.



## Thai Researchers Succeeded in Developing a "Biosensor," the World's First Bird Flu Detector

In 2004, Thailand was among countries heavily hit by avian influenza. Years after, when people had received correct information and had become familiar with the disease, there were no deaths from the flu and people's fears of the flu subsided.

Despite the perception of a lessened threat, research to cope with the flu continued, especially with regard to preventing possible mutations of the virus that could result in human-to-human transmission. One result of such research was a biosensor for detecting avian influenza. The detector was developed by Prof. Dr. Tararaj Dharakul of the Faculty of Medicine, Siriraj Hospital.

The sensor analyzes reactants including enzymes, antibiotic substances, DNA, and microbes with electrical converters (light and electrons).

This biosensor is different from the detector developed during the first outbreaks of bird flu in that it can produce more accurate results in only 15 minutes. Additionally, the biosensor makes detection feasible in infected animals showing no symptoms of avian influenza. The inventor has agreed to transfer this technology to the Innova Biotechnology Company for commercial production and for sale to both local and foreign agencies responsible for detecting the virus.



Global Warming

# **Global Warming**

**A Real Threat  
from Humans**

Global Warming

Global Warming

# Global Warming

## A Real Threat from Humans

If you think that the warmer weather these days is a purely natural phenomenon and has nothing to do with what people do, you should probably think again. And if you believe that heavy storms carrying torrential rain from the open seas, causing both landslides and raging floods that have killed large numbers of people, are normal weather, you need to rethink that as well. These disasters that we presume to be "normal weather" are becoming more and more serious and far from normal.

What we have experienced for several decades are warmer and longer summers, while the winter gets warmer and shorter. In some places, there is no winter at all, so that sweaters are kept locked away in closets. Rainy seasons have changed too. Torrential rain is more frequent, and severe flash floods have become more common even in the areas where the total amount of rainwater and the number of rainy days have tended to decrease.

What some of us may believe now about the normality of such events seem to be contradicted by the piles of evidence from scientists telling us that the earth currently has a "fever," which causes the temperature to keep rising. Scientists define this phenomenon as "climate change." Its symptoms are more and more severe storms, flash floods, drought, unrelenting heat waves, and epidemics. These disasters have become more frequent, destroying assets and taking many more lives when compared to the recent past.

Sadly, this threatening phenomenon of nature has been caused by us, the earth dwellers. We have severely exploited nature in recent centuries, starting from the industrial revolution and speeding up at an ever-increasing pace in the last 50-60 years.

This might be the first time in the long history of the earth that it is fighting back. Human beings are paying an extremely high price for their selfish and reckless exploitation of Mother Earth.





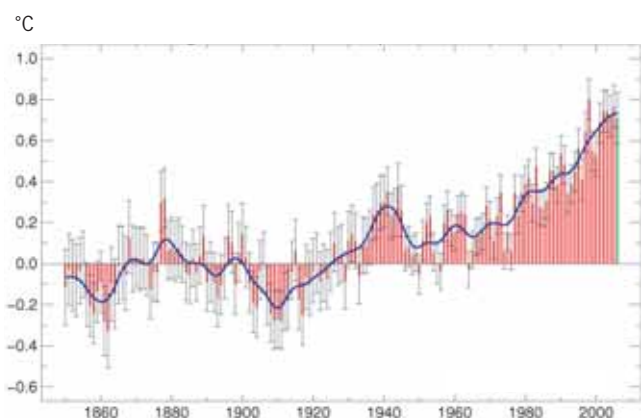
## Is the Earth Really Warming?

“A wide range of hard evidence collected by scientists concludes that the earth currently has a fever, and the fever is rising”

Evidence from leading scientists and organizations monitoring climate change has revealed that the earth's temperature has been rising. Before the industrial revolution (beginning approximately in 1750), the global average temperature was less than 14 degrees Celsius. Currently, it has increased to nearly 15 degrees.

During the past 150 years (1850-2005), the planet's temperature has risen by 0.7 degrees Celsius. (This comparison is based on the average temperatures between 1861-1900.)

From the laymen's point of view, an increase of 0.7 degrees Celsius might seem harmless and to be no cause for concern. Actually, this is an average temperature taken over the last 150 years. Scientists sampled the variable temperatures from every season, summed them up, and calculated the mean value. However, the most rapid increase of the earth's temperature has been noted especially over the past 50 years or so. And when we look closely at this 50-year span, it is the past two decades that have had the highest average temperatures.



Average global temperature from 1850-2005 compared to mean temperature taken of the period between 1861 and 1900. Note that the temperature rose steadily since 1900, and the increase has been faster since 1950.

Source: Stern, N. 2006. Stern Review on the Economics of Climate Change.  
[http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

This evidence suggests that the earth's temperature will most likely continue to rise in the future unless the causes of warming temperature are controlled.

Scientists are well aware that what seems to be a small increase in the earth's temperatures can cause huge changes in the global climate. It is the effects of such climate change on the ecosystem that they are most concerned about.

To understand how this seemingly small temperature change can have great effects, we can compare our planet to the human body. The average normal human body temperature is 37.0 degrees Celsius, or 98.6 degrees Fahrenheit. If it increases even by a small margin such as 0.5 or 1.0 degree Celsius, a person is said to have a fever. The same goes for our planet. A wide range of hard evidence collected by scientists concludes that the earth, too, has a fever, and the fever is rising.

The symptoms of the earth's fever can easily be seen. The polar ice caps are melting, plants and animals are migrating, rain patterns are shifting, droughts are becoming both more widespread and more frequent, the sea level is rising, etc. Scientists believe that this phenomenon will be even worse in the future. For all of us, life will be harder because the environment has been changed in ways that they are less predictable which put our lives at higher risks.

**The hard evidence and scientist's theories on climate change are telling us that global warming is a real threat to human survival. If the problem continues to be neglected, we will soon be facing the biggest catastrophe in human history.**

# What's Behind the Warmer Temperatures?



Scientists have answers for us.

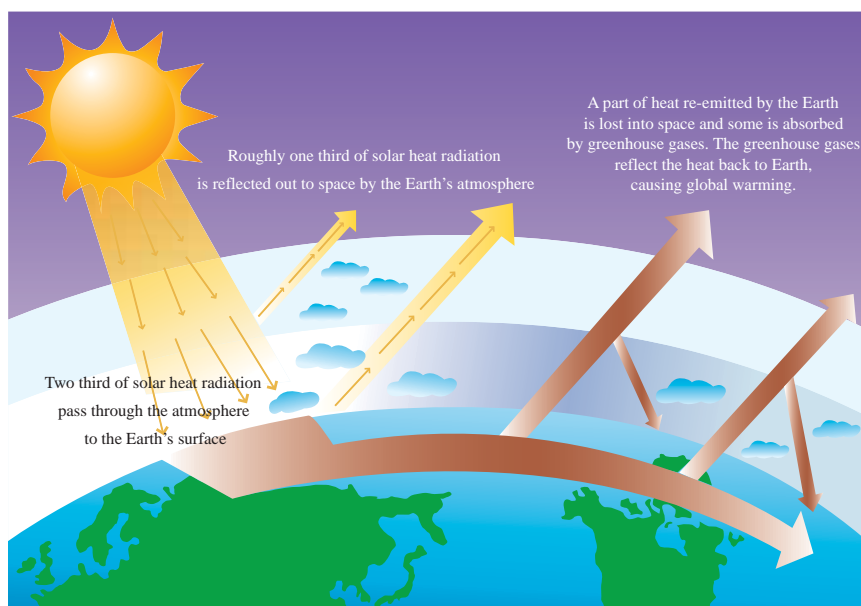
Many factors account for the earth's rising temperatures. The most important one is solar radiation, which comes in the form of a short (ultraviolet) wave length. Another factor is the earth's surfaces that have different capacity to absorb heat from solar radiation. The last factor is the level of greenhouse gases and aerosols - tiny particles suspended in the air.

Approximately one-third of all incoming radiation is reflected back into space before reaching the earth. Of all the heat that reaches the earth, two-thirds is absorbed by the earth's surfaces while one-third is reflected back into the atmosphere in the form of infrared (long wave) radiation. Normally areas covered with ice or snow reflect the heat better than other surfaces, and the ocean has a better scattering quality than does the land.

The heat thus reflected from the earth is radiated in all directions by the greenhouse gases accumulated in our atmosphere. Part of the heat disappears into the higher level atmosphere but

the other part is radiated back to the earth's surfaces. This mechanism keeps the earth's temperature to be warm and rather stable. Without it the earth's temperature will be too cold and not suitable for living. On the other hand, if greenhouse gases continue to proliferate, the heat cannot be re-emitted through our atmosphere, and the result will be that the earth's temperature will rise dramatically. The whole phenomenon is known as the "greenhouse effect." And this is the cause of the global warming that threatens our environment.

Scientific evidence we have so far points to one thing, namely, that the earth's re-emission mechanism is failing to work properly. We can see more and more clearly that the average global temperature has been going up. Scientists have found that greenhouse gases are responsible for this. Greenhouse gases that have increased so rapidly from human activities since the industrial revolution have blocked the planet's system of scattering excessive amounts of heat from its atmosphere. The higher the concentration of those gases, the more the temperature increases.



Greenhouse effect

## Greenhouse Gases : A Side Effect of Unbalanced Development

What we refer to as greenhouse gases consist of many gases which contribute to global warming. The Kyoto Protocol, which was adopted in 1997, identifies six important greenhouse gases; carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), perfluorocarbons (PFC), hydrofluorocarbons (HFC) and sulfur hexafluoride (SF<sub>6</sub>). However, most scientists pay more attention especially to the first three gases as they contribute the most to global warming. Among these three important gases, carbon dioxide is found to play the most important part.

Since the industrial revolution (around 1750), concentrations of greenhouse gases in the atmosphere have increased dramatically. Over 650,000 years before the industrial revolution, greenhouse gases of all kinds were estimated to be at the level equivalent to 430 ppm (parts per million of air molecules) of carbon dioxide (CO<sub>2</sub>e). Carbon dioxide alone accounted for 280 ppm. Report of the World Meteorological Organization (WMO) in 2006 indicated that carbon dioxide had been increased 101.2 ppm to 381.2 ppm.



### Greenhouse gases

There are many kinds of greenhouse gases. The most important ones are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O). Among these three, carbon dioxide has the most severe effects because it has caused 63% of global warming. Ten thousand years before the industrial revolution, scientists estimate that there were 280 ppm of carbon dioxide in the earth's atmosphere (280 parts of CO<sub>2</sub> per million air molecules). Since the industrial revolution, the amount of carbon dioxide has increased to 381.2 ppm (or a 36% surge). The most important factor in this increase is fossil fuel burning. Fifty-five percent of carbon dioxide thus generated is trapped in the atmosphere. The other 45% is absorbed by oceans and plants.

Methane accounts for 18.6% of earth's rising temperature. The chemical composition of this gas affects the atmosphere and water evaporation at the same time. About 40% of methane is generated from natural processes and 60% from our activities—fossil fuel burning, agricultural activities, decomposition of animal waste and carcasses, and burning of biomass. In pre-industrial times, there were 700 ppb of methane in the atmosphere (700 parts of CH<sub>4</sub> per billion air molecules). That amount had increased to 1,782 ppb by 2006. In the past ten years, methane has been increasing at a rate of 2.4 ppb per year.

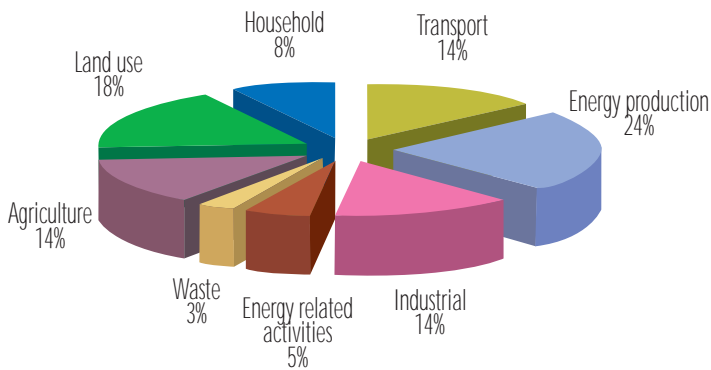
Nitrous oxide accounts for 6.2% of global warming. Before the industrial revolution, there were 270 ppb of nitrous oxide; by 2006 the amount had increased to 320 ppb. It has surged 0.76 ppb a year during the past ten years.

Source: (1) Piroje Wongwuthiwat, 2007, "Stopping global warming: the common mission of mankind." Bangkok Bank Newsletter, 2007.

(2) WMO Greenhouse Gas Bulletin, 3: 23, 2007  
<http://www.wmo.ch/pages/prog/arep/gaw/ghg/documents/ghg-bulletin-3.pdf>

Scientific studies have revealed that the largest part of the increasing greenhouse gases is caused by human activities. Significantly contributing to this increase is burning of fossil fuel in various activities, such as power generation, manufacturing, and transportation. These activities produce roughly half of the greenhouse gases. Meanwhile, other human activities such as cutting and burning forests, land use change, agricultural practice, energy consumption in households, and waste management also add greenhouse gases to the atmosphere. In short, every human activity causes these gases, the amount of which depends on the types and intensity of each activity.

**Greenhouse Gases Emitted from Different Sources, 2000**



**Source:** Stern, N. 2006. Stern Review on the Economics of Climate Change. [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

**Why did greenhouse gases increase especially after industrial revolution?** Industrial revolution has brought, among other things, fast economic growth and rapid population increase. These trigger spiraling demands for food and natural resources. Patterns of our production and consumption have shifted rapidly. Uses of fossil fuel have expanded tremendously not only in industrial production but also in transportation, household activities and agriculture. As a result, greenhouse gases steadily increase.

These facts tell us that the more we develop our economy based on industrialization, the more greenhouse gases we release into the atmosphere. Consequently, we are facing a more severe global warming problem.

**Amount of carbon dioxide released from burning fossil fuel, by countries, 2004**

(units: million metric tons)

country	rank	amount released in 2004	increase from 1994	% increase from 1994
USA	1	5,912	674	13
China	2	4,707	1911	68
Russia	3	1,685	-5	0
Japan	4	1,262	174	16
India	5	1,113	384	53
Germany	6	862	-5	-1
Canada	7	588	95	19
UK	8	580	12	2
South Korea	9	497	143	40
Italy	10	485	85	21
South Africa	11	430	86	25
France	12	406	46	13
Iran	13	402	153	62
Australia	14	386	107	38
Mexico	15	385	52	15
Saudi Arabia	16	365	127	53
Ukraine	17	364	-76	-17
Spain	18	362	128	55
Brazil	19	337	69	26
Indonesia	20	308	99	48
Poland	21	288	-32	-10
Netherlands	22	267	46	21
Thailand	23	219	92	72
Turkey	24	212	73	53
Kazakhstan	25	172	18	12
Malaysia	26	154	65	73
Belgium	27	148	20	16
Egypt	28	147	50	51
Venezuela	29	143	24	20
Argentina	30	142	27	23
Arab Emirates	31	141	47	51
Singapore	32	129	48	60
Uzbekistan	33	121	23	24
Czech republic	34	112	-7	-6
Pakistan	35	106	22	26
Greece	36	106	22	26
Romania	37	95	-21	-18
Nigeria	38	94	-1	-1
Algeria	39	77	-7	-8
Philippines	40	75	22	42
Austria	41	70	13	23
Israel	42	66	18	38
Portugal	43	63	17	38
Chile	44	62	26	70
Finland	45	61	4	7
Sweden	46	59	0	0
Vietnam	47	57	30	108
Hungary	48	56	-2	-4
Denmark	49	56	-9	-13
Belarus	50	55	-10	-16
Columbia	51	55	2	4
Syria	52	53	12	29
Norway	53	51	15	43
Bulgaria	54	47	-3	-7
Switzerland	55	45	3	6
Ireland	56	42	13	46
Slovakia	57	38	-2	-5
Bangladesh	58	38	19	97
New Zealand	59	38	7	22
Azerbaijan	60	37	-9	-20
Trinidad and Tobago	61	33	11	50
Morocco	62	229	2	7
Peru	63	27	4	19
Oman	64	23	8	56
Bahrain	65	23	7	44
Ecuador	66	23	5	27
Croatia	67	22	4	23
Tunisia	68	21	5	30
Dominican	69	20	11	107
Angola	70	20	12	169

**Source:** Environment Department, The World Bank. 2007.



## How Long Will the Global Warming Last ?

The answers from scientists today may not sound so pleasant to all of us. Existing evidences point to the inconvenient truth that the earth will get warmer and it will remain so with no end in sight.

If we continue to release large quantity of greenhouse gases in the years to come, it is certain that surface and atmospheric temperatures will continue to increase. This is so because it takes a long time for the greenhouses gasses to be absorbed by the soil, water or trees. Even if we were to completely stop releasing the gases today (practically not possible, though), global warming will continue for a long time.

The Intergovernmental Panel on Climate Change (IPCC), a technical body set up by the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP), has made a projection of climate change based on current scientific information. The projection shows that the amount of greenhouse gases we have presently is large enough to increase the earth's average temperature by 0.2 degree Celsius every ten years. This can continue for many decades to come. But if the greenhouse gases are released at a faster rate, the temperature will rise even faster which can cause further climate change up to the next century.

Projections by some scientists have revealed that by the end of this century the earth's average temperature will rise between 1.8 to 4.0 degrees Celsius or higher when compared to the pre-industrial revolution level.

Even if there is no increase in greenhouse gas emissions, the trend of increasing temperatures cannot be easily halted within a short period of time. This is due to the "inertia" of the thermal radiation emission in the global climate system that has built up over quite a long time. This can be explained in two ways. First, most of the greenhouse gases do not simply "go away." For example, carbon dioxide lasts 120 years in the

### The Amount of Greenhouse Gases Released by Thais

When compared to that released by developed countries or big developing countries such as China and India, the amount of greenhouse gases released by Thailand is still relatively low. Statistics from the World Bank in 2004 ranks Thailand as 23<sup>rd</sup> in terms of greenhouse gas emissions (the top five were USA, China, Russia, Japan, and India).

In 1994, Thailand released 270 million tons of carbon dioxide equivalents. Ten years later, the number had increased to 325 million tons, or up by 20%. Activities releasing most gases were those related to fuel—developing, producing, or burning fuel for a variety of uses. In 1994 greenhouse gases generated from these activities amounted to 48% of the total amount; they surged into 59% in 2003. Currently, Thailand, as a developing country, is still exempt from the emission reduction program under the Kyoto Protocol. Nevertheless, Thailand has to cooperate with the rest of the world to help preserve the earth from warming up.

#### Amount of greenhouse gases released from various sectors of Thailand 1994 and 2003

(unit: million tons Carbon Dioxide equivalents)

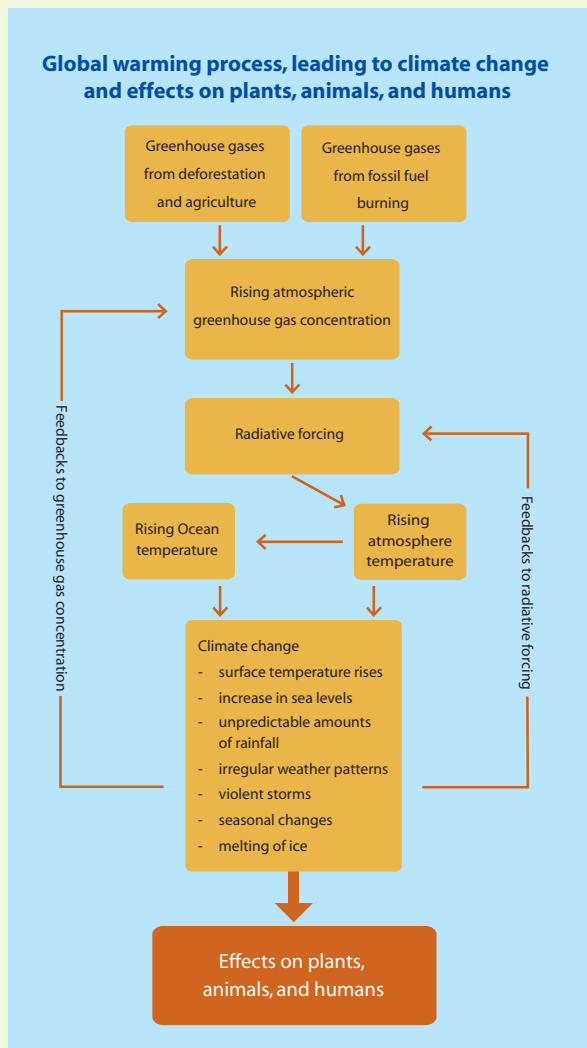
Sector	1994	2003	Increase (%)
Energy	129.87	193.20	48.7
Agriculture	77.39	82.78	7.0
Waste	0.74	26.87	3531.1
Forest and Land Use	61.85	22.61	-63.4
<b>Total</b>	<b>269.85</b>	<b>325.46</b>	<b>20.6</b>

#### % of Greenhouse Gases from Energy Sector

Acquisition and production	35.1	39.8	13.4
Fuel use in industry	23.9	19.6	-18.0*
Fuel use in transport	30.7	27.1	-11.7*
Fuel use in agriculture	3.7	5.4	45.9
Fuel use in Commerce	0.7	1.1	57.1
Fuel use in Household	2.7	2.1	-22.2*
Other use (Fugitive emission)	3.1	5.0	61.3

Source: National Committee for Strategy on Management of Climate Change, 2007.

Note: \* The decrease of emissions in industrial, transportation, and household sectors might stem from the difference of data sources; 1994 data is based on the Ministry of Natural Resources and Environment's report in 2000, but the data of 2003 came from ERM Siam Co. Ltd reported in 2005.



Source: Adapted from Stern, N. 2006.



the level of greenhouse gases could be equivalent to 550 ppm of carbon dioxide (CO<sub>2</sub>e). Such a level is severe enough to raise global temperatures by more than 2°C.

Facts, however, indicate that greenhouse gases are emitted at a high rate, which may cause greenhouse gases to reach 550 ppm. CO<sub>2</sub>e sooner than expected. Some scientists predict the 550-ppm CO<sub>2</sub>e level to be reached within the next 30 years.

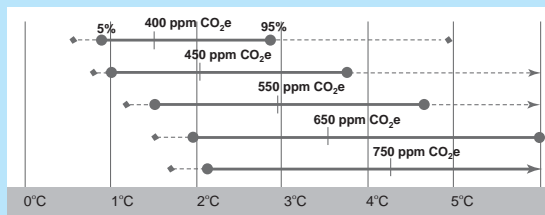
atmosphere while methane lasts 11 years and nitrous oxide 13 years. Second, given their gigantic sizes and the fact that they have been heated up for a long time, the earth and the atmosphere around it cannot simply be cooled down in a short while, even if the rate of temperature increase is halted altogether. The accumulated thermal level will endure for quite a while before it starts to drop.

Report of the 'Stern Review' on the Economics and Climate Change prepared by a team of experts under the support of the UK government, reveals that even if the greenhouse gas emission does not increase from the current level, within the next 40 years all types of greenhouse gases will nevertheless double from what they were before the industrial revolution. By that time

The Stern Review concluded that if the world cannot successfully reduce greenhouse gas emissions and the emission level remains as it is today, within the next 100 years the level of greenhouse gases might triple from the pre-industrial revolution levels. If such estimation is correct, there is a 50% chance that the global surface temperature may rise by more than 5°C within this century. And that may place human beings in incalculable jeopardy.

In the past, it took more than 10,000 years, since the last Ice Age (Late Pleistocene) until now, before the global surface temperature rose as much as 5°C. But from now on, it may take just 100 years to drive the global surface temperature to rise another 5°C. Such a great difference has been caused by human activities.

### Expected Temperature Changes in Relation to the Rising of Emitted Greenhouse Gases



The figure shows the level of temperature that might increase in the future (in degrees Celsius shown at the bottom) if the amount of greenhouse gases stops at a certain level, such as 400 ppm ...750 ppm. Thicker lines are ranges of temperature varying by the level of greenhouse gases. The figures 5%-95% are ranges of level of statistical confidence. The vertical black line is the 50<sup>th</sup> percentile point, which is the most likely spot. The dotted lines indicate the least likely spot.

From the figure, we can see (with a degree of confidence 5-95%) that if the amount of greenhouse gases stops at 400 ppm, the earth's temperature might increase by 1-3 degrees Celsius (compared to the time before the Industrial Revolution). The rise in temperature is most likely to be 1.5 degrees Celsius. And if the level of greenhouse gases stops at 550 ppm, the temperature increase should be between 1.5 and 4.7 degrees. The most likely increase would be 3 degrees. We can use the same technique to forecast the rising level of the earth's temperature when the greenhouse gases reach 650 ppm and 750 ppm.

Source: Stern, N. 2006. Stern Review on the Economics of Climate Change. [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)

## Global Warming: Climate Changes

Scientific evidence confirms that global warming causes the world's climate to change in many ways. Observations over the past 50 years together with computer simulations of changes in the climate indicate that such changes will be more frequent and more severe as time goes on. The question then arises as to consequences of these changes.

Following are scenarios that most scientists agree will accompany climate changes brought about by global warming.

### Warmer Temperatures

Global surface temperatures before 1900 did not change at such an accelerated rate as they are today. Most of the changes were caused by natural fluctuations more than human activities. However, by the first half of the 20<sup>th</sup> century, when the average temperature rose approximately 0.35°C, temperature changes became more noticeable. Moreover, since then, particularly since 1970, average temperatures have risen 0.55°C. Over the past 100 years, there were 12 years when the world was extraordinarily warm, 11 years of which occurred in the past 2 decades with 1998 and 2005 being years when the temperatures rose to new records. All this indicates that the world has been getting warmer.

As for Thailand, a report on Thailand's climate changes shows that the average temperatures rose about 1°C over the past 40 years. Moreover, the number of warm days in a year increased while the number of cool days in winter decreased in every region of the country. The same phenomenon took place all over Southeast Asia. Such rises are believed to affect monsoon and rain patterns as well as droughts in the region.

“If the world cannot successfully reduce greenhouse gas emissions and the emission level remains as it is today, within the next 100 years the level of greenhouse gases might triple from the pre-industrial revolution levels”

## Melting Glaciers

Not counting those at the Antarctica and Greenland, 10% of the earth's surface and 7% of ocean areas are covered with glaciers all year long. Meanwhile, 49% of the Arctic Circle is covered with snow in winter. However, global warming is causing these numbers to drop. Nowadays, ice and snow in these areas are melting more and more. Data from observations made since 1980 show that the volume of ice and snow in many areas of the world has been steadily decreasing and, especially over the past decade, this decrease has been accelerating.

Evidence indicates that mountain glaciers and ice sheets are melting at rapid rates as temperatures on earth's surface and atmosphere continue to rise. In addition, melting of snow in the spring begins earlier than before while the areas covered with ice around the Arctic Circle diminish every season. In winter, the length of time that rivers and lakes are frozen tends to be shorter while the gigantic ice sheets at the Antarctica and Greenland grow thinner and keep receding.

Melting glaciers directly affect the water volume of the world's principal rivers, which deliver crucial nourishment to human lives and the nature. At first, the run off from these rapidly melting glaciers causes floods in the low-lying areas along rivers that have their sources in these glaciers. But in the longer term, when the amount of ice and snow on high mountains diminishes, the volume of water feeding these rivers is also reduced. Such phenomena pose serious threats to the way of life of riverine communities and other populations dependent on such rivers.

The Himalayas are an obvious example. The world's highest mountain range is the source of Asia's seven principal rivers (the Indus in Pakistan, the Ganges in India, the Brahmaputra in Bangladesh, the Irrawaddy in Myanmar, the

Yangtze and the Yellow Rivers in China, and the Me Kong which runs through China, Myanmar, Laos, Thailand, Cambodia, and Vietnam). These rivers supply water to at least one-sixth of the global population, or about 1 billion people. A United Nations' report indicates that global warming is causing the glaciers on the Himalayas to melt at an ever-increasing rate. If global temperatures keep on rising, thousands of glaciers may dry up by 2035. This means that Asian populations living along important glacier-fed rivers will be faced with more and more serious harm. Scientists are concerned that within the next few decades hundreds of millions of people living in lowland areas fed by water from the Himalayas will suffer more and more from alternating periods of floods (as glacier ice melts) and water shortages. In the case of India alone, hundreds of millions of people may be at risk, not to mention the economic, social, and political problems that would result. All of these problems are becoming more serious as time goes on.



Glaciers on the Himalayas melt at a faster rate. If global temperatures keep on rising, thousands of glaciers may dry up by 2035.

Picture by: [www.abc.net.au](http://www.abc.net.au)



## Rising Sea Level

Reports compiled in 2001 and 2007 by the Intergovernmental Panel on Climate Change (IPCC) confirm a gradual sea-level rise, which began in the 20<sup>th</sup> century, and predict that sea levels will keep on rising at accelerating rates if greenhouse gas emissions remain unchanged. Scientists are convinced that sea levels will rise 20-88 centimeters or as much as 1 meter within the next 100 years. Two main reasons are cited, namely, that (1) rising temperatures cause thermal expansion of the oceans, and (2) rising temperatures cause the melting of most mountain glaciers including those in Greenland as well as at the Antarctica. Thus, the volume of water in the oceans increases.

As for Thailand, a follow-up report on Thailand's sea-level study (the National Strategy on the Management of Climate Changes, 2008-2012), commissioned by the National Committee on Climate Changes (released in January 2008), indicates that in the past 55 years from 1940-1994 areas in the lower parts of the Chao Phraya River were affected by rising sea levels. During this period, sea levels increased by approximately 3 millimeters annually, but since 1960, these increases have been approximately 20 millimeters annually. It is predicted that by the end of the 21<sup>st</sup> century, sea levels in the Gulf of Thailand will rise 17-49 millimeters annually.

In a 2007 the Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment published a report on the Crisis of Coastal Erosion in the Gulf of Thailand. The report notes that the erosion has occurred all along the coast of the Gulf of Thailand, with some areas losing more than 5 meters a year – a critical situation. Such a critical situation has occurred in 12 provinces, namely, Chanthaburi, Rayong, Chachoengsao, Samut Prakan, Bangkok, Phetchaburi, Prachuap Khiri Khan, Surat Thani, Nakhon Si Thammarat,



This Bangkok border stone used to be inland years ago. Today it is about one kilometer from the shoreline due to rising sea level.

Picture by: [www.khunsamut.com](http://www.khunsamut.com)

Songkhla, Pattani, and Narathiwat. Eroded coastlines in these provinces account for 180 kilometers or about 11% of the coastal area on the Gulf of Thailand. In addition, there are other areas with erosion rates of less than 5 meters per year, totaling 305 kilometers of eroded coastline or about 18.4% of the overall coastal areas of the Gulf. The report also notes that this erosion has resulted partly from natural causes, such as waves and wind, and partly from human activities. Among the reasons cited, are climate changes due to global warming.

Aside from coastal erosion, consequences from rising sea levels also include variations in the pattern of high and low tides at river mouths and the encroaching of seawater deep into freshwater systems, resulting in alterations of ecosystems, which is harmful to the lives of animals and plants living there. Impacts will also be felt from changes in mangrove forests. Normally, if the sea level rises and the coastal areas are flooded at a slow rate, mangrove forests can shift gradually toward inland. This is a natural adaptation. However, such natural adaptation has now been limited by human activities along the coast, particularly buildings and land use for various purposes. These have resulted in increased serious flooding of coastal areas and continuing erosion.



Loss of shorelines in Bangkhuntien, a coastal district of Bangkok. Lamp posts, once on the shore, are now seen in the sea.

Picture by: [www.khunsamut.com](http://www.khunsamut.com)

In saltwater lakes such as Songkhla Lake, studies find that, if sea levels rise 0.5 meters, the areas around the lake will be at risk from serious flooding. And if the sea levels rise 1.0 meter, the encroaching seawater will harm the cultivated areas surrounding the lake while brackish water will enter the freshwater system of the lake and severely damage the ecosystem.

In addition, global warming, which results in the continued rising of ocean temperatures, brings about other change, coral bleaching. Global warming, combined with other problems such as the pollution and chemical changes in seawater, is believed to have caused coral bleaching in Thai seas as in many coastal areas of the world. Coral that has undergone bleaching tend to die rather than survive. This means great losses of invaluable coastal resources since coral reefs, in addition to their beauty and recreational appeal, are not only rich food sources and shelters for fish and other aquatic animals but also provide a buffer against storm surges and help protect shorelines from erosion.

Rising sea level can also cause problems in draining out sewage and waste waters in big cities located in the coastal area. For example, Bangkok and many other cities around the world are faced with this problem. Some consequences of this problem include flooding of residential areas which deteriorates environmental health systems.

## Coral Bleaching

Corals are valuable marine resources for the economy, recreation, tourism, and coastal protection. Marine scientists have found that in the last two decades coral bleaching has been occurring more frequently in almost every region of the earth. Coral bleaching leads to the death of coral and causes damage and inestimable losses. Reports say that global coral bleaching has caused several hundreds of billions of US dollars a year.

Coral depends on a symbiotic relationship with photosynthesizing unicellular algae called zooxanthellae, which live within their tissues. Besides protecting their host's soft tissues, zooxanthellae give coral its particular coloration. However, changes in the marine environment, such as higher sea temperature and increasing marine pollution, have made the symbiotic relationship between zooxanthellae and coral more difficult. In some cases, coral expels their zooxanthellae. Without zooxanthellae, coral become lighter or completely white in appearance or "bleached" and eventually die.

Coral bleaching in small areas of the coastal sea is normal. However, the spread of this phenomenon in the span of the past 20 years is something else. Experts believe that global warming is a major factor of bleaching because of the rising of marine temperatures. The first coral bleaching in the Gulf of Thailand occurred in 1998, which was widely believed to be a result of 1997's El Nino. Similarly, in 2007 there were reports of widespread coral bleaching in the Andaman Sea, which also might be related to global warming.



The picture on left is taken by J. Hoogesteger, in "Coral Reef Bleaching" a feature written by Jason Buchheim published in Odyssey Expeditions website (<http://www.marinebiology.org/coralbleaching.htm>). The picture on the right is published in Sarakadee's website ([www.sarakadee.com](http://www.sarakadee.com))

## Changes in Rain Volume and Patterns

Although computer simulations give varied scenarios of the effects of global warming on the rain volume and patterns 100 years into the future, the bottom line is that in some regions rain volume will erratically increase while in others it will decrease. Unusually heavy rains may occur more often in some areas where the total volume of rainfall is usually low. In some regions, severe droughts will occur, and drought-affected areas will expand as rising temperatures cause greater evaporation. This means greater tendency of more frequent and severe wildfires, such as those that have occurred in Indonesia, Australia, Europe, and the US in recent years.

Moreover, warnings have increased concerning the possibility that global warming is aggravating the problem of desertification in some areas. For example, it is reported that the Gobi Desert in the northern part of China is expanding at a shocking rate as a result of global warming and human activities such as over-grazing.

Studies of rainfall in Thailand reveal that, as average temperatures have been rising, rain volume is decreasing from the average levels of 960-1,200 millimeters a year to 800-900 millimeters a year. Moreover, rainfall will vary greatly in different regions of the country. All this will have significant affect on agriculture, which depends largely on rainfall.

Studies estimating the impact on Thailand's water resources find that with an additional 2-4°C in the atmosphere water in reservoirs will evaporate at a greater rate, causing water volume in reservoirs/dams/weirs to diminish faster, thus leading to water shortages unless there is more effective water management.

On the other hand, there are also studies indicating that, with double the amount of carbon dioxide in the atmosphere, photosynthesis in plants may increase, resulting in higher yields. But that also can lead to a greater risk from expanding numbers of pests.



Torrential rain cause serious flood in Vietnam and Bangladesh in 2007. Commuters used any possible means they could.

Picture by: [www.reuters.com](http://www.reuters.com)



## More Intense Storms

The fact of weather is that when there is a great difference of temperature and humidity in adjoining regions such as the continent and the sea, intense storms tend to occur. Global warming is believed to increase this difference. Therefore, it is certain that with the increase of global warming, heavy storms will occur more frequently, and their intensity will be more difficult to predict.

In Thailand, studies by the Thai Meteorological Department show that since 1991 severe tropical storms have hit the country twice a year on average. Each of these storms resulted in huge damage to crops, properties, infrastructure, and human lives. Such severe damages may be seen in the case of heavy rainstorms that caused the sudden flood in Nam Kor district of Phetchabun province in 2001 and several tropical storms and depressions in the rainy season of 2006 where hundreds of lives were lost and several thousands affected.

## Heat Waves

In the past two decades, heat waves have occurred more frequently and have, each time, affected millions of human lives in Asia, Australia, the US, and Europe. People still remember the brutal heat waves that affected many European countries in the summer of 2003, when temperatures broke previous records reaching 40°C in Paris, and causing over 52,000 deaths (according to a report of the Earth Policy Institute in 2006). In the same year heat wave of even greater intensity (temperature of 45-49°C) also hit India leading to the deaths of more than 1,600 people. A year earlier, India had lost more than 1,000 people due to similar heat waves. Scientists are convinced that these fatal heat waves are related to global warming.

“Scientists have warned that over the coming decades or even century extreme weather events will be more frequent. This means that worse lessons from the nature are still to be experienced by humans unless, of course, the world acts now to alleviate them.”



Picture by: [http:// www.greeceinflames.org](http://www.greeceinflames.org)

Fire fighters are trying to control wildfires caused by severe heat wave in many parts of Europe in 2003.



## Impact on Biodiversity

The truth is that the current biodiversity of species worldwide tends to be seriously threatened by human activities such as over-hunting, trading of wild animals and plants, deforestation, and habitation expansion. However, from now on, global warming must be added to this list of major threats to biodiversity. The Intergovernmental Panel on Climate Changes (IPCC) points out that 20-30% of wild animals and plants face extinction if the global temperatures increase 1.5-2.5°C. This is because even a slight increase of temperature directly affects the ecosystem of many species of animals and plants.

In Thailand's case, though the area covered by forests may not change much in the near future, there are reasons to believe that, given the likelihood of continuing increases in temperature, the forests will alter dramatically. The *subtropical life zone* will shrink from 50 percent to 20-30 percent of the total forest land while the area of *tropical life zone* in the South will increase from 45% to 80% because of increases in rainfall there. *Subtropical dry forest* which comprises 12% of the country's forest land may very likely disappear

altogether and to be replaced by tropical very dry forest. In the North and Northeast *tropical dry forest* is likely to replace *subtropical moist forest* because of the decrease of humidity. Under the global warming, alteration of the forest compositions along with changes in temperature, amount of rain, and chemical property of soil and water will inevitably affect biodiversity in Thailand.

In short, immediate and long-term consequence of the global warming is climate change which, in turn, causes extreme weather events beyond what human beings have experienced so far. These weather events include flash floods, drought, extreme temperatures, brutal heat wave, destructive storms, and wildfires. In the long run, these climatic changes will result in dramatic alteration of local ecosystem which directly threatens biodiversity. Scientists have warned that over the coming decades or even century extreme weather events will be more frequent. This means that worse lessons from the nature are still to be experienced by humans unless, of course, the world acts now to alleviate them.

Frequency of Global Extreme Weather and Disasters, 1950-2001

Events	1950-1959	1960-1969	1970-1979	1980-1989	1990-2001
Storms	59	121	121	207	300
Wildfires	0	4	11	25	54
Tidal waves	2	5	2	3	12
Landslides	11	15	34	63	114
Large scale insect outbreaks	0	1	6	43	13
Flood	50	11	170	276	489
Famine	0	2	4	11	45
Excessive heat	4	10	9	19	70
Epidemics	0	31	44	86	317
Drought	0	52	120	177	195

Source: The Center for Health and Global Environment, Harvard Medical School, 2005.

## Global Warming: A Real Threat to Humans

The catastrophes caused by global warming nowadays combined with results of the mounting scientific studies so far provide strong evidences for a conclusion that severe weather is a real threat to humans in many ways, especially in the health, social, economic, and environmental aspects.

### Health Impact

Severe weather such as intense storms, flash floods, or severe heat waves obviously causes injuries and deaths. Even though we do not have the exact numbers of deaths from these causes, we can say that the numbers are large. It is a fact that the frequency of these disasters will increase, which means that the number of casualties will also grow. For example, when typhoon Durian hit Bicol City in the Philippines in December 2006, there were more than 1,200 people killed. At the end of 2007, more than 3,000 Bangladeshis had been killed by cyclone Sidr, and thousands people in India and Europe died from the excessive heat wave of 2003.

In Thailand, there have been losses from similar incidents. For example, in May of 2006 when

torrential rain caused flash floods and landslides at Amphur Thapla and Amphur Lablae in Uttaradit province. More than 100 people were either killed or missing. The neighboring provinces such as Sukhothai, Phrae, Lampang, and Nan were also affected. In that one storm, 697 houses were destroyed and 2,970 houses partly damaged, affecting 352,016 people.

Besides death, there are also other health and health-related effects of these catastrophes which may not yet be fully realized. The most important possible effects are:

#### 1) The increasing spread of contagious diseases:

Global warming and higher temperatures have caused some vectors that carry diseases to rapidly increase, thereby increasing the spread of diseases. These vectors include mosquitoes, carriers of malaria and dengue fever, flies, carriers of diarrhea and cholera, and rats, carriers of leptospirosis and other diseases. A sample of this effect is the case of widely spreading of dengue fever in Southeast Asia, including Thailand, in 2006-2007. In 2007 Thailand had more than 24,000 cases of dengue. In Cambodia, there were more than 40,000 people stricken with the



disease, of which more than 400 died. This may be a low death rate, but dengue fever is one of the most important health problems in the world, with more than 50 million patients a year.

In 2000, Mozambique experienced a four-to-five-fold increase in the spread of malaria after massive flooding. When the flooding subsided, there were still puddles, which became breeding areas for malaria-carrying mosquitoes. Another example occurred in 2005, when there was heavy rain in India, causing flash floods in Mumbai. After the floods, not only were malaria and dengue fever widespread, but other diseases emerged as well.

Moreover, the higher temperatures have caused some diseases to spread into places where they had never appeared before. A report from the Center for Health and Global Environment, Harvard Medical School, revealed that warmer temperatures caused malaria and dengue fever to spread in areas of higher altitudes in many regions such as East and Central Africa, Latin America, and Asia. Normally, the mosquitoes that are carriers of malaria and dengue fever are found in the altitude below 1,000 meters, but in the past 30 years, they have been found at altitudes of 1,700 meters in Mexico and 2,200 meters in Columbia. Warmer temperature due to global warming has made it possible for mosquitoes to breed and survive in these higher altitudes.

If the higher temperatures continue, malaria, dengue fever and other diseases that have animals as carriers could pose a very dangerous threat to developing countries. And more resources would have to be used to protect against and treat those diseases.

**2) Unhealthy environment:** Higher temperatures, drought, or too much rain can all cause an unbalanced environment. In such condition, the risk groups are children and elderly people, who are more susceptible to sickness. Those who are

### Diseases that may spread rapidly due to global warming

There are many diseases that may spread more rapidly when climate changes, especially when the temperature and humidity in the air is higher. These conditions cause the vector animals breed more. The table below lists some diseases and their carriers.

Disease	Carrier(s)
Bubonic plague	Rats, wild rabbits, squirrels
Leptospirosis	Rats, dogs, cattle, pigs, and wild animals
Murine Typhus	Rats
Hantavirus	Field rats
Rabies	Dogs, cats, squirrels, bats
Rat-bite fever	Rats
Malaria	Anopheles mosquitoes
Dengue fever	Aedes aegypti mosquitoes
Lymphatic Filariasis	Mosquitoes
Encephalitis	Mosquitoes, birds, rats
Diarrhea/Cholera	Flies
Encephalitis (Nipah virus)	Bats, pigs
Encephalitis (West Nile virus)	Birds, mosquitoes
Ebola	Chimpanzees, bats, rats

Source: Ruengnoo, 2007.



not healthy could see their conditions worsen or even die. For example, in a heat wave it is usually children and elderly people who succumb or die more so than people in other age groups. Extremely hot weather causes dehydration and energy loss more than usual and also worsens environmental conditions by creating more dust in the air and, at times, lowering humidity, which can aggravate respiratory and circulatory problems among at-risk populations.

Likewise, in times of drought, not only is there danger from the heat, but drought also paves the way for raging wildfires. Smoke and soot from the wildfires are hazardous to the respiratory system and irritate the eyes. For example, in 1997-1998, there were severe wildfires in Indonesia for months, causing thick smoke, covering many parts of Indonesia and neighboring countries including Thailand. A large number of people suffered respiratory system and eye problems because of that incident.

Furthermore, drought also harms agriculture, which causes food shortages, affecting nutrition and people's health in the end. Poor families, children, and unhealthy people are the groups most affected. An example of this was seen with the drought in some parts of Africa that caused many deaths from starvation during the last 2-3 decades.

**In summary, climate change from global warming has both direct and indirect impacts to human health.**



## **Economic, Social, and Environmental Impacts**

Climate change from global warming has short-term and long-term impacts on economy. A massive loss due to widespread flooding in Thailand in 2006 is an example of a short-term impact. According to official records, the flood that hit areas of 47 provinces (out of 76) of the country directly affected over 5 million people from 1.4 million households. Crops in the areas of about 5.6 million rai (896,000 hectares) were also damaged. Total amount of loss due to flood in that year was estimated to be more than 300 billion baht (\$ 9.4 billion).

Globally, economic costs of damages resulted from climate change would be enormous if all the losses are collected. The Stern Review reports that if nothing is done to reduce global warming, losses that are caused by the climate change in each year could be equivalent to 5% of the world GDP. But these could be as high as 20% if all other risks and indirect effects are taken into account. (According to the World Bank, the world GDP in 2006 is 48,244.879 billion dollars.) This shows that global warming has the potential to bring about massive impacts which will hinder economic and social development in many countries. If these losses could be saved, we would have more to invest in the development that will contribute to poverty reduction and improving the quality of life of people around the world.

Those are the short term economic impacts which can be seen in relatively short time. But there are also long term impacts which are difficult to calculate in terms of money. These include:





- **Opportunity losses:** Loss of money to repair or replace damaged properties and other public facilities are very important. But on top of that is the loss of opportunity brought about by the disasters which is difficult to estimate. For example, when the heavy rain causes flooding and landslides, many villages and communities may not be able to reach because of damages to roads and other communication facilities. People suffer not only from lack of aids from outside but also loss of opportunity to carry out their usual productive activities. The longer it takes to return to normal, the more losses there are.

Loss of opportunity for further development is a more subtle aspect. Losses of property, money, and even health due to the disasters are crucial setbacks for many people and households. Resources and time which would have otherwise been used for more development of these people and households have to be spent in health care or fixing properties that are damaged. Saving may be more difficult or the existing one may be used up under such circumstance. For the poor households that are affected by the disasters the opportunity for further development may be even more difficult or impossible. Some may take a longer time to restart. If these disasters happen more frequently, chances for the poor to improve their lives are almost impossible, especially in societies where social safety net is not strong.

- **Social damages:** Disasters such as heavy storms or flash floods often cause many injuries and casualties. For example, death of a household member can affect a household's economic stability, but if more than one member are lost in a disaster, it will affect the household even more. The situation is worse if the dead ones are parents or the main breadwinners in the family, leaving behind only children and old people. This creates a long term social problem. (There were many cases like this after the Tsunami in December 2004, although Tsunami was not caused by global warming.)
- **Waste of energy and resources:** Climate change that causes many disasters often results in more use of resources. In time of drought or excessive temperature, for example, people use more electricity and water to protect themselves or other properties. In the case of a severe heat wave or prolonged drought, the hot weather brings about high rate of power usage at the household level and beyond. Recently, warmer summer in Bangkok has set new high record of electricity usage nearly every year. This is believed to be the main cause of brownout or blackout in the city during summer. At the



Flooding in Uttaradit province, 2006

household level damages from brownouts or blackouts are not as much, but in the industrial sector such as factories they can be very serious.

Thus, climate change due to global warming is expensive in terms of energy and resource.

- **Damages to the environment:** Major disasters frequently damage the environment of the local areas that have been affected. Severe flash floods and mudslides on hill slopes and valleys can sweep away trees and forests, rich top soil, buildings and infrastructure, in a matter of hours. Such severe damages were seen in Thailand in 2001 when torrential rain hit Namkor and Namchun subdistricts of Petchabun province and Lablae district of Uttaradit province in 2006.

The rising sea level and the resulting damages to the shorelines of the Thai Gulf is another example. In particular, this has caused further flooding and increasing erosion to the coastal areas. According to the report of the Ministry of Natural Resources and Environment, the loss of shorelines in some areas is over 5 meters per year. The situation is getting worse in some places where communities have been flooded permanently, such as in Samut Chedi district of Samut Prakarn province and Bang-Khunthien district of Bangkok.

Facts are that once the environment has been destroyed, it is hard to restore it. On top of this there is a health consequence, particularly poor sanitation among people and communities that are facing with this problem.

“Beside damages to economy, health, sanitation, and many others aspects of human life, global warming brings about effect to the environment and ecosystem, which, once damaged, are difficult to recover. These losses can have huge effect on people, community and society at large.”

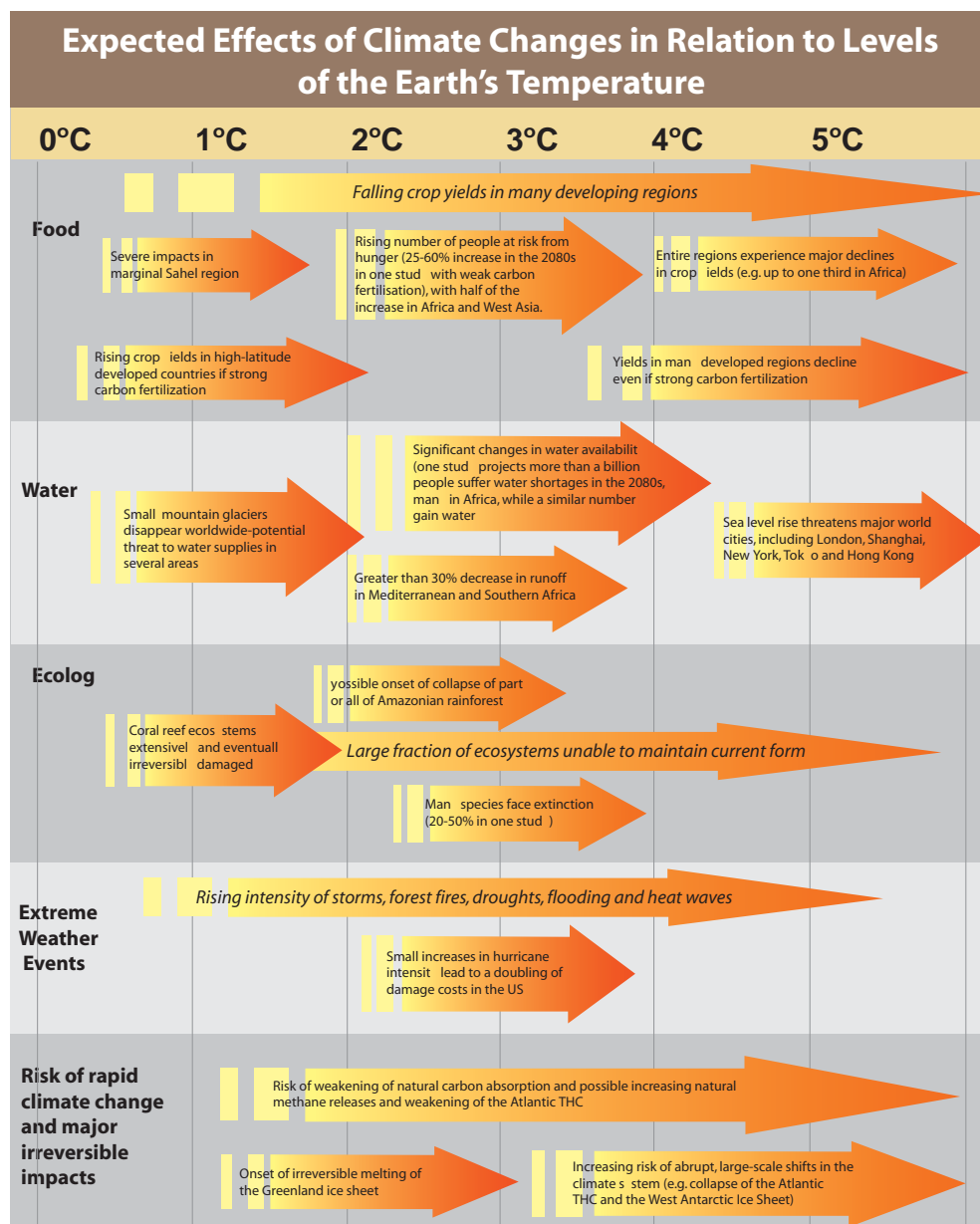


**In summary, beside damages to economy, health, sanitation, and many others aspects of human life, global warming brings about effect to the environment and ecosystem. These losses can have huge effect on people, community and society at large. Global warming is indeed a real threat to human being, much more than the general public would imagine.**

## The Difference

Severe disasters could create different levels of losses between developing countries and developed countries due to different strengths in their economies, societies, technologies, and basic structures. In developing countries, the losses are in terms of lives, health, and property, while in developed countries, the losses are mainly economic. There is an estimate that if the strong hurricanes, such as Katrina that hit New Orleans, USA, in August 2005, had hit Bangladesh, thousands more people would have died than the 1,500 who died in USA.

The reason for these differences is that developed countries have better mechanisms to cope with the effects of disasters and thus have fewer losses. Most properties in developed countries are insured against disasters, which can ease the loss when it happens. In the case of Hurricane Katrina, half of the economic losses (about 125 billion dollars) had been insured. This shows how developed countries are able to recover from disasters faster than developing countries.



Source: Stern, N. 2006. Stern Review on the Economics of Climate Change. [http://www.hm-treasury.gov.uk/independent\\_reviews/stern\\_review\\_economics\\_climate\\_change/stern\\_review\\_report.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm)



## How Do We Survive in the Global Warming



*The answer to this question should be obvious from the facts about global warming mentioned above. The best way to live in the warming earth is to try to avoid making temperatures higher than what they are now, and it would be even better if we could reduce temperatures in the future.*

*There may be many ways to make that happen but the best way is to reduce the emission of greenhouse gases, and we need to act now.*

Scientists believe that if the world can reduce greenhouse gas emissions by at least 60% of the current emission rate (or, better, 75%), within 40-50 years it will be possible to maintain a level of greenhouse gases at 550 ppm CO<sub>2</sub>e. Even if we succeed with this, the world temperatures will still rise by 2-5 degrees Celsius, which is considered severe climate change. So the desired goal is to reduce greenhouse gases more and to do so more quickly. That means we have to seriously adjust ourselves in at least two key areas, namely, in daily lifestyles on personal, household, and community levels, and in “societal structure.” Doing so will allow us to have an enduring environmentally friendly way of life.



“The desired goal is to reduce greenhouse gases more and to do so more quickly.”

### Environment-Friendly Living

Statistics shows that about 16% of greenhouse gases are from residences, household waste, and burning energy in activities other than manufacturing, but if we include transportation, which emits 14% of greenhouse gases, the total adds up to 30% of all greenhouse gas emissions. If we can reduce much of this portion, it can help ease global warming in the future.



“The basis of environmentally friendly living is simple consumption.”

The question is: “Is it possible to reduce greenhouse gas emissions without affecting our daily lifestyles?” The answer is yes, but we have to work harder in some areas.

Almost every activity we do, whether it involves producing or consuming, household activities or office activities, travel or leisure, can generate “foot print” in the form of greenhouse gases in one way or another. So the best answer is to live simply in our daily lives and leave the smallest trace possible of greenhouse gases, which means living in harmony with the environment.

The basis of environmentally friendly living is simple consumption. This means reducing unnecessary consumption, reusing things that are still usable, repairing equipment to extend its usage, and recycling previously unusable equipment. The most important thing is to resist advertising that can lure you to buy unnecessary products. These methods (called “the 5 Rs”) can help reduce greenhouse gas emissions and also save money. It can start immediately at the personal and household level.

If we want to succeed, we need to take seriously the threat of global warming and to increase awareness of the relationship between human beings and the environment, especially the relationship between our actions and the quantity of greenhouse gases, which, in ironic retribution, can come back and destroy us in the future.

This concern should be raised strongly enough to make us change our lifestyles, at least in the way we consume. Consumer culture, which

### Greenhouse gas reduction starts with us

There are many ways for each person and each family to help reduce greenhouse gas emissions. There is simple advice that everybody can practice without too much effort. If we faithfully follow this advice, the threat of global warming can be reduced.

- Build airflow housing, use light colors to help reflect the heat inside the house and brighten up rooms, reducing the need for electricity for light.
- If there is free space, grow as many plants as possible around your house or in your community to reduce the heat and help absorb carbon dioxide that causes global warming.
- Save energy by using energy-efficient lights and appliances. Turn off your appliances when you are not using them. Place your refrigerator in an area with airflow and defrost your freezer often. If using air conditioning, select the proper temperature for the room. Set the temperature at 25 degrees Celsius and clean your air conditioner regularly.
- Conserve water by stopping water leaks. Install water-saving devices in your bathroom. If possible, take showers instead of baths. Do not leave the tap running while brushing your teeth or shaving. If using a washing machine, try to use a water-efficient one. Wear suitable clothes for the weather to avoid using a fan or air conditioning.
- Use cloth bags or baskets instead of plastic bags. Use products made from natural materials and avoid plastic products.
- Choose to eat less processed foods. Cut back on canned foods. Drink water instead of soft drinks to reduce the energy of production but also for your health.
- Use environmentally friendly products.
- Don't spoil yourself; only do necessary shopping and don't let commercials lure you.
- Walk, cycle, or use public transportation whenever you can. If you do have to use the car, use green fuels like bio-diesel or gasohol. Keep the car well tuned and don't drive over 90 km/hr.
- Separate trash, find out what can be recycled, and start recycling.



Cycling Campaign

Picture by: [www.thaicycling.com](http://www.thaicycling.com)



Clay house, alternative housing in the warming temperature

Picture by: [www.baandin.org](http://www.baandin.org)

emphasizes being luxurious and using lots of energy, is the cause of increasing carbon emissions. This pattern of consumption must be stopped and replaced by environmentally friendly consumption, which needs to be the normal way of life in this era of global warming.

At the community level, we need to coordinate and organize in order to promote an environment-friendly ideology. Practically, this ideology comes up with better ways to protect and preserve the environment and to reduce reliance on unnecessary technology.

Preserving the environment at the local level does not cost much but can nevertheless reduce greenhouse gases. For example, preserving existing forests and planting more trees can help absorb carbon dioxide. And reducing and better managing waste through low-tech strategies such as recycling can save on both energy and in terms of gases released from unnecessary burning. Thus, communities that concern themselves with these issues should be given strong support from the government.

To be less dependent on technology may seem extreme and a reversal of progress, but most technology such as motor vehicle or air conditioner that makes our lives more comfortable

also generates greenhouse gas. That is why a community which is not so dependent on technology is more desirable. At present, there are not many communities like this, but we are starting to see more of them, which can be in various formats. For example, in Thailand, there are the Asoke communities, organic agricultural communities, as well as other such communities in other areas. Most of these communities are small and located in rural areas. There are communities like these in Europe and the USA as well (for example, the Amish communities in Pennsylvania and Iowa). The main point is that these "alternative communities" exemplify a sustainable model of harmonious living on the planet that should be promoted.

The initial goal of these alternative communities may not have been to reduce greenhouse gases, but their simple lifestyles nevertheless have a direct effect in doing so. Different communities live by different ideals which may be religious, social/political, or back-to-nature/agrarian. Whatever the case, such communities have in common less reliance on polluting technologies and tend to emphasize frugality and simple living in harmony with nature. These communities can be our models for alternative lifestyles that can reduce the threat of global warming.

## Restructuring for Sustainability

Efficient ways to reduce greenhouse gas emissions need to be done properly at the most basic level. One such way is to engineer societal structure so as to create a sustainable reduction of greenhouse gases at every level. And this needs to start with effective governmental policies and strategies.

As a member of UNFCCC, Thailand has set a policy to reduce carbon emissions, as have other member countries, even though Thailand has no obligation to reduce greenhouse gas emissions to the levels specified in the treaty. (The obligation applies to Annex 1 countries, and Thailand is not on the list.)

Strategies to reduce greenhouse gases should employ both non-technological and technological means together with legislative and taxation measures in order to achieve a goal of sustainable carbon reduction.

An example of a non-technological method would be to simply preserve the environment, especially forest and water resources, which help absorb carbon dioxide. To protect the forest and grow more is a cheap but efficient way to reduce greenhouse gases. Government should support the private sector in preserving and protecting the forest and enforce penalties on businesses that cause greenhouse gas emission, such as factories that do not use clean technology. Technological approaches would include invention of clean, energy-saving technology and implementation of ways to reduce greenhouse gases both in production and consumption.

In manufacturing, measures to reduce production that wastes energy and generates greenhouse gas emissions needs to be implemented along with the measures providing incentives to those who use environment-friendly technology. Government should promote clean energy, such



as biomass energy, and support the research and development of environmentally friendly technology. Similarly, from the consumption side, environmentally friendly products that can be reused and recycled and not increase greenhouse gas emission should be promoted.

Besides production and consumption, legislative and taxation approaches also need to support greenhouse gas reduction. In the past, Thailand has not been very successful in taking serious action with regard to city planning and building regulations. This failure is partially to blame for the high carbon emissions related to transportation. Good city planning can solve this problem.

Many developed countries use taxes as a tool to reduce greenhouse gas emissions. Thailand should also apply this strategy by using tax regulations to convince individuals and businesses to eliminate waste and reduce greenhouse gases. For example, a low tax rate could be set for products that generate less greenhouse gas and innovative production methods could be subsidized so as to help reduce energy use.

To be consistent with these approaches, government should have a definite policy to support industrial manufacturing projects or development projects that focus on greenhouse gas emission mitigation. Such projects can provide three possible benefits:

- (1) A cleaner environment
- (2) Greater international cooperation and collaboration on greenhouse gas emission reduction as specified in the Kyoto Protocol,

especially with regard to the Clean Development Mechanism (CDM), which will benefit the country's image.

- (3) Greenhouse gases, especially carbon dioxide which are saved by these projects, can be traded as "carbon credits" in the international "carbon market".

**Structural adjustment should be in line with the national strategy on a balanced and sustainable economy specified in the Tenth National Economic and Social Development Plan (2007-2011) which states, "Use appropriate technologies that save energy and resources and result in environment-friendly production and consumption. At the same time effective use of energy along with development of alternative energy must be urgently promoted."**

**Thailand has recently adopted a "Strategy for Management of Climate Change 2008-2012" which involves cooperation of a number of key government organizations, particularly those working in the environment, energy, science and technology, health and agriculture. However, the role of private sector has not been stated clearly in this national strategy.**

### **Thailand Greenhouse Gas Management Organization**

An organization to manage the effects of greenhouse gas emissions was established by the Cabinet Resolution on May 15, 2007. The main purposes are to (1) compile with Kyoto Protocol in reducing greenhouse gases through the Clean Development Mechanism (CDM), (2) develop the capacity of the public and private sectors and other involved parties in managing greenhouse gas mitigation projects that help protect the environment and natural resources and support sustainable development.

The Thailand Greenhouse Gas Management Organization is under the Ministry of Natural Resources and Environment. Its main duties are to:

- Screen, comment and approve the greenhouse gas reduction projects under the Clean Development Mechanism (CDM). Follow up and evaluate the approved projects.
- Support the projects development and the carbon trading markets.
- Be a greenhouse gas information center.
- Prepare a database of certified clean development projects and on trading of the greenhouse gases.
- Support and develop the capacity and also give advice to governmental and private sectors about greenhouse gas management.

Source: Department of Strategy and Policy on Natural Resources and Environment, Ministry of Natural Resources and Environment, 2007.



## Kyoto Protocol

The United Nations established the Framework Convention on Climate Change (UNFCCC) which began operations on March 21, 1994 with the aim of reducing the amount of greenhouse gases in the earth's atmosphere to a safer level.

Currently, UNFCCC has 190 members, which are divided into two groups based on their different responsibilities in reducing greenhouse gases. The first group consists of 40 industrial countries listed in "Annex 1". The second group consists of all other "non-Annex 1 countries", namely, the developing countries.

In the third UNFCCC conference in Kyoto, all members ratified the Kyoto Protocol, which was to take effect 90 days after more than 55 country members ratified the pact. The total amount of greenhouse gases emitted by these countries is about 55% or more of the global amount recorded in 1990. At first, many of the large greenhouse gas producing countries, such as the USA, Russia, and Australia, refused to ratify the pact. As a consequence, the pact could not be implemented for several years. But Russia eventually changed its position and ratified the Kyoto Protocol in late 2004. The treaty came into full effect on February 2005.

Thailand is in the second group and still has no obligation under the treaty to reduce its emissions, but the country ratified the Kyoto Protocol on August 28, 2002. The Office of Natural Resources and Environment Policy and Planning of the Ministry of Natural Resources and Environment acted as a coordinator of both UNFCCC and the protocol.

The Kyoto Protocol urges countries in Annex 1 to reduce their greenhouse gases not less than 5% of its total amount in 1990 within 5 years from 2008-2012. Moreover, all members have to report all progress made in reducing gas emissions by the year 2010.

The Kyoto Protocol has identified three ways for reducing greenhouse gases:

- (1) **Joint Implementations** (JI) — Countries in Annex 1 can cooperate in greenhouse gases reduction programs.
- (2) **Clean Development Mechanism** (CDM) – Countries in both groups could cooperate in greenhouse gas reduction programs. For example, developed countries might invest in clean energy production or forest cultivation in developing countries. "Emission Reduction Units" (ERUs) generated by such projects can be used by developed countries as credits to cover their release of gases in their countries. These projects can help developing countries receive new technologies for sustainable development. The second choice is for developing countries to create their own clean energy projects and sell certified ERUs directly in the carbon market.
- (3) **Emission Trading** (ET) – Developed countries that have not used up their emission quotas could sell their unused allowance as carbon credits to other developed countries. Moreover, they could also buy the rights from countries not included in Annex 1 that are not bound by the treaty to cap their emissions. The selling and purchasing of such rights is called "trading carbon credit".

Source: Piroje Wongwutthiwat, 2007.

## Carbon Credit

The Kyoto Protocol urges its members in Annex 1 and those outside of Annex 1 to cooperate in reducing emissions through a market mechanism called "carbon credit." Under this scheme the amount of greenhouse gases reduced or saved by a country is treated as "goods" that can be traded in the international carbon market. Trading may be done in two ways:

1. Emission trading among developed countries is based on their emission quotas or "Assigned Amount Units" (AAUs). The countries that have not used up their quotas can sell their unused allowances as carbon credit to other countries in the same group.
2. Emission trading between the Annex 1 and the out-of-Annex 1 countries can be done through the Clean Development Mechanism (CDM). A developed country can invest in CDM projects in both the public and private sectors of developing countries, such as projects to produce alternative fuel, transform industrial waste into fuel, recycle energy, enhance effective use of energy, and increase transportation capacity. They may also enter into joint venture projects with any developing country. The amount of emission reduction derived from such projects that have already been certified by a special body can be sold in the carbon market.

In Thailand's case, emission trading through CDM projects is managed by the Thailand Greenhouse Gas Management Organization. However, emission trading is relatively new for Thais. At present there are few certified CDM projects. Around the beginning of 2008 there are not more than 20 such projects in the country and no clear information on whether all of them are fully certified. However, many believe that the number of such projects will be increased in the future. Such projects not only generate income but also help reduce Thailand's emissions and shore up the quality of local environment.

The international carbon market has rapidly expanded in recent years. In 2005, the year that the Kyoto Protocol was fully implemented, carbon credit trading in both methods amounted to 10,864 million US dollars or 710 metric tons of carbon or equivalents. In 2006, the trading value reached 30,098 million US dollars or 1,639 metric tons of carbon or equivalents. Trading in a form of certified emission reduction (CER) through clean energy in 2006 alone reached 5,477 million dollars or 508 metric tons of carbon or equivalents. Developing countries with big market shares in the carbon market are China (61%) and India (12%). The rest of Asia, including Thailand, makes up only 7% of market share. Other developing countries in Africa and Latin America comprise 20% of market share.

**Source:** (1) Pareena Srivanich, "Carbon credit, how to reduce emission without losing the nation's interests." Matichon Newspaper, August 18, 2006  
(2) Cooper, Karan and Ambrosi, Philippe. 2007. State and Trends of the Carbon Market 2007. The World Bank.

# Be Prepared...



“...Though mankind has an ability to forecast the weather in a certain level, we cannot control it with any technology we currently have...”

The truth is we can forecast the weather in a certain level, but we cannot totally manipulate it for our own convenience. We do not have knowledge or technology to do it and might be never will in the future. The ongoing climate change is far more impossible for us to control or manage or even perfectly forecast it. Global warming has changed the weather pattern that we have known for centuries to something relatively new and beyond normal. Therefore, we are in the great risk of facing severe natural disasters without effective warning system.

Under the risky situation, the safer way is to be well-prepared. The reduction of greenhouse gases emissions might be the best way to reduce our risks in the long run. Moreover, preparations for

any severe weather conditions are necessary. With this point of view, we can mitigate severe damage to only a mild one. Therefore, we should be ready from the country level down to regional and communities.

On the one hand, we should focus on the efficient warning system. (We should learn the lesson of tsunami tidal wave and will not let the lack of warning system happen again in the future). However, we also cannot overlook the rescue and relief services. Emergency rescue teams have to be well-trained, necessary gears should be ready to use. Food, shelters, and medical supplies should be well-organized and ready in the time of emergency.

## Challenges

The driving forces to slow down global warming still have thorny issues to discuss. The most difficult parts in the issue are the strong policy-level intention, timing, resources to invest in research and technology development, moral and political commitment.

Global warming has caused difference political policies between the developed and developing countries. Governments of some developed nations might show their hesitations in fully adopting the anti-global warming pact because it might affect their economic growth. At the same time, developing countries may not be ready to support the carbon dioxide reduction programs for the fear that their economic growth might be in forever stagnation. Moreover, the political uncertainty can be an important factor in blocking the progress of global warming strategy and operations. Reduction of greenhouse gases emissions is a long term operation and need continuity of policies. Without political stability, policies adopted by one government might be ignored by its successor. This is a thorny problem for developing countries, including Thailand.

Investment for the solution of global warming is an investment for our future with huge amount of money, and we cannot see its fruits in the near term. So the current taxpayers might hesitate to let their money to be used for the benefit of other generations. It also depends on visions of each government. While the developed countries look at the issue as an urgent task to be quickly tackled, the developing nations take it far less serious with no urgency when compared to other problems facing them such as poverty, health care etc.

However, there are many options to be chosen. First, the simple methods with small amount of money involving in such activities as tree planting and deforestation preventions can be as effective as expensive high technologies and adjustment in structural level. Secondly, private sector should increase their roles in technology development in reducing greenhouse gas emission. It is possible and doable if governments offer incentives like tax reduction for clean energy production or the used of "clean development mechanism" as mentioned earlier. Thirdly, the expensive technologies (solar power, wind power, nuclear power) are our most important hope to reduce the use of carbon fuel. In the long run, these technologies might be cheaper and easier to access.

A moral dilemma facing many developing countries is: What is the best way to invest the nation's limited resources – to invest on the programs for greenhouse gas reduction, or on the programs to lessen poverty, hunger and increase healthcare services?

The last issue is the moral dilemma in the international affairs. The inconvenient truth is developing countries are facing more severe effects of global warming than the developed countries, even though they have caused much less greenhouse gases when compared to the developed or industrial nations. With better infrastructures, more efficient disaster relief and mitigation through insurance system, developed nations are less effected by the ongoing global warming. Moreover, most of developed nation are located in region in which the nature is less severe. Developing countries are far more disadvantage, and disasters occur in their countries will effect more to their people than when it happen in the developed countries.



## Everything Depends on Us

The global warming is a truth about the earth's changing climate. It challenges mankind in both moral and maturity. We have to thoroughly reexamine our foundation in the modern society, especially in the relationship of human and the climate. The truth is revealed to us that the earth temperature is rising. And it has nothing to do with the common switching between ice age and warmer age in the long geographic history of the planet. Scientists have pointed out that since the beginning of the industrial revolution till now human activities are the main source of the global warming.

Temperature increase will persist into the future. Within this century, the earth's temperature may surge 1.5-5.0 degree Celsius. Sea levels might increase as high as 1 meter or even 5-6 meters if the ice sheets in Greenland and the Antarctica melt at the faster rate as forecasted by some experts. In consequence, severe weather change will be more threatening for us. We will see more of torrential rain, flash floods, heavy storms, the rapid rising of sea level, brutal drought, cruel heat wave and widespread epidemics.

Though these natural disasters are not something new to human, they will be more severe and frequent and become direct threats for our survival.

Our society should be quickly adjusted to reach the sustainable survival of mankind. On the one

hand, we should alter our policy, legislative and regulation systems so as to give support to greenhouse gases reduction. On the other, we should develop clean and environment-friendly technologies both related to productions and consumptions. Production and consumption processes that waste energy and cause a large quantity of greenhouse gases should be reduced, even though they are inexpensive. Government have to increase proper incentives in order to switch to clean productions and consumptions. Innovations helping reduce emissions should be promoted in order to reduce global warming in any types.



If we still ignore all the signs we have seen and keep on the same habits as in the past, the threat of climate change will exacerbate. We have to change our world view to clearly see the global warming in the new light. This is a chance for mankind to alter our way of living and social activities to be less risky. We should start by adjusting ourselves to live a friendly and harmonious life with the environment. And we have to do it here and now. If we keep postponing the change or self-adjustment procedures, it will be harder and more costly than we can imagine.

**It all depends on us and our friends who share the same planet together.**

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## 10 Health Issues

### 1. New Laws to Protect Victims of Violence: Another Step towards Stopping Violence Against

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## 4 Notable Thai Contributions to the Health of Thais

### 1. UNESCO Rewarded a Young Thai Scientist for Solutions to Plant and Animal Extinction

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### 2. Health Insurance Scheme Granted Patients with Kidney Disease the Right to Kidney Dialysis and Transplantation Free of Charge

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### 3. Thai People Developed the "Strip Test for Alpha Thalassemia Detection," The World's First Successful Detection Method for Thalassemia

"ชุดทดสอบพาหะธาลัสซีเมีย ฝีมือคนไทย ความสำเร็จครั้งแรกของโลก". *Manageronline*. 29 March 2007.

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### 4. Thai Researchers Succeeded on Developing a "Biosensor," The World's First Bird Flu Detector

ไทยทำชุดตรวจไข้หวัดนก "ไบโอเซ็นเซอร์" ครั้งแรกของโลก. *Manageronline*. 7 November 2007

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# The Process of Writing of the Thai Health Report 2008

## Health Indicators Work Methods

### Procedure

1. A working group was established consisting of experts or people from organizations that collect reliable health data. The members of the working group contributed entries for the Indicators section. Each entry was required to
  - Explain why the topic is important to the general public
  - Give contextual information about the selected indicators
  - Provide up-to-date, trustworthy data
2. After members of the working group had completed drafts, the Management Committee for the Thai Health Report provided feedback, with the assistance of relevant experts. The aim was to identify any gaps, and to ensure that the entries conformed to the objectives of the report. The Management Committee also wrote summaries for each entry.
3. The entries were checked by experts.
4. The Management Committee made a final revision, and, together with a graphic designer, put the data into easily comprehensible formats.

### Process for choosing indicators

The indicators were chosen by the Management Committee, under the guidance of the Steering Committee. The criteria for choosing the indicators were as follows:

- The data were reliable, and were available at a national or regional level.
- Research cited in the text must be relevant to the selected indicators.
- Some of the indicators should be chosen based on recommendations from experts.
- The data had to reflect conditions at the time of the report.

## Ten Health Issues and Four Notable Contributions

The 10+4 Issues section has discussions of ten important health issues from the past year, ranked from 1 to 10, plus summaries of four notable contributions made by Thais towards the health of Thais. The ten issues were chosen using the following criteria:

- The issues arose during the previous year.
- The issues have broad implications for the health of Thais, including people's safety and security.
- The issue may be a policy affecting health that has been introduced or implemented during the past year.
- The issue is new.
- The issue arose often during the past year.
- The four notable contributions are scientific discoveries or innovations that enhance the health, including the social health, of the Thai public.

### To rank issues, the following procedure was followed:

- A survey was conducted in which members of the public were asked to rate the importance of selected current issues, including issues not featuring in the news. The ratings were expressed using a Likert scale, ranging from 0 (unimportant) to 2 (very important).
- The survey data were analyzed to rank the issues.
- The rankings were approved by the Thai Health Report Steering Committee.

## Special Topic for the Year

Special topics are either based on issues or target groups, with the type alternating from year to year. The topic may be chosen from the 10 Health Issues of the year before. The criteria for selecting a topic are as follows:

- The topic is importance to policy.
- The topic is importance to the general public.
- The topic is complex.

### Procedure

1. The Steering Committee chooses the special topic for the year.
2. The Thai Health Report team constructs an outline for the chapter.
3. Experts are commissioned to write reports on aspects of the topic, in close collaboration with the Thai Health Report team.
4. The Thai Health Report team combines the reports, and rewrites them in a way that will be easily understood by the general public. The results are then checked by experts.
5. Advisors to the project check and edit the report a final time. A graphic designer then constructs the art work, and the report is sent to the printers.

## Experts 2008

Name	Organization	Reviewers
1. Dr. Suwit Wibulpolprasert	Office of Permanent Secretary, Ministry of Public health	Whole Report
2. Dr. Vichai Chokeyivat	Institute for the Development of Human Resource Protections	Whole Report
3. Parichart Siwaraksa	Researcher	Whole Report
4. Dr. Chanpen Chuprapawan	Research Association for Child and Family Development	Whole Health Indicators
Experts		
1. Dr. Siraporn Sawasdivorn	Thailand Breastfeeding Center	Breast Milk and Bottle-Feeding
2. Dr. Suntaree Ratanachu-Ek	Queen Sirikit National Institute of Child Health	Breast Milk and Bottle-Feeding
3. Uraiporn Chittchang	Institute of Nutrition, Mahidol University	Supplementary Foods
4. Dr. Jantana Ungchusak	Dental Health Division Ministry of Health	Dental Health
5. Ittipol Preratiprasong	National Institute for Child and Family Development Mahidol University	Today's Media
6. Thai Health Team	Institute for Population and Social Research, Mahidol University	Growth in the Womb and Delivery, Diseases of Preschool Children, Development of Intelligence in Different Area, Emotional Intelligence, Orphans/ HIV Infected Children/ Disabled Children, Caregiver, Influence of Childcare on Child Development,

## Steering Committee 2008

Name	Organization	Position
1. Dr. Suwit Wibulpolprasert	Office of Permanent Secretary, Ministry of Public health	Committee Chair
2. Dr. Vichai Chokeyivat	Institute for the Development of Human Resource Protections	Committee
3. Dr. Ampol Jindawattana	National Health System Reform Office	Committee
4. Dr. Pongpisut Jongudomsuk	Health Systems Research Institute	Committee
5. Dr. Pinit Fahmouyphol	National Health Information System Developing Office	Committee
6. Dr. Narong Kasitipradith	Bureau of Policy and Strategy, Ministry of Public health	Committee
7. Dr. Chuchai Suppawong	The National Human Rights Commission of Thailand	Committee
8. Apinya Wetchayachai	Faculty of Social Administration, Thammasat University	Committee
9. Suttalak Samitasiri	Institute of Nutrition, Mahidol University	Committee
10. Yuwadee Kardkanklai	National Health Foundation	Committee
11. Parichart Siwaraksa	Researcher	Committee
12. Jeerawan Bunpoem	National Statistical Office	Committee
13. Warunya Teokul	National Economic and Social Development Board	Committee
14. Pipop Thongchai	Foundation for Children	Committee
15. Surin Kitnitchi	Klongkanomjeen Community, Sena District, Ayutthaya Province	Committee
16. Benjamaporn Chantrapat	Thai Health Foundation Promotion	Committee
17. Churnrurtai Kanchanachitra	Institute for Population and Social Research, Mahidol University	Committee and Associate Secretary
18. Kritaya Archavanichkul	Institute for Population and Social Research, Mahidol University	Committee and Associate Secretary
19. Chai Podhisita	Institute for Population and Social Research, Mahidol University	Committee and Associate Secretary
20. Umaporn Pattaravanich	Institute for Population and Social Research, Mahidol University	Committee and Associate Secretary
21. Suporn Jarasit	Institute for Population and Social Research, Mahidol University	Program assistant
22. Kullawee Siriratmongkhon	Institute for Population and Social Research, Mahidol University	Program assistant
23. Parnnachat Seangdung	Institute for Population and Social Research, Mahidol University	Program assistant

## The Thai Health Report Team

1. Churnrurtai Kanchanachitra	Main editor
2. Chai Podhisita	Editor "Global Warming: A Real Threat from Humans"
3. Kritaya Archavanichkul	Editor "10 Health Issues"
4. Umaporn Pattaravanich	Editor "13 Health Indicators"
5. Suporn Jarasit	Research assistant
6. Kullawee Siriratmongkhon	Research assistant
7. Parnnachat Seangdung	Research assistant

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