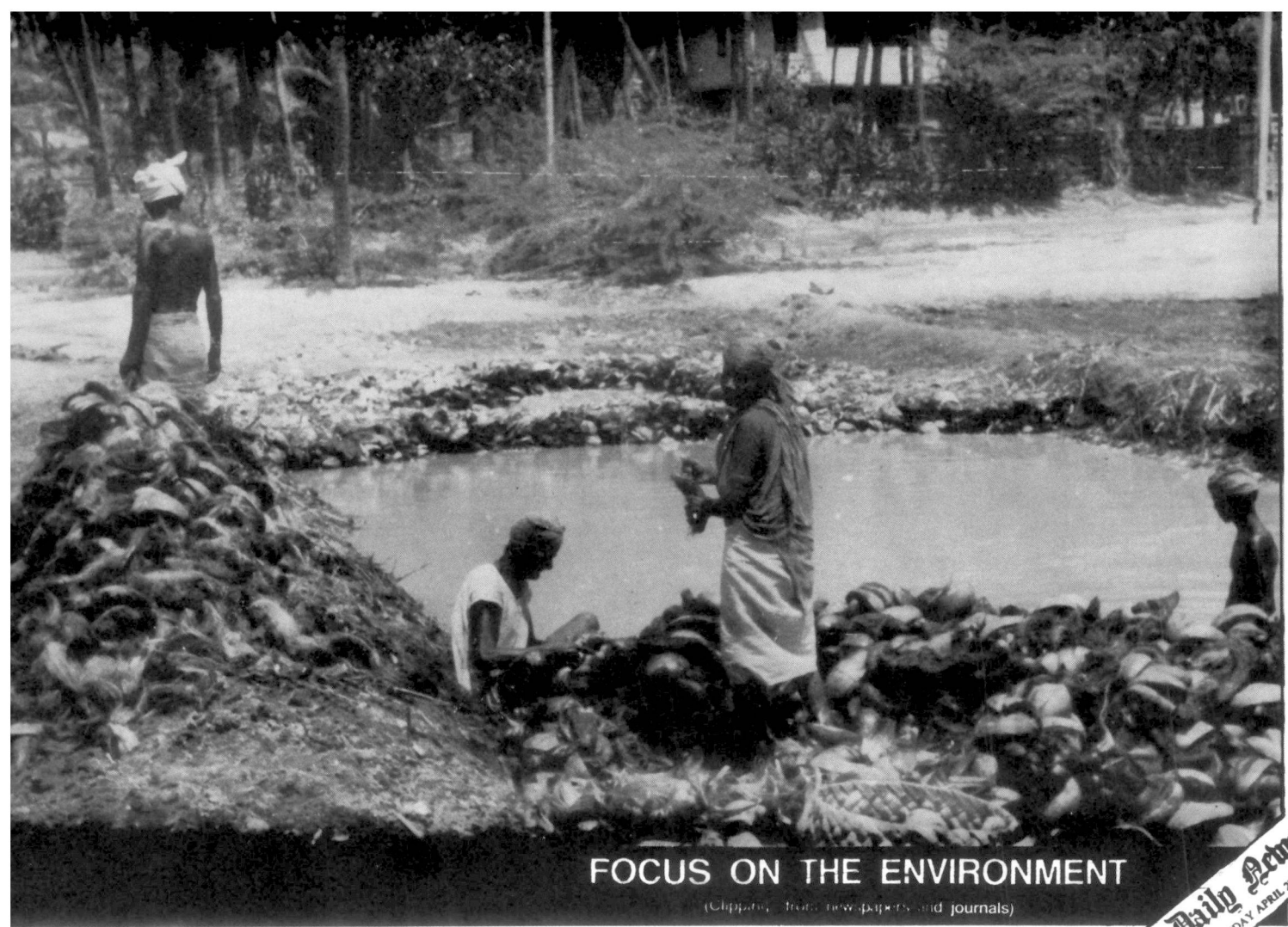




FOCUS ON THE ENVIRONMENT

(Clippings from newspapers and journals)

Daily News
TUESDAY APRIL 21, 1993

THE IMPORTANCE OF ENVIRONMENTAL HEALTH

DR. W. A. KARUNARATNE

Environmental health is one of the most important public health problems in Sri Lanka. As, yet a large proportion of the people suffer from diseases caused by insanitary environments,

The environment has a considerable influence on the growth, development, and well-being of man. It is not possible to think of a human being apart from the environment in which he lives. It provides man with the possibilities of growing essential food for his sustenance; of providing the shelter he needs; facilities for raising his family; and to procure the necessary

clothing to protect himself, in fact, it moulds the very life of man.

However, the environment which is so indispensable to life can also be the agent through which a person's health is adversely affected.

Therefore, it is essential to have a healthy environment and its control is of prime importance. Such control of the environment may be defined as "the control of all those factors in man's physical environment which exercise or may exercise, deleterious effects on

SOBA, 93 MAY

his physical development, health and survival"

The chief cause of the high sickness rate is found to be poor sanitation of the environment, the most important being the lack of pure water, and the proper disposal of excreta and refuse. Due to these diseases, spread through the environment, on any one day, over 10,000 hospital beds are occupied.

If these diseases which are preventible could be eliminated, then the saving to the national exchequer would be many millions of rupees yearly.

To improve the standard of living and to improve the health and wellbeing of the people it is a sine qua non that the environment should be improved. Action in this direction requires the simultaneous solution to many complex inter-related problems pertaining to the environment.

The social structure

The main purpose of the environment is to create conditions more favourable to man's death comfort and efficiency; and these are problems that are facing not only this country but all developing countries.

A faulty environment may be responsible for the transmission of diseases:

- (a) affecting the alimentary system i.e. typhoid, dysenteries, cholera, and worm infections;
- (b) affecting the respiratory system such as tuberculosis, pneumonia, virus infections etc;
- (c) through close contact specially associated with overcrowding such as leprosy, yaws, trachoma;
- (d) by vectors as malaria, yellow fever, bilharziasis, typhus plague, etc.

The environmental factors that need control are:

disposal of excreta, sewage, and community wastes;
the provision of a pure and wholesome water supply;
provisions of sanitary housing so as to minimize the transmission of infectious diseases, specially those affecting the respiratory system and to encourage healthful habits;
control of food supplies and milk so as to ensure their safety for human consumption;
personal cleanliness and health habits;
dealing with factors which are responsible for transmission of diseases such as mosquitoes, flies etc;
atmospheric pollution;
sanitation of the workplace, factories, shops.

Environmental health has to be considered against the background of the social structure of the community, especially the following groups:

Urban communities; village communities; scattered rural communities; industrial estates and new colonies.

Disposal of excreta: The proper disposal of excreta is an important activity in regard to environmental sanitation, and constitutes one of the most essential steps taken towards ensuring a safe environment. The other essentials are the provision of an adequate water supply for safe drinking water and the control of insect and vectors disease.

Inadequate and insanitary disposal of infected faeces leads to the pollution of the soil and the contamination of sources of water supplies. It affords an apposition for certain species of flies to lay their eggs, to breed, to feed on the exposed matter and to carry infection. It also attracts domestic animals, rodents and other vermin who scatter the faeces and thus create an intolerable nuisance.

Children suffer the most

The inadequacy of facilities for night soil disposal is often associated with lack of adequate water supplies and sanitary facilities and is also due to the low economic status of the people. All these conditions affect health and make it difficult to assess the role played by each component in the transmission of disease.

The relationship between the disposal of night soil and the state of the health of the people is both direct and indirect. The direct effect is exemplified by the reduced incidence of certain diseases when proper disposal of excreta is practised. These diseases are cholera, typhoid, para-typhoid fevers, the dysenteries, infant diarrhoea, hookworm diseases, ascariasis, bilharziasis and similar intestinal infections and parasitic infestation.

These diseases mostly affect children as their immunity is low and as their bodies are not strong enough to deal with infections after they have become established.

Further evidence of this direct relationship can be demonstrated by a comparison of figures for infant mortality from diarrhoea and enteritis. In some parts of the world it has been found that when a latrine construction programme was undertaken the death rate attributed to these diseases was cut down by two thirds and eventually reduced to nil.

Improper disposal of excreta results in soil pollution. Diseases that are commonly transmitted by soil pollution are worm infection, such as hookworm and roundworm. Infection by intestinal round worms (ascariasis) affects an estimated 650 million people on all continents.

It has so far been one of the "hidden" diseases, seldom diagnosed and treated, and often mistaken for something else. Yet the parasite responsible, *Ascaris Lumbricoides*, is the most important of all intestinal parasites as a cause of illness, malnutrition and lowered productivity and is a serious menace especially in developing countries. Children suffer the most as they are usually more heavily infected than adults.

Because the infection can be effectively treated by a well-accepted drug, piperazine, the World Health Organisation (WHO) has singled out ascariasis from other intestinal worm diseases as a test case. If large-scale control proves feasible, the way would be open for an attack on many other infections caused by worms.

Ascariasis occurs in all parts of the world except where the climate is consistently too cold, or too hot and dry, for the parasite to survive. Recent WHO surveys show a prevalence of at least 50% of the total population examined in 12 countries of Africa, Asia, and South America.

In Africa many authorities believe that the greatest benefits to public health in the next decade or so may possibly come from control of intestinal parasites and the consequent reduction of malnutrition and anaemia.

The presence of worms not only lowers the nutritional status of the body but also renders an under-nourished child more susceptible to infections.

The height, weight and mental performance of children with roundworm have been repeatedly shown to be below those of uninfected children raised under similar circumstances.

The indirect relationship is generally associated with other factors of environmental sanitation so that an improvement in excreta disposal may:

- promote a state of well being in the population which is conducive to its social development;
- show a decrease in morbidity from other diseases the etiology of which is not directly related to either excreta or contaminated water supplies;
- improve various economic benefits such as increase in life expectancy;
- result in the reduction of unemployment due to fitness of the individual, which assists him to obtain employment anywhere.

Method of transmission

Man is the reservoir of most of the diseases that destroy or incapacitate him. The faecal borne infections

and infestations cause a tremendous loss in death and debility. All these diseases can be controlled through good sanitation and especially through the sanitary disposal of excreta. The transmission of diseases from the sick or from carriers to the healthy is similar to that of many other communicable diseases.

In the transmission of disease the following factors are important:

- (a) Causative or etiological agent.
- (b) A reservoir or source of infection of the causative agent.
- (c) Mode of escape from the reservoir;
- (d) Mode of transmission from reservoir to potential new host.
- (e) A mode of entry into the new host.
- (f) A susceptible host.

Absence of these makes the spread of disease impossible.

For example, there are many ways in which the causative agent of enteric disease reaches a new host.

In different parts of the world different modes of transmission assume various degrees of importance. In some areas water, food and milk may be most important. In others, flies and other insects, and in still others direct contact may assume a major role. What is most important is the combination of all the factors enumerated above and the sanitary worker must assume that this is the case and guard against all modes of transmission.

The technical objective of the sanitary disposal of excreta is to isolate faeces so that infective agents in it cannot possibly get to a new host.

In countries where roundworm infection is most common it is often difficult to discover how much illness and how many deaths should be attributed to it. In one community in Queensland (Australia), for example 29% to 54% all deaths occurred among children and this was blamed largely on pneumonia. After mass treatment of the children for roundworms, deaths fell to 8%.

In Sri Lanka one third of our rural houses do not have latrines and even in Colombo only one-third of the dwellings in the city are provided with a water carriage system. In an examination of the primary school children in Colombo, it was found that 80% had hookworm and 76% suffered from roundworm infestation, while 44% were infested with whipworm.

Further in an investigation carried out among pre-school children in Devamedda Hatpattu in the Karunegala district it was found that in different korales in this area between 43% to 72% were positive for hookworm infestation 22% to 80% for roundworm infestation, 1.3% for shigella infection and 5.3% to 14% positive for entamoeba histolytica.

Economic losses as a result of insanitation often reach staggering proportions. It has been found that infant mortality and morbidity from typhoid fever, diarrhoea and enteritis were in inverse proportion to the income per capita.

Disposal of refuse

Proper disposal of refuse is an important health activity. Refuse normally consists of household garbage, commercial wastes, street sweepings, animal litter and dead animals. If refuse is not properly disposed of there is the constant danger of the breeding of flies, mosquitoes and, offensive odours may emanate from such refuse dumps. Flies and mosquitoes are carriers of disease.

Flies, according to their habits, could physically carry disease germs from a source of infection to the food one eats. Mosquitoes are carriers of malaria and filariasis. Rats are a carrier of disease and a great source of destruction of food grain and other household materials.

The problems of refuse disposal is specially of importance in urban cities and the rapid urbanisation with influx of rural people seeking employment better living conditions and amenities in the cities have created the problem of slums, which are a great handicap for maintaining environmental sanitary conditions in a satisfactory state.

The primary need for proper disposal of refuse is a good organisation which is capable of collecting the refuse at regular intervals and carrying it for final disposal. The organisation should consist of competent staff and on adequate number of vehicles and equipment.

The collection of refuse has to be methodical. Every householder should be required to store his refuse in a sanitary dustbin. This should be the responsibility of the occupant.

In the case of commercial premises the commercial waste and associated refuse should also be stored in

large-size sanitary bins. The street sweeping should be collected in hand carts and carried to central depots.

Sanitary refuse collecting vehicles should be used to collect the household refuse, and refuse from commercial establishments and the street sweepings from the central depots at regular intervals, preferably at fixed times, either daily or every other day. The refuse from congested areas, such as slums, where there is no proper road access for vehicular traffic, should be collected in small carts and brought to central depots, just as street sweepings.

The final disposal of refuse is of fundamental importance. There are various methods of disposal, such as pulverization, separation, incineration, composting and controlled tipping. The best method for filling low lying land is controlled tipping, where the refuse is sorted.

Tins, cans and bottles are first dumped and then any carcasses and kitchen garbage and after that the rest of the refuse. A layer should not extend over six feet. The surface should be covered with six inches of earth and the exposed edge could be burned or sprayed with an insecticide to prevent breeding of flies. This method has the advantage of being sanitary without any breeding of insects and of reclaiming of swampy land.

Composting is a relatively cheap, safe and non-offensive method of waste disposal. It may also yield end-products of considerable economic value to the soil.

The house in which a person lives materially contributes to his health. If the house is insanitary or damp it will have an adverse effect on his health and that of other inmates. The people who live in bad houses also suffer from other disabilities such as unemployment with its consequent poverty and belong to a class among whom good personal habits and cleanliness are sometimes lacking. It has been demonstrated by many health officers that improved housing helps to reduce abnormally high infant mortality rates.

Damp, overcrowded, congested, ill-ventilated houses lacking in essential amenities cause increased morbidity, specially in the spread of common infectious diseases and also rheumatic conditions.

Insanitary houses are associated with vermin, lowering the comfort and habitability of the house. Moreover, people who live in sub-standard houses are more prone to psychotic and neurotic ailments. While

the personality of such a person is also affected because of the poor living conditions.

Stocks, in his studies, showed that the effects of overcrowding are most serious in the pre-school ages. This is due to the fact that the young children are highly susceptible to infections, and bad housing facilities cause easy transmission of disease.

A house in which a person lives materially contributes to his well being. Insanitary or damp houses have an adverse effect on health and the growth and development of children.

If houses are to perform the purpose for which they are intended then it is necessary to relate housing to function. Consequently, our attitude towards housing should change; the idea that a kitchen should be tucked away in any odd place, that a latrine or bathroom need not be constructed, that there is no need for play space for children, should give place to a more enlightened and modern view so that houses could be constructed with a view mainly to satisfy the health needs of the people.

Housing for the elderly

Houses that are constructed should have a minimum standard. Such sanitary standards could be considered as a target to be aimed at rather than a legal requirement. After some time these could be made legal standards.

A target of standards that is recommended is that a house should

- be in all respects dry;
- be in good state of repair;
- have each room properly lighted and ventilated;
- have an adequate supply of wholesome water;
- have an internal or otherwise easily accessible closet;
- be provided with facilities for domestic washing;
- have a proper drainage system and refuse storage;
- have satisfactory facilities for storage, preparation and cooking of food.

In Urban areas the construction of houses is controlled by legal enactments which are:

- House-Town Improvement Ordinance No. 19 of 1915, with several amendments.
- Urban Council Ordinance 61 of 1939.
- Town Council Ordinance 3 of 1946.
- Municipal Council Ordinance 29 of 1947,
- Thoroughfare Ordinance Chapter 148
- Town & Country Planning Ordinance 13 of 1946.

Life expectancy in Sri Lanka is increasing every year. Consequently, the elderly population is also increasing. Provision of adequate houses for the elderly is an urgent need. About 5% of the population of 16.5% million people are now over 65 years of age.

The elderly have more critical needs to fulfil certain physiological and psychological requirements which are the result of the aging process.

The elderly need more and better lighting than younger persons to do the same job. Glare should be avoided and switches for electric lights should be within easy reach. Houses could be located away from excessive noise.

The elderly require exercise like the younger group. This has both a psychological value and physiological benefits, so facilities should be provided for regular gentle exercise such as walking.

To avoid climbing, housing units should be on one floor. Also such houses should not be isolated from the rest of the community. Every house unit must have a minimum sanitary standard. In rural areas there is no statutory control of houses. So we can only lay down a sanitary standard as a target to be aimed at.

Housing for the handicapped is similar in many respects to that of the elderly. However the handicapped are not identified by age. They are persons of all ages. Since they are handicapped, they are dependent on others.

Housing for the elderly and handicapped need urgent attention in Sri Lanka as it is an area that has been badly neglected.

Slums

The existence of slums is a major public health hazard. They exist in all urban areas of Sri Lanka. The effort made to provide sanitary dwellings to re-house the slum dwellers has been paltry. A more courageous effort should be made to eliminate all slums and rehouse the slum dwellers in sanitary houses.

MacGregor of Glasgow has recorded that as the size of the house increases, the incidence of pulmonary tuberculosis diminishes, more noticeably in females. Bradbury has shown by statistics that the incidence of tuberculosis was greater in overcrowded houses.

Halliday demonstrated that the incidence of measles

SOBA, 93 MAY



among tenement dwellers was 3.7 times greater in pre-school children than among children of 5 to 10 years and in model housing schemes the incidence was only 0.4 times as great.

Water supply

A supply of pure water is essential for a healthy life. The main method of supply of water to towns would be by pressure lines providing for storage, filtration and disinfection. The sources would be surface water in hilly and rocky areas and ground water in the coast-line areas.

For small villages, the best source would be from underground or from springs which are located close to villages. The water would be reached by pumping and stored in tanks.

In the hilly areas it should be possible to utilize hydraulic rams for providing water to small villages and towns. This is a simple method and it can be enlarged at any time if the source of supply is adequate.

In cases of larger towns of a few thousand people, a series of hydraulic rams could be utilized. The only

problem would be sand during the rainy season. This can be overcome by small diversion dams provided with grit removal devices and if necessary, settling tanks and slow sand filters of simple construction.

Food hygiene: This requires the implementation of food regulations and requirements of the Food Act. The extent of food poisoning cannot be correctly determined. The enforcement of food regulations is extremely apathetic.

The preparation of food and serving the public must be done under hygienic conditions.

All animal meat and fish sold in the markets must be strictly controlled. If cooked food is to be stored, it should be under proper refrigeration.

Air pollution

Air pollution is the greatest and most urgent problem of environmental hygiene. For over a century environmentalists have had the aim of abatement and if possible elimination of harmful pollutants.

Air is the first essential of life. pollution causes a

deterioration of the natural quality of air affecting health and well being. Therefore conservation of air is of primary importance.

The protection of the health of the people from avoidable hazards of air pollution is a task of increasing importance and urgency, with expanding industrialization in Sri Lanka.

Deterioration of health and well being caused by air pollution ranges from minor discomforts and nuisance to chronic disabling respiratory diseases which are seriously affected by various pollutants.

Tobacco smoking is one of the largest sources of indoor pollution; it affects not only the smoker but also indirectly, those compelled to inhale smoky air.

Smoking is increasingly considered as socially unacceptable and there is no longer any reason why non-smokers should put up with the discomfort caused by exposure to a smoke-filled environment.

Evidence has accumulated in recent years, showing that non-smokers have higher levels of nicotine carbon monoxide and other toxic substances in their blood when exposed to tobacco smoke in the home and at the place of work.

Research in Greece, the United States of America, Japan and other countries shows a significantly higher risk of lung cancer among non-smoking women exposed to tobacco smoke at home or at work.

The elderly, the cardiac or asthmatic, as well as hypersensitive people can be adversely affected by smoke produced in their vicinity.

Children of smokers are often more prone to

respiratory illnesses than those living with non-smoking parents.

Another form of passive smoking occurs through the nicotine and carbon monoxide-laden blood of pregnant women who smoke. Development of the foetus is affected, leading to premature delivery, low birth-weight with a higher risk of perinatal mortality.

The ill effects of air pollution give cause for alarm in view of the ever increasing urbanisation and industrialization.

Radiation hazards

Possible damage in populated areas may come from increased use of Isotopes in Research and Industry.

Much is unknown in this field, but the recognition of this problem and its dangers are essential.

Preventive measures include the proper siting of plants and their design.

With regard to the genetic effects there is little information available as regards exposure to sub lethal doses. The damage can be transmitted to future generations.

Healing of the damage rarely occurs and it is latent.

Medical Officers should take a careful note of all cases of congenital defects and malignant diseases which occur in childhood. It may be any condition which is the result of environmental hazard including radiation.

Such a study may be of epidemiological interest and may help in determining the relationship between the radiation dosage and congenital defects of human heredity and health in general.

SALUTE TO TWO MARTYRS

It is with great sorrow and also a sense of indignation that we heard the news of the assassination of Mr Dayananda Manamperi, Range Assistant and Mr W.A.D. Jayasekera, Game Guard by armed poachers.

To us in Ministry of Environment and Parliamentary Affairs, they are martyrs who have given their lives for a worthy cause for the protection of wild animals in their legitimate habitat.

Action is being taken to pay some compensation to their families and to strengthen the security system in the National Parks. We wholeheartedly support these and other measures assistants to protect those who risk their lives in their task of preserving the wealth of fauna and flora of Sri Lanka.