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UNICEF-ASSISTED INTEGRATED SANITATION PROGRAMME IN VIET NAM

Paper presented at the WHO Regional Workshop  
on Excreta and Refuse Disposal

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by

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## 1. Country reievew

The Democratic Republic of Viet Nam was founded on 2 September 1945, the Socialist Republic of Viet Nam was established with Hanoi as its capital in June 1976. The country has an area of 331 688 square kilometres and can be divided into three totally different types of region: plains, midlands and highlands. Half of the area of the country is covered with forest and about 4.9 million hectares are used for agricultural cultivation. Viet Nam shares a border with the People's Republic of China to the north, with Lao People's Democratic Republic and Democratic Kampuchea to the west and has a 3 260 kilometre coastline bordered by the Pacific Ocean in the east.

At present the country is divided into 40 provinces, including three cities: Hanoi, Haiphong and Ho Chi Minh City, which are divided into 481 districts consisting of 8 599 communes. Average population of each commune is between 2 000 and 10 000 inhabitants. The climate is tropical and sub-tropical with the average temperature ranging between 21.4°C and 27.2°C. In the northern part of the country, the temperature reaches 80C between December and February. The average yearly rainfall varies from 1 332 mm to 2 303 mm and the summers are hot and wet.

The Vietnamese are largely a homogeneous people, with their own culture and history. The main group representing 84.4 per cent of the population are Kinh, while 15.6 per cent of the population are represented by about 60 different ethnic minority groups thinly spread over the mountainous regions. Taoism is the traditional religion but Buddhism is widespread and there are about 3.5 million Roman Catholics. The national language is Vietnamese, although French is a useful language in the urban areas and English is more widely used than before.

Total population in 1983 was estimated to be 57.4 million with about 80.9 per cent living in rural areas. The population density is 173 per square kilometre and males constitute 49.1 per cent. Other statistics are as follows<sup>1</sup>:

	<u>Year</u>	<u>Rate</u>
Crude birth rate (per 1 000)	1983	30.4
Crude death rate (per 1 000)	1983	7.5
Annual growth rate (%)	1983	2.34
Maternal mortality (%)	1983	1.1
Infant mortality (per 1 000 live births)	1983	33.5
Per capita gross national product (GNP)	1983	US101

MATERNAL AND INFANT MORTALITY \*

<u>Years</u>	<u>Maternal mortality</u>	<u>Infant mortality</u>			<u>Perinatal mortality</u>
		<u>7 days</u>	<u>28 days</u>	<u>1 year</u>	
1976	1.40	12.6	18.4	34.2	27.0
1980	1.00	11.5	18.6	34.7	21.4
1981	1.00	11.2	18.1	33.9	20.7
1982	1.20	11.3	18.4	33.6	20.4
1983	1.10	11.2	18.3	33.5	20.1

SANITARY FACILITIES\*

<u>Year</u>	<u>Number (in thousands)</u>			<u>Number of families for each</u>		
	<u>Latrines</u>	<u>Wells</u>	<u>Bathrooms</u>	<u>Latrine</u>	<u>Well</u>	<u>Bathroom</u>
1976	2 894	1 457	631	2.4	4.7	10.8
1980	4 748	2 837	2 230	1.8	3.1	3.8
1981	4 551	2 631	2 223	1.9	3.6	4.4
1982	4 875	2 809	2 529	1.9	3.7	4.5
1983	5 001	2 858	2 646	1.7	3.4	4.3

MORTALITY AND MORBIDITY RATES, 1976 AND 1983\*

(Selected communicable Diseases)

ICD	Diseases	1976		1983	
		Per 100 000 population			
		Cases	Deaths	Cases	Deaths
001	Cholera	2.8	1.0	1.0	0.2
002	Typhoid para-fevers	10.5	0.2	7.4	0.1
004	Shigellosis	81.8	1.6	98.1	0.5
006	Amoebiasis	136.4	1.2	171.0	0.5
003	Other salmonella	440.1	3.9	648.4	2.5
020	Plague	1.7	0.8	0.4	0.1
022	Anthrax	0.9	0.01	0.7	0.01
032	Diphtheria	3.5	0.5	6.7	2.6
033	Pertussis	102.9	0.2	48.8	0.2
037	Tetanus	3.1	0.9	2.4	0.03
062	Viral encephalitis	4.7	1.3	7.7	0.8
045	Poliomyelitis	1.2	0.06	1.9	0.04
052	Chickenpox	51.4	0.4	38.5	0.02
055	Measles	200.0	0.7	218.0	1.0
061	Dengue haemorrhagic fever	45.4	12.0	249.7	3.0
071	Rabies	27.7	0.5	88.3	0.5
070	Viral hepatitis	45.3	0.3	37.7	0.3
072	Mumps	24.2	0.6	17.6	-
084	Malaria	563.6	3.3	350.0	1.5
100	Leptospirosis	6.0	-	2.5	0.5
487	Influenza	1 312.0	-	837.0	-
011-012	Pulmonary TB	111.8	1.2	78.7	1.1

\* Source: Tripartite Country Programme Coordination Meeting  
Government of Viet Nam/UNICEF/WHO  
21-22 March 1985.

## 2. Programme genesis

This paper was prepared to present a review of UNICEF-assisted sanitation activities in Viet Nam over the past years. In recognition of the importance of adequate environmental sanitation and hygiene, UNICEF has been assisting the Government of the Socialist Republic of Viet Nam with the implementation of sanitation projects since 1975. The Vietnamese government, however, has long before since recognized the importance of environmental sanitation and has been carrying out such activities since 1945.

Since 1975, UNICEF assistance in the field of sanitation has been in giving support to Government projects towards the improvement of environmental sanitation and personal hygiene in the country and to develop activities to control epidemics and water and sanitation related diseases to which children fall often as the first victim. Prevention of transmissible diseases by cutting their transmission routes was aimed at by means of improving personal hygiene activities and environmental sanitation.

The first UNICEF assistance of this nature was mainly of the "emergency" type: providing cement and iron bars on a national scale, for lining wells and for building latrines. In the rural areas of Viet Nam, UNICEF assisted to construct 100 000 elevated double-vault compost latrines, together with construction and/or renovation of 50 000 wells. UNICEF provided cement and iron bars, items which were difficult to obtain locally at that time just after the war.

Since 1980, UNICEF's assistance to sanitation has been concentrated in rural areas. The policy has been to assist certain planning and training activities at the national level, but to stress actual implementation only in certain priority districts of six provinces: Long An, Minh Hai and Kien Giang in the Mekong Delta, and Thanh Hoa, Nghe Tinh and Ha Nam Ninh in the northern part of the country.

Because UNICEF's resources are limited, UNICEF-assisted sanitation projects are concentrated in these six provinces. Attempting to provide facilities to more than six of Viet Nam's 40 province in the present circumstances, would result in UNICEF's assistance being spread too thinly to have any real impact on children's health.

Although the close links between water and sanitation are clearly recognized, UNICEF in Viet Nam has been treating these activities as separate programmes in order to make implementation more straightforward.

1980 and 1981 were largely used for programme planning. UNICEF's first Water and Sanitation Officer on permanent assignment to Viet Nam arrived in September 1980, after which working recommendations were developed and initial lists of required supplies and equipment were drawn up. These materials started arriving in the country in early 1982.

In mid-1982 a National Committee for Water and Sanitation was established to help pursue the goals of the International Drinking Water Supply and Sanitation Decade. The Committee includes representatives of most of the government bodies which deal with drinking water and sanitation and it is chaired by the Vice-Director of the National Committee for Science and Technology. The committee has been studying the requirements of the Sanitation Sector, and it is in the process of preparing recommendations for future action.

In mid-1983, province-level coordinating committees for water and sanitation were established in each of the provinces of special UNICEF assistance. These committees include members from all the provincial government bodies which receive assistance from UNICEF, and each is chaired by a vice-Chairman of the People's Committee.

Such committees at any level are primarily responsible for developing and establishing a policy for Sanitation and Drinking Water, and for defining broad areas of work requirements. Actual project implementation is carried out by the various government bodies to which such tasks are designed.

With regard to implementation of Water and Sanitation activities during the period 1980-1984, the greatest progress was in the water sector. Programmed UNICEF assistance to water activities began in 1980 in "the Three Provinces" of the Mekong Delta. During 1983 the work expanded to "the Three Provinces" of the North, but work there is approximately one year behind the stage reached in the South.

In the South, warehouses for project S & E have been completed in all three provinces, and mechanical workshops are nearing completion. The local authorities are not familiar enough with required store-keeping procedures, and UNICEF staff are assisting with the development of such procedures.

Some prototype Ventilated Improved Pitlatrines (VIP) have been installed in Long An and Minh Hai Provinces, but some basic design considerations were not adhered to and much more experimentation along those lines is required.

In August 1984 UNICEF's first Sanitation Officer arrived in Hanoi. In order to take up the post which was already established in 1981 and has been vacant since then. Before the arrival of the Sanitation Officer, Sanitation Programme activities were being programmed and executed by the Water Supply Officer who was responsible for both programmes.

The arrival of the Sanitation Officer marked UNICEF objective to reinforce and support Sanitation Programme activities in the coming years. After an initial period of 5 months in which extensive field trips have been made and ample discussions with the government have been held, the Sanitation Officer has been put in charge with further development of the Sanitation Programme. The Water Supply and Sanitation Programme are completely separated into distinct programmes, although close working relations exist.

The Government assigned in February 1985 the Ministry of Health (MOH) with the main responsibility for implementing sanitation programme activities supported by UNICEF.

The Ministry of Education works in close cooperation with MOH, but under separate responsibility towards improving the hygiene and environmental sanitation education at schools and training centres, in order to increase students' awareness.

The National Committee for the Protection of Mother and Child works in close cooperation with MOH, but under separate responsibility, towards improving the hygiene and environmental sanitation education and training of day-care centre attendants, in order to improve the hygiene and environmental sanitation situation at day-care centres or creches.

It is, perhaps, important to recognize that many of the programme's long-term requirements may not be satisfied very soon. In the meantime, practical, realistic and often day-to-day measures will continue to be the means of implementing the Sanitation Programme.

UNICEF stresses the fact that a sanitation programme is a complex combination of many different projects and activities which must be united in a way that the end result is a decreased rate of child morbidity and mortality - particularly in the country's rural areas.



### 3. Environmental Sanitation and Primary Health Care

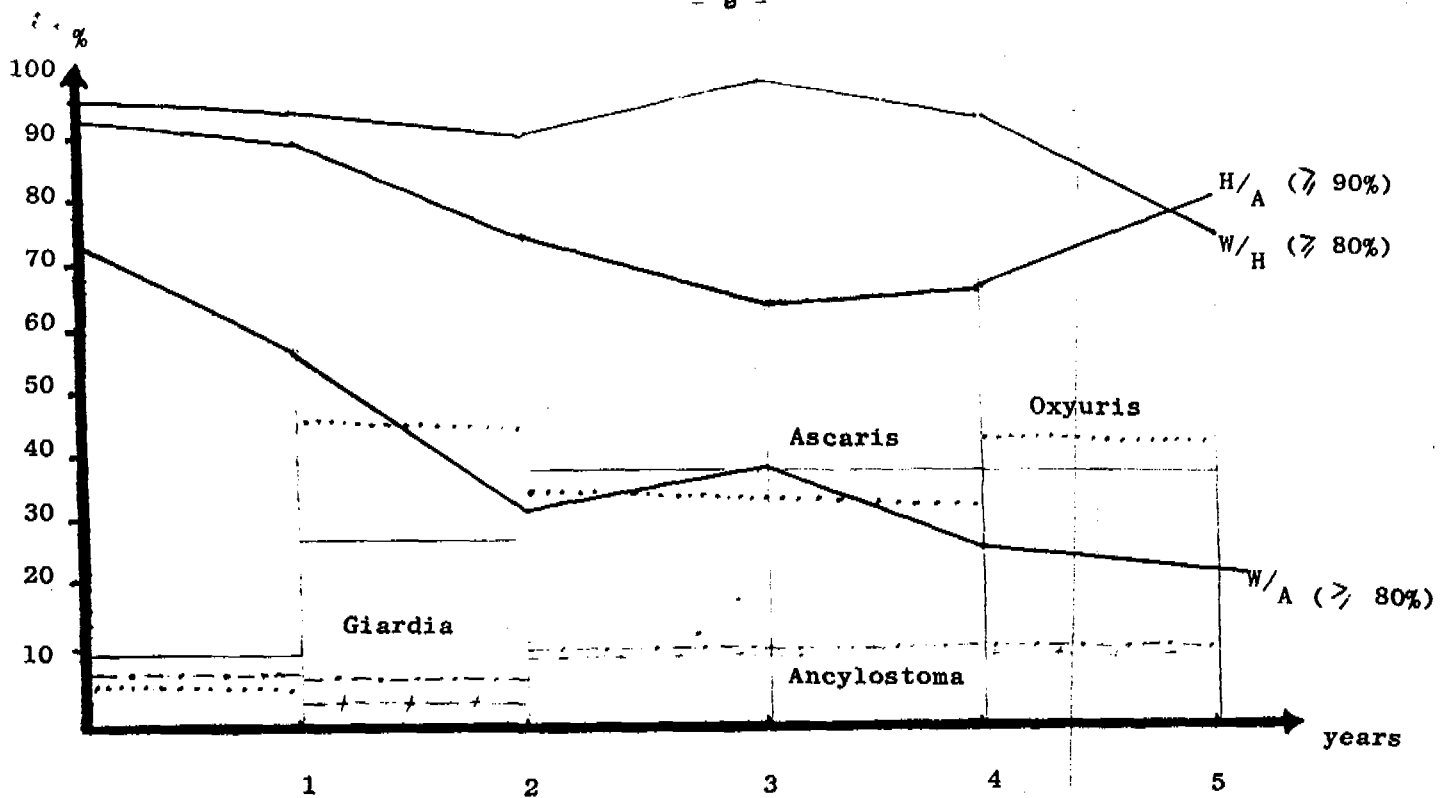
UNICEF's policy for the promotion of mother and child health over the past years has been focussed on 9 key elements reflected in G.O.B.I.F.F.F.-W.S., whereby the G = Growth, O = Oral rehydration, B = Breastfeeding, I = Immunization, F = Food, F = Female Promotion, F = Family Planning, W = Water Supply and S = Sanitation. Key elements which form together the basic instruments for a successful Family Health and Primary Health Care Programme.

Environmental Sanitation has as its main objective to improve the health status of the population. However, as the statistics indicate high morbidity and mortality rates due to various water and sanitation related diseases often affects the children, children which are often already victim to other severe health dangers like malnutrition.

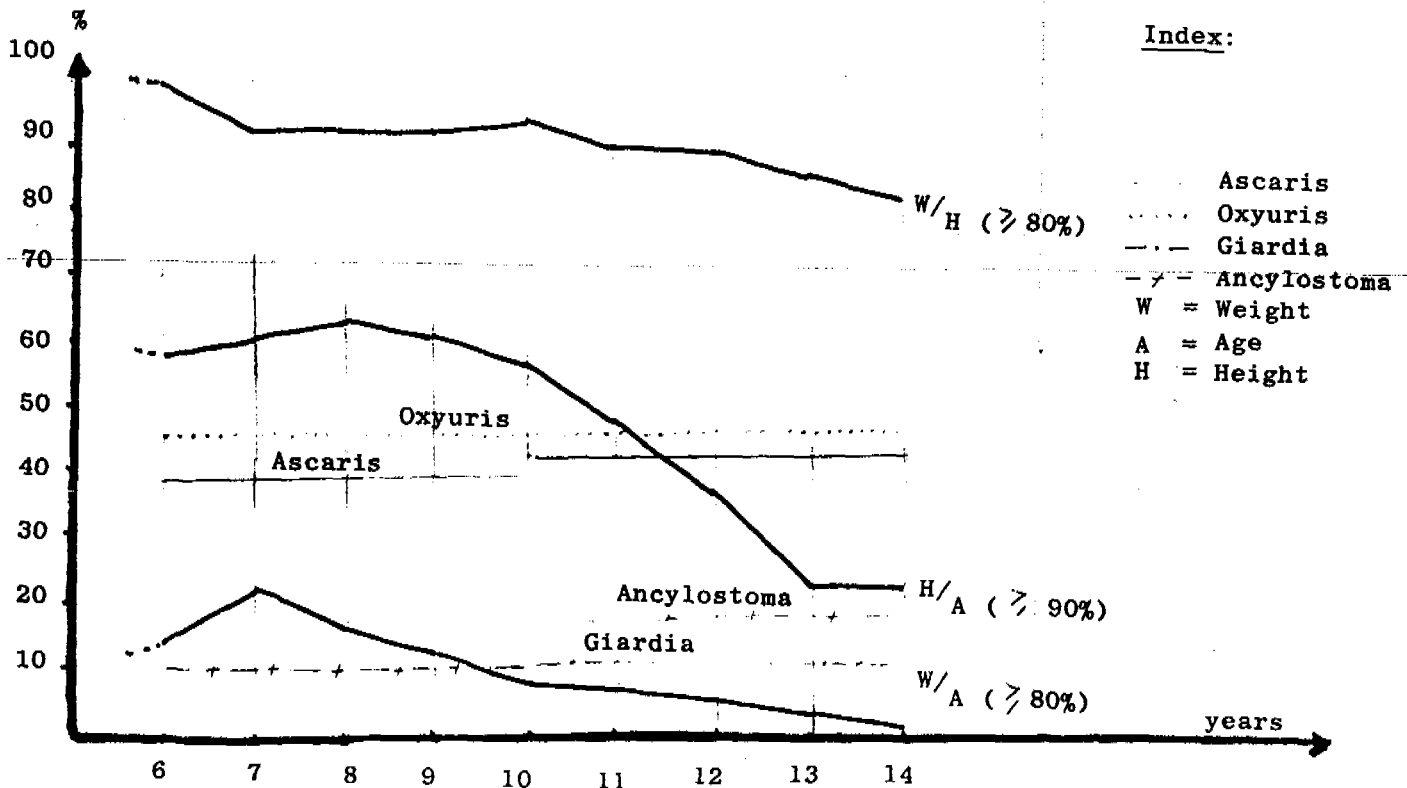
The main diseases related to water supply and sanitation are the diarrhoeal diseases and intestinal diseases, which both are highly prevalent in Viet Nam. Although the mortality of diarrhoeal diseases is of a major concern, and wide-spread use of oral rehydration salts (ORS) is encouraged by the Government and UNICEF, it is the high morbidity of diarrhoeal diseases together with the high rate of intestinal parasitic infections that leads to chronic malnutrition, severely hampering the development of the children.

Recent findings by the Pediatric Centre in Ho Chi Minh Ville underlive this aspect in more concrete figures. After a study of the children's nutritional status in one under-served urban fringe district of Ho Chi Minh Ville it was observed that:

- children have been subject to a chronic malnutritional situation which lasted several years, which is reflected in a progressive growth of the number of children with insufficient W/A and H/A (W = weight, A = age, H = height)
- but at the moment of the survey, these children were relatively well nourished which was reflected in their W/H, with figures of 96% - 85% but not reflected in their age. We have to conclude that the malnutritional status is not due to under-nourishment but that also other factors interfere;
- at the same time, a survey showed that these children are subject to high morbidity of diarrhoeal diseases and intestinal parasites (Ascaris, Ancylostoma, Giardia);
- the environmental sanitation situation in the district is reaching unacceptable levels, the water supply provision is inadequate (only 20 l/family/day) and excreta disposal is done in a haphazard manner, children often use the streets (and walk barefooted) and adults use fish-pond latrines, connected to nearby canals. Solid waste is often dumped on vacant land or on river and canal banks.



Frequency diagram of children from 0-5 years with a normal W/A, W/H and W/H and H/A in an underserved urban fringe areal of Ho Chi Minh City and corresponding average infection rate for Intestinal Parasites (Ascaris, Ancylostoma, Oxyuris and Giardia) of children in the same age group.



Frequency diagram of children from 6-14 years with a normal W/A, W/A, W/H and H/A in an underserved urban fringe areal of Ho Chi Minh City and corresponding average infection rate for Intestinal Parasites (Ascaris, Ancylostoma, Oxyuris and Giardia) of children in the same age group.

It is well understood that an Integrated Sanitation Programme comprising the following elements, water supply, excreta disposal, intestinal parasite control, hygiene and health education and solid waste disposal together with improvement of the existing drainage system is the answer to improve health and the overall nutritional status of the children in this particular area.

Similar analyses are being conducted for the six pilot communes in the rural areas of Viet Nam to investigate in more detail the relation between environmental sanitation, diarrhoeal diseases, intestinal parasitic infections, family health and nutrition.

4. Existing conditions in the programme area

A. General characteristics of the environmental sanitation situation\* in the Mekong Delta (Long An, Minh Hai and Kien Giang Provinces)

Feacal organism indicators (such as Coliform E. Coli) reach a medium to high level in 100% of surface water of Mekong River as well as in its tributaries: rivers, canals and ponds.

In March (dry season), specimen analysis results of water from the upper part of Mekong River show that Coli index is 4.000/litre, and the results also tell that 80% of the specimens of water near the river side, and 50% of the specimens of pond water are heavily infected by feacal organisms.

Water analysis also shows that 8.5% of the dug-well water specimens are contaminated, 56% of which are heavily infected. These wells are often made in an unproper manner and lack protection.

In most of the cities, 57.7% of water distributed from the water treatment plants are contaminated by pathogenic organisms, of which 31.5% are heavily contaminated, mainly, because this water is not treated.

Due to the nature of unhygienic habits, it may take many years to change them, e.g., the habit of drinking unboiled water from rivers and canals, particularly in dry season (lack of other sources of water). Drinking water is taken from the river, then often simply decantated in containers, people in urban areas generally drink unboiled fountain water. During the rainy season, some houses having containers obtain rain water for drinking. Enteric diseases are wide-spread and sometimes become epidemic. The water of the Mekong basin is not considerably polluted by liquid wastes from factories.

Human nightsoil is seen as the main factor of water pollution in the Mekong Delta, generally speaking, people have the unsanitary habit to dispose feaces directly in rivers and in fish ponds which communicate to rivers and canals. In some crowded areas, there are many public overhung-latrines on water, fish feeding on human excreta is popular.

In most urban areas there are also septic tanks and semi-septic tanks or water closet latrines for private and public utilities, the sewage of which is poured directly into rivers, canals or is penetrated into the soil.

With aid of UNICEF, a lot of composting double-vault latrines have been built in many places for private and public use, but these latrines are not properly used by a majority of the people.

Nearly two-thirds (69.2%) of the families living in the Mekong basin have not their own latrines and use latrines of other families or dispose excreta uncontrolled on the land or into the river.

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\* Water quality analyses figures obtained from the National Institute of Hygiene in Ho Chi Minh City.

One-third (30.8%) of the families have their own latrines, of which 22.8% are sanitary fish pond latrines which isolate completely the water from the fish-ponds from the rivers or canals.

Classification of different kinds of latrines

- 65% fish pond latrines (363 114 units)
- 3.1% over-hung latrines (17 508 units)
- 16.3% pit latrine and water closet latrines (91 381 units)
- 12.3% septic tank and semi-septic tank latrines (68 744 units)
- 3.3% composting double-vault latrines (18 628 units)

Approximately 70 per cent of the latrines directly contaminate surface water ways.

Particularly dangerous are the suspended latrines for fish feeding by human excreta. Rivers passing by are thus seriously contaminated. The E. Coli index of their water samples is 150 000 to 460 000 E. Coli per litre, i.e., 20 times higher than those taken where the fish raising process uses no human excreta as food (9.300 E. Coli per litre), and 1 000 times higher than the water specimens taken right on the centre of the Mekong river's first divergent point at Tan Chau (4.500 E. Coli per litre).

Sanitary habits in the programme area are conditioned by the following factors:

- geographical factor: soil conditions and level of groundwater
- economical factor: fish-pond latrines are economically advantageous
- psychological factor: fish-pond latrines and river-drop latrines exhale no bad smell and do not attract flies
- health education: people are generally not conscious of the relationship between the environmental sanitation situation and diseases nor with regard to their own individual responsibility upon the whole population's health
- legislation: regulations on hygiene practices have been set up, but neither implementation nor control have been seriously put into force, so river-drop latrines and river-linked fish-pond latrines are still widespread
- 100% of river water tested samples do contain E. Coli (including water of the river Bao Dinh, Thu Thua and Moc Hoa which are water sources of the water systems of Tan An-town of Thu Thua and Moc Hoa market-towns)
- 44% biologically tested food samples in 1982 did not reach normal hygienical criteria.

Gastro-intestinal diseases are widespread:

- a. Results of an inquiry on morbidity of diarrhoeal diseases (July 1983) (Long An Province):

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	<u>Vam Co</u>	<u>Long An town</u>	<u>Duc Hoa</u>
Diarrhoeal crisis/5 years child/year	3.7	1.8	2.6

b. Situation on gastro-intestinal parasites among school-children: Tested samples from school children (Long An Province);

<u>Locality</u>	<u>Contaminated samples</u>	<u>Ascaris</u>	<u>Hook-worm</u>
Duc Hoa	33.3%	25.9%	14.8%
Can Giuoc	53.8%	38.4%	7.7%
Moc Hoa	49.8%	37%	2.0%

B. General characteristics of the environmental sanitation situation in the Northern Provinces (Ha Nam Ninh, Nghe Tinh, Thanh Hoa):

Type of latrines in use:

- in the mountainous areas: single vault latrines (traditional pit-latrines)
- in the coastal area, the plains, and midlands: double vault latrines (compost latrines)
- in towns, small towns, cities: septic tank latrines and semi-septic tank latrines

The average number of families having latrines in the Northern provinces is around 65%.

Sanitary habits and the use of fertilizer:

- a. ~~In the midlands and the plains: fertilizer is needed, fresh excreta or composted excreta are used on the fields.~~
- b. In the high mountainous and coastal areas: the use of fertilizer is rarely observed. In the high mountainous areas people often have no latrines, doing their need on the ground, on the edges or in the field.
- c. In the coastal area: people are usually doing their needs at the beach.

The people are not frequently educated in order to raise their sanitary consciousness and understanding of the relation between sanitation and diseases.

The individual hygiene consciousness and sanitation responsibility to the collective are not so high. Sanitary rules are not consciously carried out.

Sanitary rules were delivered but no implementation and examination were made. Thus, in some regions, fresh excreta has still been used for vegetables as fertilizer and for fish ponds. Solid waste collection in the cities has not been satisfactory and firmly dealt with.

E. Coli are found in nearly 100% of the tested samples of the river water.

The prevalence of intestinal diseases:

Data of persons being taken ill or died of diarrhoea from 1981-1984 (Nghe Tinh Province):

	1981		1982		1983		1984	
	Illness	Death	Illness	Death	Illness	Death	Illness	Death
Diarrhoea	20042	66	11922	124	27899	242	8255	59
Dysentery	13082	105	20146	130	15351	206	6954	94

The situation regarding intestinal parasite infections (Nghe Tinh Province)

Locality	Samples	Samples (+)		Roundworms	Whipworms	Hookworms
		Infected samples	%			
Quyhop district	64	49	77	48 = 97%	0	10 = 20%
Nghi loc Commune	418	380	90	372 = 98%	80 = 21%	13 = 3.4%
Vinh	526	429	81	415 = 96%	45 = 10.4%	5 = 1.1%

## 5. UNICEF-assisted integrated sanitation programme

### General

The Integrated Rural Sanitation Programme consist of many sub-projects providing for the planning, construction and placing into operation of a large number of facilities in numerous locations over a large area, in a stated period of time. The so-called "hardware".

They also provide for community development, health and hygiene education, training, institutional development, technical assistance and operation and maintenance support. The so-called "software".

To break the chain of transmission of certain diseases, however, improved excreta disposal methods must be provided along with improved water supplies. For a rural area the latrine, properly located, constructed and maintained will be an adequate facility. In Viet Nam, the double vault composting latrine is widely used in the North, whereas the fish-pond latrine or the over-hung latrine are aqua-privy are also observed.

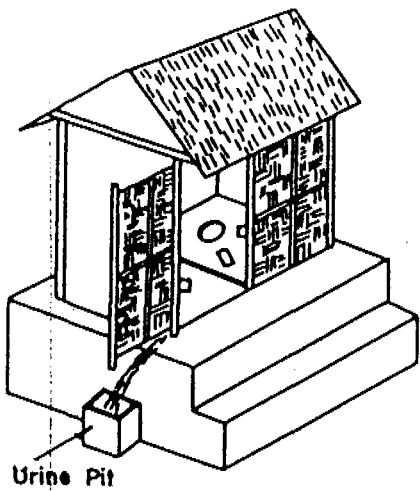
The main objective of the "Integrated Sanitation Programme" might be formulated as follows: to provide means for the safe disposal of human excreta through low-cost, easily maintained facilities (the 'hardware') and to increase users awareness for the need of proper use and maintenance of the facilities. (the 'software'). Thus, completing the effort to protect the health of the people from water and excreta-related diseases.

Sanitary improvement of existing water sources, like open wells and water storage systems are an integrated part of the Integrated Sanitation Programme in selected communes.

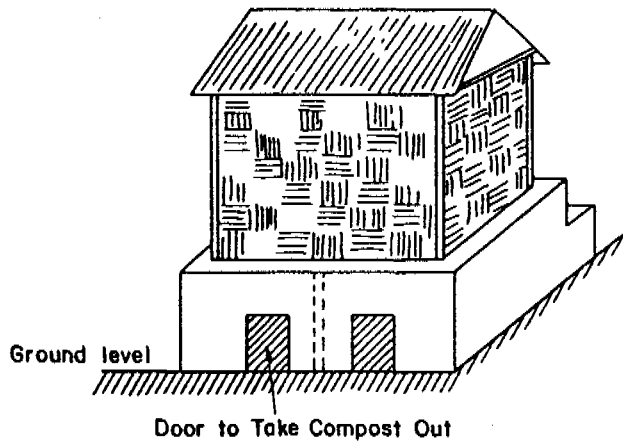
In Viet Nam, human waste is often seen as an important economic resource that should be recovered. The double-vault composting latrine combines the safe disposal of human waste with the generation of composted fertilizer to be used as an agricultural input.

An average Vietnamese family of 4-5 members can collect about 180-220 kg of excreta per year and about 200 to 300 litres of urine per capita per year. If these estimated quantities of human feaces and urine are applied to a field of rice, maize or potatoes, and calculating for the N-nutrient alone, a family may gain 130 to 150 kg extra crop yield. This figure clearly illustrates the important economic and nutritional aspect of the use of composted human excreta to fertilizer the fields. However, the system needs careful operation and users' discipline in order to function properly. If not operated well it might become a breeding ground for flies and mosquitoes and unplesant smells and odours might be present, creating an unwanted health hazard.

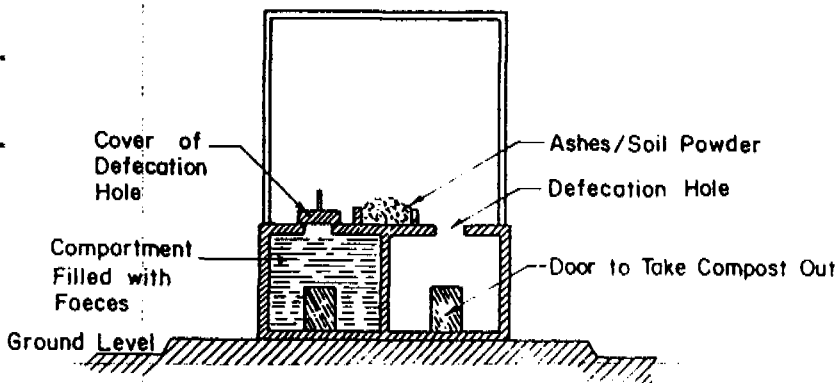




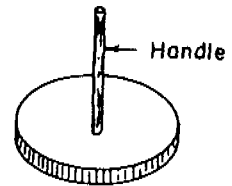
Earthen Double Septic Bin  
(Isometric View, Front Side)



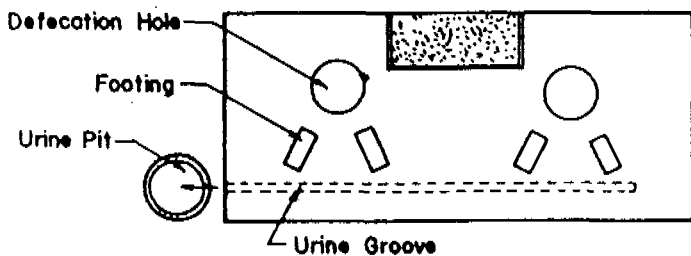
Isometric View, Back Side of Double Septic Bin



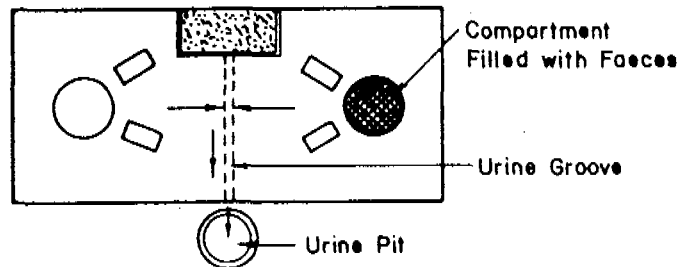
Cross Section of Double Septic Bin



Wooden Cover for Defecation Hole

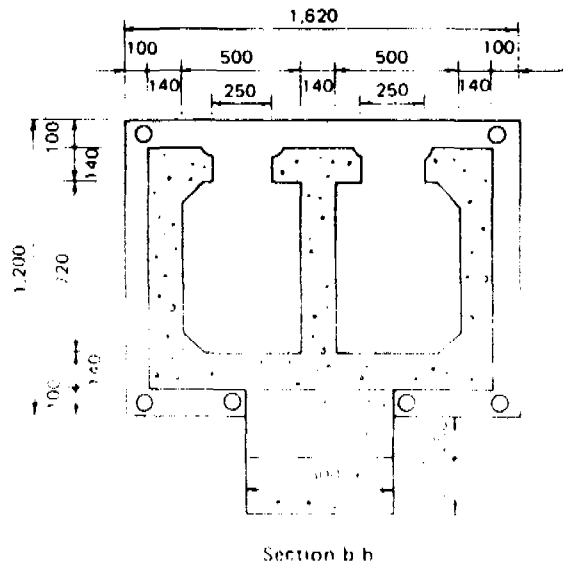
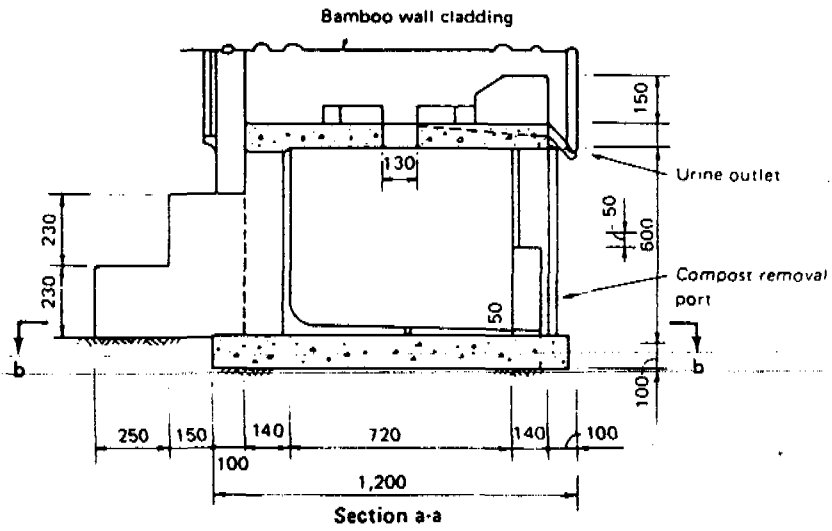
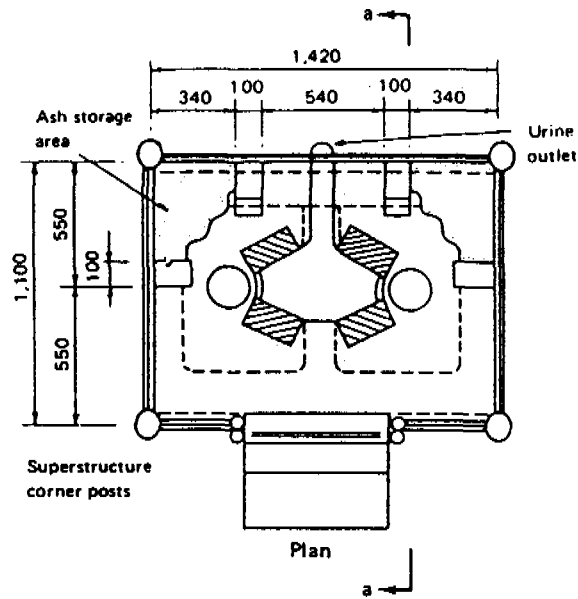


Plan View of Double Septic Bin



Alternative Arrangement, Plan View of Double Septic Bin

### Double-vault Composting Toilet Used in Vietnam

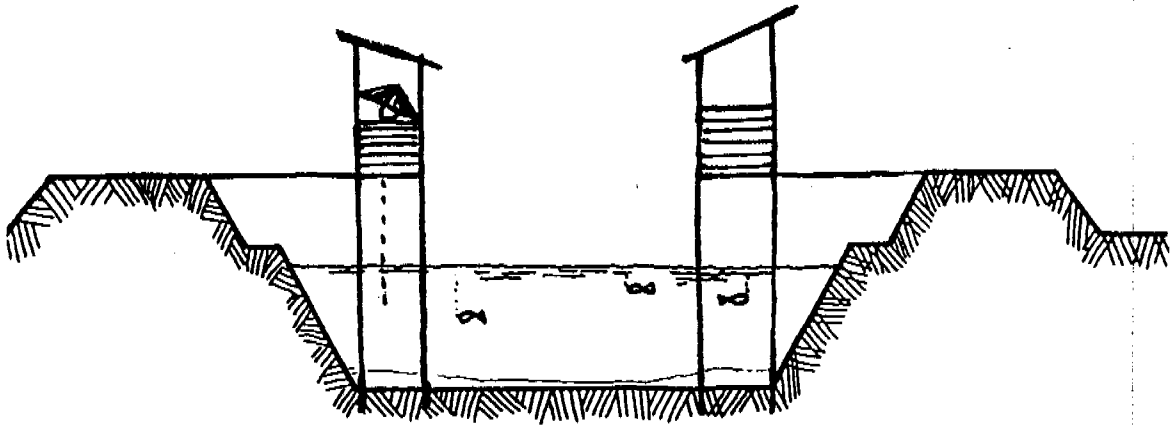


The fish-pond latrine combines the disposal of human waste with the cultivation of fish which forms an important additional nutritional advantage of the system.

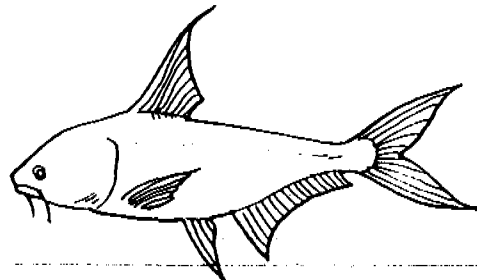
The fish-pond latrine has to be considered as an important instrument to provide and increase animal protein in the diet of rural people, particularly pre-school children, pregnant women and breast-feeding women. Very often, rural people suffer from a protein-energy malnutrition but however often do not realize it themselves. A family-size fish pond latrine may support the animal protein needs of a family and with proper maintenance and operation practices, including supplementary feeding, marketing possibilities do exist. Silver striped catfish (Pangasius) can be raised easily, since they feed on human excreta, animal manure, waste food, water spinach, rice bran and broken rice. You can stock about 5 to 10 fish per m<sup>3</sup> or 1 000 to 2 000 fish in a 200 m<sup>2</sup> pond, but this, of course, needs a lot of manure, excreta and additional food. At least 100 kg fish per year should be raised from a simple family fish pond latrine without additional supplementary feeding. This means about 300 gms per day per family. However, these are conservative figures and they may be much higher, e.g., when fish-pond latrines are shared with neighbours or are of the communal type.

Fish-pond latrines are often seen directly connected to the rivers or canals and thereby pollute surface waters. The system offers potential for improvement, by increasing the fish production through proper feeding and pond operation, by indirect application of human waste either through double vault compost latrines, aqua-privies or septic tanks in this way reducing the health hazard and preventing surface water pollution. However, this may mean a different aquacultural system needs to be introduced by raising Tilapia which feeds on plancton and algae.

The septic tank systems often observed in urban areas and at hospitals, schools or other institutions are in a need of proper maintenance and regular emptying facilities should be available in order to maintain a minimum required retention time in the system. Soakage and sludge disposal arrangements need careful attention in order to optimize the system.



Double fish-pond latrine, often made from wood or timber and located directly above the fish pond.



Pangasius can live in heavily polluted waters with high BOD demand, feed on human excreta, animal manure, waste food, water spinach, rice bran and broken rice. By preparing the fish extreme care has to be taken in hygienic handling and cleaning of the fish before cooking.

### Socio-cultural aspects

Sanitary disposal of human waste is necessary to eliminate contamination of water and food and to prevent people from coming into direct contact with disease organisms. Sanitary facilities must be in line with local customs and habits, otherwise, they will not be used.

It has been found that one of the principal causes of project failures has been the lack of participation of the villagers or other beneficiaries in every phase of the local sanitation scheme, and the lack of contribution to their construction and operation (in cash or kind). Unless users are involved from the beginning and are conscious of a need for safe water and proper sanitation, there is a danger that the facilities will not be properly used or maintained.

To achieve full benefits from the investments made, therefore, usually requires public health and hygiene education programmes, tailored to local customs and beliefs and the understanding capability of the target audience.

These programmes are to be carefully planned (the provision of hardware and software should be supplementary) and adequately funded. They are carried out by the existing specialized institutions (Institute of Hygiene (HCMC), Institute of Hygiene and Epidemiology, Hanoi, from the Ministry of Health through their Provincial Hygiene and Epidemiology Stations in the provinces, as they seem to be the natural facilitators of these programmes, or other institutions or agencies as decided by the government.

Each programme is directed to the users of the new facilities but should also include training of all water supply and sanitation personnel in the fundamentals of health and hygiene education since they are in direct contact with the people and will continue to give advice and support to them. The sanitation programme should provide for staff, salaries, vehicles, boats, equipment, materials, transport, and other recurrent costs, as well as in-service training.

~~Special attention is given to develop a proper health and hygiene education programme to be included in the school and training curricula of various schools and training institutes. A school latrine construction programme will be combined with the above mentioned hygiene and health education programme.~~

### Intestinal parasite control

Gastro-intestinal parasite control activities are carried out in Viet Nam in support of Environmental Sanitation Programme activities, to enhance people's health consciousness and awareness in the form of a participatory health education process to reduce soil-transmitted helminthic infections and at the same time encourage operation and maintenance of latrines and wells to a more hygienic standard and to motivate participation in construction and renovation activities.

In the first phase of the project in a commune assistance and cooperation is thought from the People's Committee and a local Integrated Sanitation Programme is formed. Health education activities will be carried out, focussing on water and sanitation related diseases and in particular soil-transmitted helminths (Ascaris).

The primary school in the commune is selected as the entry-point for the programme implementation. Students are requested to bring a sample from their faeces to the school in a stool container which was previously handed out to them. The stool container with faeces is put in an envelop on which has to be written the child's name, age, sex, weight and height and the result of the stool examination test.

Students are allowed to see in the microscope by themselves and identify helminth eggs which might be present in their stool. All this takes place on a school-wide scale with all students participating. Films can be shown, and explanation about the nature of parasitic infections and their prevention by improved Environmental Sanitation and Personal Hygiene is given. All students found positive will be given an anti-helminthic drug (Mebendazole - 400 mg/single dose) and are requested to collect their stools for the coming four days and to bring them to school, where they will be dilluted and sieved in order to expose the expelled worms, including ascaris and ancylostoma.

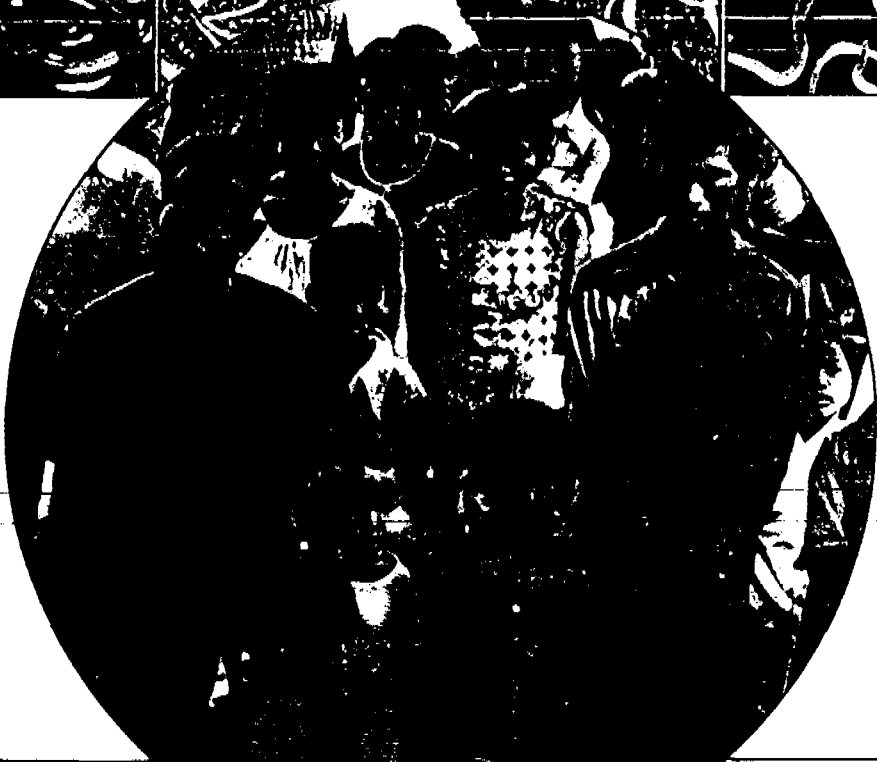
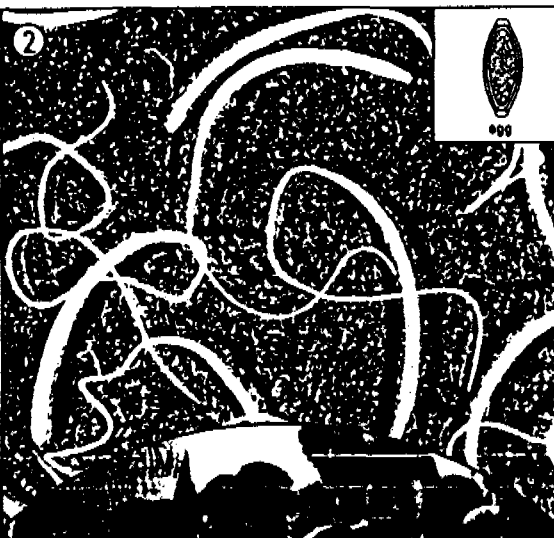
The dramatic effect of seeing the large roundworm expelled from his body will have a powerful impact on the student and enhance his health consciousness, furthermore stimulating him to practice proper Hygiene and Environmental Sanitation. The parents will, no doubt, be very pleased by the parasite control activities as they witness the results of the deworming of their children.

In general Environmental Sanitation activities will now start to be implemented in the communes, including sanitary improvement of existing wells, renovation and construction of latrines and bathrooms.

After half a year usual reinfection has taken place and parasite control activities are again carried out at the school, but his time also the adult population of the commune is invited to participate in the mass stool examination and mass deworming, and in turn will receive hygiene and health education.

# Intestinal parasitic infections . .

Any of over 50 different species of intestinal parasite can infect human beings. The six most important groups are :



**1. ROUNDWORMS**  
*(Ascaris)*

Infect: 1,000,000,000 people  
Kill: 20,000 people per year

**2. WHIPWORMS**  
*(Trichuris)*

Infect: 500,000,000 people

**3. HOOKWORMS**  
*(Ancylostoma/Necator)*

Infect: 900,000,000 people  
Kill: 60,000 people per year

**4. AMOEBAS**  
*(Entamoeba histolytica)*

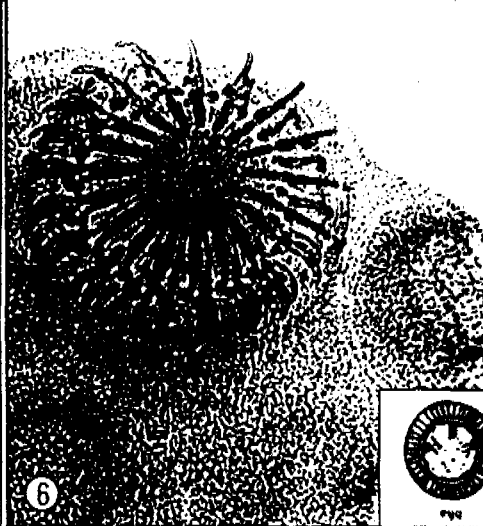
Infect: 400,000,000 people  
Kill: 30,000 people per year

**5. GIARDIAS**  
*(Giardia)*

Infect: 200,000,000 people

**6. TAPEWORMS**  
*(Taenia)*

Infect: 50,000,000 people  
Kill: 50,000 people per year



# ... and how best to prevent them

All over the world, disease, disability and death are brought about by parasites in the form of:

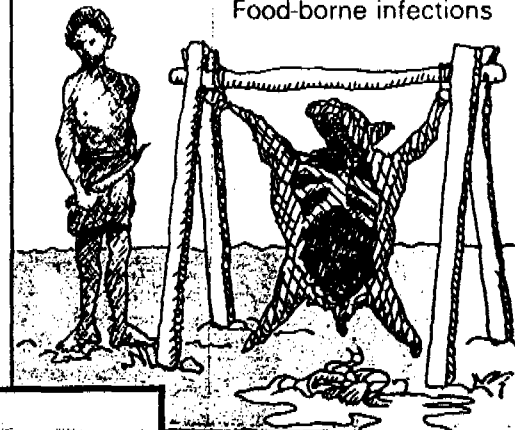
Soil-transmitted helminths (worms)



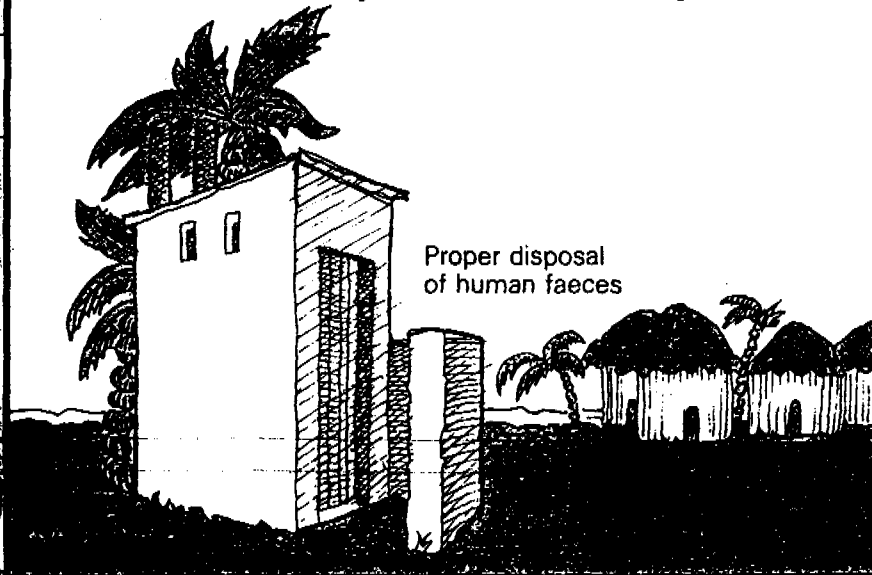
Water-borne infections



Food-borne infections



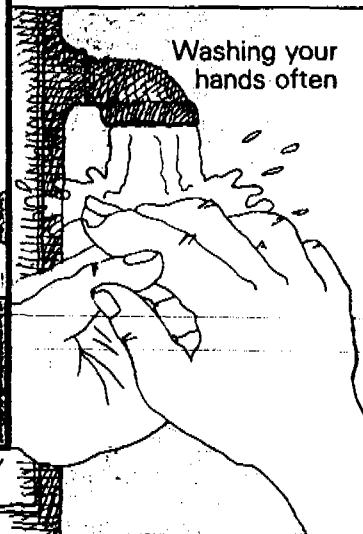
You can prevent them by:



Drinking safe water

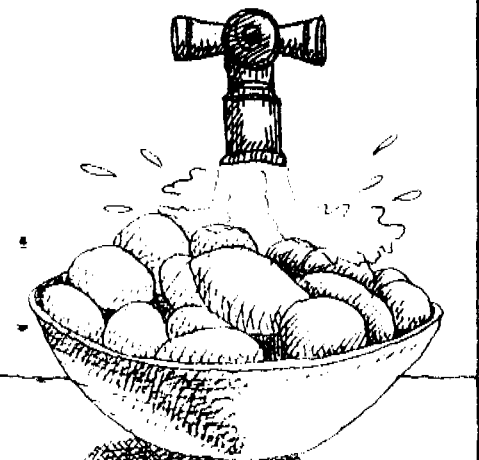


Washing your hands often

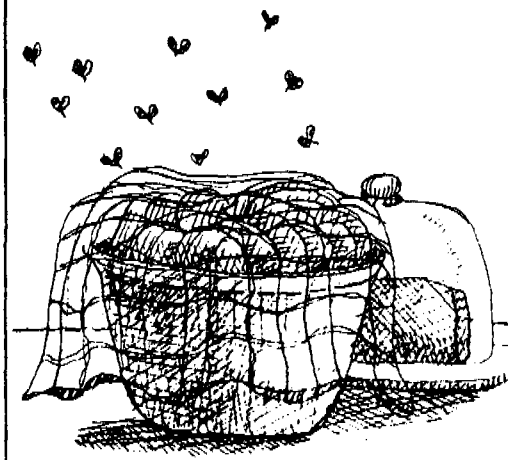


and also by:

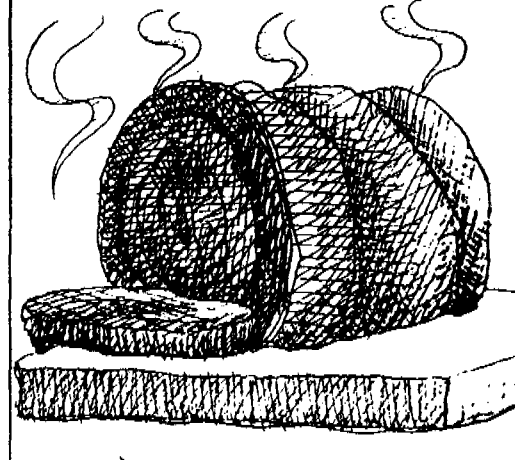
Washing fruit and vegetables well



Controlling flies and rodents



Eating meat well-cooked





The Environmental Sanitation improvement activities will continue to take place during the coming months, and everybody is motivated to eradicate intestinal parasites from the commune.

Parasite control activities serve as a good instrument for participatory Health Education whereby the person is treated at the same time. This process gives a boost to the credibility of the commune health worker who is the general executive director of the Integrated Sanitation Programme in the commune.

It also serves as an instrument for evaluation and monitoring of hygiene and environmental sanitation activities in the commune whereby the rate and nature of gastro-intestinal parasitic infections are the key-indicators, together with W/A, H/A and W/H nutrition indicators of the children.

Intestinal Parasite Control activities in support of Environmental Sanitation are a new element in Sanitation Programme implementation and form a key-element in the Integrated Sanitation Programme as supported by UNICEF, furthermore, it has also to be considered as a major instrument to stimulate other Family Health activities related to Primary Health Care, like control of Diarrhoeal Diseases (CDD) and the Extended Programme of Immunization (EPI).

The construction of simple sanitary systems like latrines, bathrooms, rainwater storage tanks, etc., can be done by the commune. In most cases the commune can provide unskilled labour and usually also sand, gravel, stone or bricks depending on the local situation. UNICEF provides cement, iron reinforcement bars, logistics and medicines for deworming.

Arrangements are made to have materials, supplies and equipment readily available before executing the agreement which formalises commune participation. Once the commune has shown its willingness and desire to participate in the project, construction of the systems should follow quickly. Too long a delay destroys the credibility of the project and programme.

- 25 -  
SOCIALIST REPUBLIC OF VIET NAM  
SOCIOECONOMIC AND HEALTH INDICATORS

Indicator(s) for: SOCIALIST REPUBLIC OF VIET NAM	Year	Data	Source of Data
1. Area (in 1000 sq. km.)	1983	331.69	12/83
2. Estimated population, ('000)	1983	57 442	06/85
3. Annual population growth rate, (%)	1983	2.34	06/85
4. Percentage of population - less than 15 years	1980	41.2	12/83
- 65+ years	1980	3.6	12/83
5. Urban population (%)	1983	19.1	06/85
6. Rate of natural increase of population (% per annum)	1983	2.29	06/85
7. Crude birth rate (per 1000 population)	1983	30.4	06/85
8. Crude death rate (per 1000 population)	1983	7.5	06/85
9. Life expectancy at birth - Total (years)	1982	62	13/83
- Male (years)	1982	66	13/83
- Female (years)	1982	66	13/83
10. Infant mortality rate (per 1000 live births)	1983	33.5	06/85
11. Total fertility rate (women 15-49 years)	1982	7.8	06/85
12. Socio-economic indicators for the year 2000			
Estimated population, ('000)	2000	79 355	03/79.1
Life expectancy at birth - Male (years)	1995-2000	55.7	03/79.1
- Female (years)	1995-2000	59.2	03/79.1
Annual population growth rate, (%)	1995-2000	1.81	03/79.1
Crude birth rate (per 1000 population)	1995-2000	29.0	03/79.1
Crude death rate (per 1000 population)	1995-2000	10.9	03/79.1
Rate of natural increase (% per annum)	1995-2000	1.81	03/79.1
13. Per Capita Gross National Product (GNP) at market prices (US\$)	1983	101	06/85
14. Rate of growth of per capita GNP (%)		...	
15. Percentage Gross Domestic Product (GDP) derived from manufacturing at constant factor cost (%)		...	
16. Economically active pop in primary sector			
- Number in agriculture ('000)	1983	20 390	06/85
- Percent in agriculture (%)	1983	75.4	06/85
17. Daily per capita calorie supply (calories)	1982	1 850	13/83
18. Daily per capita protein supply (grams)	1982	49	13/83
19. Adult literacy rate - Total	1982	96	13/83
- Male			
- Female			
20. Health budget/expenditure			
- Amount		...	
- Per capita		...	
- As % of total budget	1981	6	12/83

- Source 13/83: Government's Report on Monitoring Progress in Implementing Strategy for HFA/2000, 1983
- 03/79.1: World Population Trends and Prospects by Country, 1950-2000: Summary Report of the 1978 Assessment, UN, 1979
- 06/85: Draft mock-up for country review revised by WRC/Hanoi, February 1985
- 10/82: 1982 ESCAP Population Data Sheet
- 12/81: Government Reports on the Number of Cases of CD
- 12/82: Government's Responses to World Health Statistics Annual Questionnaire on Health Manpower, 1982
- 12/82.1: Leaflet on Childhood CD, Report 1/82
- 12/82.2: Government's Reply to EPI Information system questionnaire, 1982
- 12/83: Country Health Information Profile (CHIP) revised by Government, 1981 and 1983
- 12/83: WPR Data Bank updated by WRC/Hanoi, 1983
- 14/83: 1983 World Population Data Sheet, Population Reference Bureau, Inc., Washington, DC

SOCIALIST REPUBLIC OF VIET NAM  
SOCIOECONOMIC AND HEALTH INDICATORS

Indicator(s) for: SOCIALIST REPUBLIC OF VIET NAM		Year	Data		Source of Data
21.	Health manpower		Number	Ratio per 10 000	
	Physicians	1983	15 917	2.8	06/85
	Medical assistants	1983	33 566	6.2	
	Professional nursing/midwifery personnel	1983	24 674	4.3	
	Nurses (all categories)	1983	79 563	13.8	
	Midwives (all categories)	1983	14 081	2.4	
22.	Ten leading causes of morbidity	ICD code	No. of Cases	Rate per 100 000	
	Influenza	487	1983 480 438	837	06/85
	Other salmonellosis (Diarrhoeal diseases)	003	1983 372 181	648.4	
	Malaria	084	1983 200 785	349.8	
	Dengue haemorrhagic fever	061	1983 143 328	249.7	
	Measles	055	1983 125 017	217.8	
	Dysentery	006	1983 56 309	98.1	
	Tuberculosis	011, 012	1983 45 174	78.7	
	Adenovirus	790	1983 33 177	57.8	
	Whooping cough	033	1983 28 011	48.8	
	Chickenpox	052	1983 22 099	38.5	
23.	Ten leading causes of mortality	ICD code	No. of Deaths	Rate per 100 000	
	Dengue haemorrhagic fever	061	1983 1 745	3.04	06/85
	Diphtheria	032	1983 1 480	2.58	
	Diarrhoeal diseases	003	1983 1 424	2.48	
	Malaria	084	1983 861	1.5	
	Tuberculosis	011, 012	1983 631	1.1	
	Measles	055	1983 551	0.96	
	Dysentery	006	1983 545	0.95	
	Viral encephalitis	062	1983 459	0.8	
	Rabies	071	1983 298	0.52	
	Leptospirosis	100	1983 287	0.5	
24.	Cases and deaths for six diseases under the WHO-EPI		Cases	Deaths	
	Diphtheria	1983	1 480	...	06/85
	Pertussis	1983	92	...	
	Tetanus	1983	18	...	
	Poliomyelitis	1983	23	...	
	Tuberculosis	1983	631	...	
	Measles	1983	551	...	
25.	Cases for diseases under the WHO Annual CD Bulletin		Cases		
	Gonorrhoea	1983	7 400		06/85
	Hepatitis viral - Type A	1983	21 640		
	- Type B	1983	...		
	- UNSP	1983	...		
	Syphilis	1983	11 100		
	Trachoma	1983	4 685 000		
	Yaws	1983	-		
26.	Cases and deaths for six diseases under the WHO Monthly CD Notes		Cases	Deaths	
	Cholera	1983	574	126	06/85
	Dengue fever/DHF	1983	143 328	1 745	
	Encephalitis	1983	4 420	459	
	Influenza	1983	480 438	837	
	Meningitis	1983	977	-	
	Plague	1983	230	51	
27.	Proportion of infants under one year of age who have been fully immunized against tuberculosis, diphtheria, poliomyelitis and measles				
	BCG	1983	60		06/85
	DPT III	1983	70		
	Polio III	1983	70		
	Measles	1983	50		
28.	Per cent of population served with safe water	1982	Urban - 37 Rural - 31		06/85
29.	Per cent of population with adequate sanitary facilities	1983	30		06/85
30.	Per cent of low birth weight infants ( $\leq$ 2499 grams)	1982	8.0		11/83
31.	Maternal mortality rate	1983	1.1		06/85

SOCIALIST REPUBLIC OF VIET NAM  
SOCIOECONOMIC AND HEALTH INDICATORS

Indicator(s) for: <u>SOCIALIST REPUBLIC OF VIET NAM</u>	Year	Data	Actual Data	Source of Data
<b>(a) Health policy indicators:</b>				
- Health for all has received endorsement as policy at the highest official level (G1)	1982	+	Yes	13/83
- Mechanisms for involving people in the implementation of strategies have been formed or strengthened, and are actually functioning (G2)	1982	+	Yes	13/83
- At least 5% of the gross national product is spent in health (G3)		...		
- A reasonable percentage of national health expenditure is devoted to primary health care (G4)	1982	+	5%	13/83
- Resources are equitably distributed (G5)	1982	+	Yes	13/83
- Defined strategies for health for all are accompanied by explicit resource allocations (G6)		...		
- Defined strategies for health for all need external resources (G6)		...		
- The needs for external resources of well-defined strategies for health for all are receiving sustained support from more affluent countries (G6)		...		
- At least 80% of local communities at all levels have well-established voluntary and formal community organizations, which are committed to continuous primary health care action programmes [R1]	1982	+	Yes	13/83
- The community contributes in cash and in kind to health or health related action [R2]	1982	+	Yes	13/83
<b>(b) Socioeconomic indicators:</b>				
- The percentage of population served with safe water in the home or within 15 minutes' walking distance is 100 (G7.1.1)	1983	-	Urban - 37 Rural - 31	06/85
- The percentage of population with adequate sanitary facilities in the home or immediate vicinity is 100 (G7.1.2)	1983	-	30	06/85
- The adult literacy rate for both men and women exceeds 70% (G11) (Total/M/F)	1982	+	Total - 96 Male - Female -	13/83
- The gross national product per head exceeds US\$500 at 1980 market prices (G12)	1983	-	US\$ 101	06/85
- The daily per capita calorie availability exceeds 2500 calories [R3]	1982	-	1 850	13/83
- The daily per capita protein availability exceeds 70 grams [R4]	1982	-	49	13/83

Notes: The number in brackets show the number given to the indicator in the global indicator list (Global Strategy for Health For All by the Year 2000, WHO, Geneva, 1981 ("Health For All" Series No. 3), pages 75-76).

+ Yes  
- No  
... No information/not available  
NA Not applicable

Source 13/83: Government's Report on Monitoring Progress in Implementing Strategy for HFA/2000, 1983  
06/85: Draft mock-up for country review revised by WRC/Hanoi, February 1985  
12/82: Leaflet on Childhood CD, Report 3/82  
12/83: WPR Data Bank updated by WRC/Hanoi, 1983

SOCIALIST REPUBLIC OF VIET NAM  
SOCIOECONOMIC AND HEALTH INDICATORS

Indicator(s) for: <u>SOCIALIST REPUBLIC OF VIET NAM</u>	Year	Data	Actual Data	Source of Data
<b>(c) <u>Health status and quality of life indicators:</u></b>				
- At least 90% of newborn infants have a birth weight of at least 2500 grams (G8.1)	1982	+	92.0	13/83
- At least 90% of children have a weight for age that corresponds to reference values given in Annex 1 to Development of Indicators for Monitoring Progress Towards Health for All by the Year 2000 (G8.2)	1982	-	86	13/83
- The infant mortality rate for all identifiable sub-groups is below 50 per 1000 live births (G9)	1983	+	33.5	06/85
- Life expectancy at birth is over 60 years (G10) (Total/M/F)	1982	+	Total -	06/85
		+	Male - 62	
		+	Female - 66	
- Maternal mortality rate is below 3 per thousand live births [R5]	1983	+	1.1	06/85
- No cases of diphtheria, tetanus, whooping cough, measles, poliomyelitis and tuberculosis occur [R6]	1983	-	Diphtheria 1 480 Pertussis 92 Tetanus 18 Poliomyelitis 23 Tuberculosis 631 Measles 551	06/85
<b>(d) <u>Indicators of the delivery of health care:</u></b>				
Primary health care is available to the whole population with at least the following:				
- The percentage of deliveries by trained health personnel is 95 (G7.4.1)	1982	+	100	13/83
- The percentage of children immunized against diphtheria, tetanus, whooping cough, measles, poliomyelitis and tuberculosis is 95 (G7.2)		...		
- Local health care, including availability of at least 20 essential drugs, within one hour's walk or travel is 100% (G7.3)	1982	-	75	13/83
- The percentage of children up to at least one year of age given routine child care by trained health personnel is 100 (G7.4.2)	1982	-	90	13/83
- The percentage of pregnant women with at least three visits for antenatal care is 100 (G7.4.1)		...		
- The population growth rate is reduced to less than 1% [R7]	1983	-	2.34	06/85