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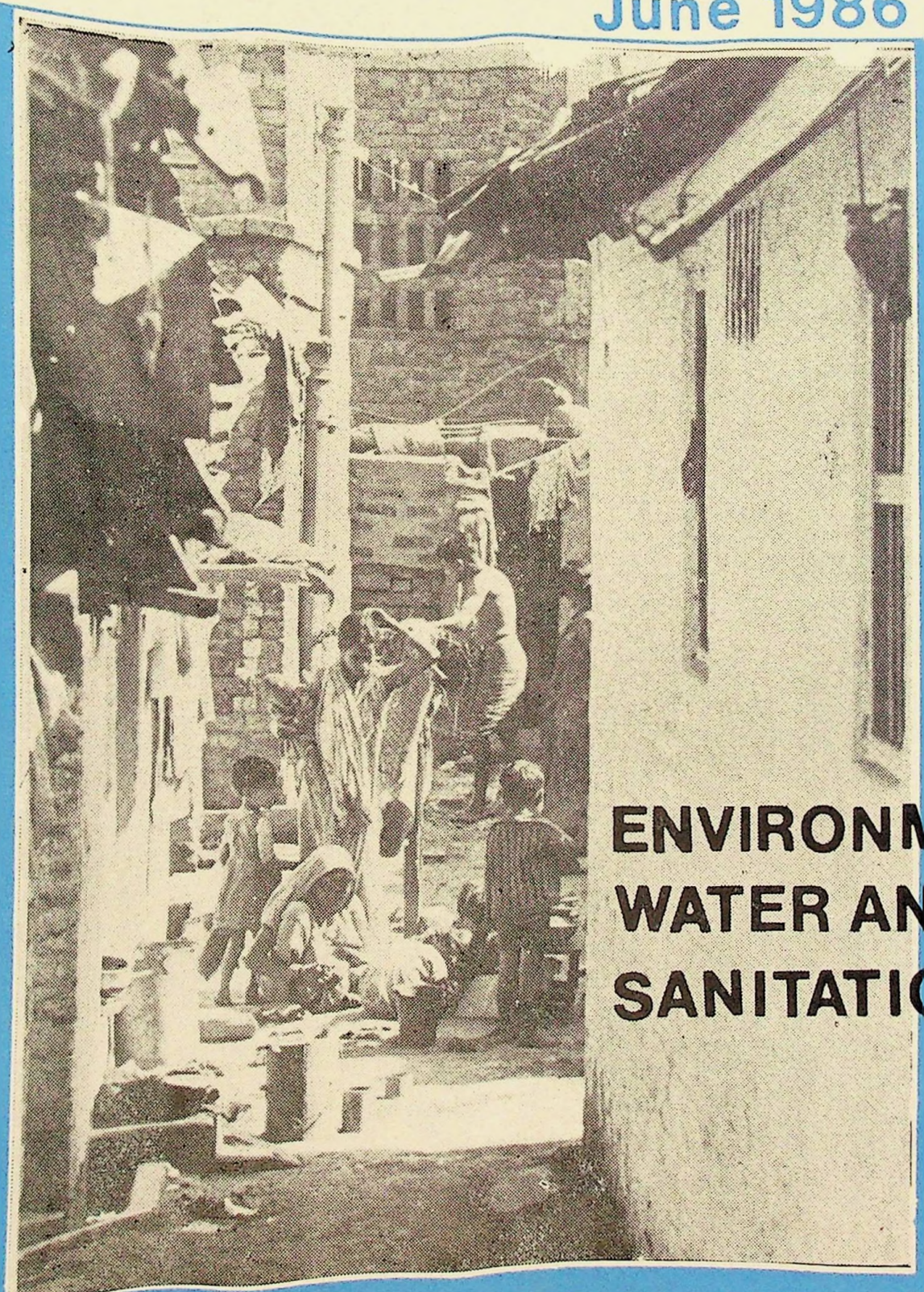

ENVIRONMENT WATER AND SANITATION

swasth hind

Jyaistha—Asadha June 1986

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READERS WRITE

I am a regular subscriber for 'Swasth Hind' for the past five years. This magazine is the most valuable journal. It is loaded with the latest advancements in the various health care programmes being implemented for rural and urban areas of our country. This journal is a must for all medical and health professionals.

This is the cheapest magazine by cost. It is a 'Bible' to the health personnel. This must be regularly read to acquire thorough knowledge and spread the same to the people at all levels. It is an eye-opener to healtaful living.

The language is simple and easily understandable. The get-up and print-type of the magazine are excellent throughout. During my long service of 35 years I have not come across such a publication. It is a treasure to the field staff of Health Departments.

I am quite confident that the magazine will help a lot to achieve Health for All by the Year 2000 A.D.

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THE CHANGING PATTERN OF DISEASE IN DEVELOPING COUNTRIES

B. O. OSUNTOKUN

Many afflictions that are common today were rare or absent in our ancestors and can be seen as the results of man's poor adaptation to significant environmental changes. In comparatively recent times, following industrialization, such changes have occurred in living and working conditions, means of transport, the atmosphere, and agriculture, and even the preparation of food has been affected. Man has adopted habits that are not conductive to good health, such as sedentary living, smoking, the use of alcohol and drugs, and overeating without regard to a good dietary balance.

SOME impressive evidence has collected by Trowell & Burkitt (*1*) on the increasing prevalence in developing countries of non-communicable diseases previously seen only in the industrial world. However, it must be emphasized that most developing countries lack reliable data. Many are unable to organize a census each decade as recommended by the United Nations, and surveys on patterns of disease, morbidity and mortality, based on representative samples, are equally scarce. There is an urgent need for more facts and figures from developing countries: accurate data will help planners to assess what health care is needed.

With some exceptions, the information on disease patterns in developing countries is derived from hospital data, which are unrepresentative of the communities. Often the reported prevalence of a particular disease reflects only the interest in it of medical practitioners. Nevertheless, the following examples indicate that the situation in developing countries is rapidly changing and now merits serious consideration by those responsible for public health.

Hypertension

Ideally, blood pressure should not rise with age. In developed countries, however, it does, and there is some evidence that lifestyle, environment and diet may be determinant factors.

In Kenya, Uganda, and the United Republic of Tanzania, clinical and epidemiological evidence suggested that between 1929 and 1940 hypertension did not occur in any African: the first patient was reported in 1941 (*2*). In other parts of Africa, several studies in black Africans over the last three decades have shown consistent findings of blood pressure rising

with age and prevalence rates of hypertension similar to those in black and white communities elsewhere (*3*). Mean arterial pressures were usually higher in urban than in rural populations, which might be explained by diet and obesity.

About thirty isolated, primitive communities have been identified in several parts of the world where people's blood pressure did not rise with age, and studies of some of these have led to speculation that life-style could be responsible. The reasons may include the dietary pattern (high in fibre, complex carbohydrates, and potassium; low in fat and sodium), the degree of physical activity, absence of stress, and environmental factors.

In one such isolated community—the Samburus of Kenya (*4*)—it was found that when the men were recruited into the Kenyan army their way of life underwent considerable changes, particularly as far as their dietary habits and physical activity were concerned. Significant changes occurred in body structure and skinfold thickness, and subsequently blood pressure rose with age.

Coronary Artery Disease and Atherosclerosis

There is no doubt that heart disease was hardly seen until recently in developing countries and was particularly uncommon in Africa.

Williams and co-workers (*5*) showed that atherosclerosis of the coronary vessels, aorta, and cerebral vessels was minimal in Nigerians compared with Caucasians and American blacks in Minneapolis, USA. Coronary artery disease is considered rare in South African urban blacks, including those who are hypertensive and hypercholesterolaemic, and is far less common than in South African whites and Indians of similar age and sex (*6*). Atherosclerosis is equally unusual even in diabetic Africans, among whom the commonest risk factors for gangrene are peripheral neuropathy, trauma, and infections. On the other hand, some communities in India appear to be unusually susceptible to heart problems both in their native land and when they migrate to more prosperous countries.

Coronary artery disease associated with cigarette smoking is a major recent feature in India, Pakistan, and the Philippines (*7*). In New Zealand, too, the introduction of smoking among the Maoris has a lot to answer for: the Maori women's death rate from heart disease and from lung cancer has been found to be the highest in the world.

The reasons why some communities in developing countries have a low prevalence of heart disease are unknown, but it is noted that the cholesterol and fat content of their diets is low and the proportion of fibre and starch is high.

The intense physical activity of man's ancestors during hunting for example, as in the bushman and the Hottentot, who may have run 30-40 km a day as routine, must have contributed to the complete absence of obesity in those days, and low physical activity is known to be a risk factor for atherosclerosis. Generally, the prevalence rate of obesity in developing countries even now is much less than the rate in developed countries, about 3% compared with 25%.

Industrialization and urbanization, with their associated social problems and stress, were unknown in primitive communities. These factors, taken together with changes in eating habits—less fibre and starch together with more fatty foods, alcohol, and refined carbohydrates such as sugar—are recognized as being likely reasons for the high prevalence of some noncommunicable diseases. They are now becoming increasingly visible in many developing countries.

Diabetes

Diabetes mellitus is said to have been unknown in East African countries before 1953, when it was first reported in an overweight African nursemaid. A few well-conducted surveys in developing countries have produced data to justify the statement that changes in life-style, associated with urbanization and the adoption of "Western civilization", have produced manifold increases in the incidence of diabetes mellitus (*8*). The prevalence of obesity in most developing countries has also increased in the last three decades. A diet low in fat and sucrose, and high in unrefined starch and fibre could protect against the occurrence of non-insulin-dependent diabetes mellitus and also be efficacious in the treatment of both this and the insulin-depedent form of the disease (*2, 9*).

Cancer

Cancer registries established in many developing countries have

Some important noncommunicable diseases like lung cancer and heart disease are now becoming more common in the developing countries. One reason for this appears to be that the people are giving up their traditional ways of life and adopting those of the developed countries. It has been suggested that, for some of the diseases, changes in dietary habits are the main causative factor.

shown that cancer is not a disease of Western society alone. More than half of the world's 5.9 million annual total of new cancer cases arise in the developing world (*10*). The annual total of deaths from all forms of cancer is estimated to be 4.3 million, of which 2.3 million occur in the developing countries.

However, socioeconomic factors, life-style, behaviour and environment appear to influence the types of cancer that predominate in the developing world. Tobacco consumption in the industrial world is falling by about 1% annually, but consumption in the developing countries is rising by twice that, encouraged by aggressive marketing on the part of the tobacco companies; this has been called the "new slave trade' (*7*). Lung cancer used to be rare in the developing countries, but now high death rates from this cause are reported from China, Hong Kong, and South African blacks in Natal, while several cases are being reported from other parts of Africa and tropical America. Traditional practices such as the chewing of betel quid and tobacco or hookah smoking are hazardous and probably constitute the main reason for 90% of the 100,000 new cases annually of oral cancer in south-east Asia.

Economic development tends to to be accompanied by an increased incidence of cancers in the lung, large bowel, breast, prostate, bladder and ovary (*11*), and by their reduced incidence in the oesophagus, stomach and liver. This is due to a variety of reasons, including the use of tobacco and alcohol, occupational exposure to chemicals, environmental pollution, sexual behaviour, personal and community hygiene, and diet. High-fat diets are believed to predispose to cancers of the large bowel, breast, and prostate, and a protective effect is exercised by some dietary components, especially a high content of fibre and vitamins A and C.

Accidents and Violence

Road accidents cause many casualties in developing countries. Nigeria and some of the East African countries are said to have the highest number of accidents per million vehicle-miles in the world.

Urban violence is also on the increase, and is one of the commonest causes of death in the 18 million black population in South Africa (*12*).

The Future

The limitations of the data available are obvious. There is very little valid information about most of the diseases, and some of it is anecdotal. It is unrealistic to compare the prevalence of diseases between countries that have not come to agreements on methods of data collection and investigation, nor on the definition of what is being studied. In spite of this it is posible to detect an emerging trend.

In the light of the experience of developed countries changes to be expected in the pattern of diseases associated with industrialization in developing countries include:

TEN RULES FOR THE DRUG TREATMENT OF HYPERTENSION

(1) Blood pressure should be lowered gradually.

(2) Treatment should depend on the individual involved, according to the severity of the disease, the degree of haemodynamic disturbance, and other prevailing disease processes.

(3) Drugs should be prescribed in a stepped fashion starting with a single drug—except in cases of severe hypertension.

(4) Combination treatment is preferable to high-dose monotherapy because it involves the use of lower doses of the individual drugs and thus may cause fewer side-effects.

(5) Avoid giving inadequate doses of any drug.

(6) Never stop treatment abruptly or withdraw one drug suddenly.

(7) Familiarize yourself with a limited number of drugs and adhere to them. The newest drug is not necessarily the best one.

(8) Drugs that do not affect the mood and mind are preferable since they interfere the least with everyday activities.

(9) In most patients, treatment must be continued indefinitely. Do not change the treatment unless absolutely necessary. Treatment should be simple, if possible a single tablet to a day.

(10) Have patience and train your patient to be patient.

From: Gross. F. et al. *Management of arterial hypertension. A practical guide for the physician and allied health workers.* Geneva, World Health Organization, 1984, p. 53.

- fewer nutritional deficiencies and infections, with falls in mortality rates of infants and young adults;

- more dental caries, obesity, hypertension, diabetes and vascular diseases;

- more gastrointestinal diseases such as large bowel malignancy, diverticulitis and appendicitis; and

- fewer cancers in certain sites (e.g., liver), offset by more in others (e.g., lung cancer related to smoking).

These changes have already begun to appear in many developing countries and in some groups of immigrant populations in industrial countries. Although the developing countries will probably achieve control of infectious and deficiency diseases in the future, they must take appropriate steps now to avoid the "epidemics" of noncommunicable diseases likely to come with industrialization.

It is necessary to determine how best to obtain and use information on the prevention and management of noncommunicable diseases in developing countries, and considerable research is required to this end. Such research would probably be rewarding, as some developed countries have been able to reduce the incidence of diseases such as hypertension and stroke as a result of active intervention programmes. ●

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ENVIRONMENT AND ECOLOGY PROTECTION IN SEVENTH PLAN

AN OUTLAY OF Rs. 427.91 crore has been provided in the Seventh Plan for the protection of environment and ecology.

The programmes aim at removing some of the weaknesses in the existing environmental planning system. Environmental considerations form an important element in the criteria for setting development targets and assessing plan performance in all sectors under the Seventh Plan. This environmental management would be integral to all environmental activities.

A major programme for the control and prevention of pollution of the river Ganga is undertaken as a science and technology mission during the plan period. Under ecological development, the plan aims at restoration of already degraded eco-systems through practical field schemes such as land reclamation, afforestation, cleaning of water bodies, etc. The programme is also geared towards arresting further damage to eco-systems and the promotion of a conservation-based development strategy.

It is now being increasingly recognised that environmental factors and ecological imperatives must be built into the total planning process if the long-term goal of making development sustainable is to be achieved. Environmental management, therefore, is a major guiding factor for the national development in the Seventh Plan. △

—YOJANA
1—15 March, 1986

A METHODOLOGY FOR OCCUPATIONAL HEALTH EDUCATION IN INDUSTRY

K.C. SAMIKKANNU

Community health problems with arise out of industrialisation, like pollution of air and water, unhealthy living conditions, increased exposure to communicable diseases, also affect the health of the workers. To protect, promote and maintain the health of the workers, occupational health services (OHS) need to be established, says the author. This article gives a brief description of the educational methodology adopted at the National Model Centre for occupational Health Services, Tiruchi, in carrying out various occupational health education programmes.

OCCUPATION is the main source by which man earns his livelihood. From the old stone age, down to the present electronic age, man has been pursuing some occupation or the other. Occupation encompasses all kinds of economic activity. Times have changed and so have occupations. But all occupations, without any exception, while contributing to the sustenance, survival, development and well-being of mankind are associated with certain inherent risks to health.

India, till recently an agricultural counrty, is rapidly getting industrialised. Workers are exposed to many hitherto unknown physical, chemical, mechanical, biological and psychological hazards due to new methods of production which are introduced in the process of industrialization. Migrant workers are posed with the problem of adaptation to the new environment and this affects their mental health. Community health problems which arise out of industrialization, like pollution of air and water, unhealthy living conditions, increased exposure to communicable diseases also affect the health of the workers. To protect, promote and maintain the health of the workers, Occupational Health Services (OHS) need to be established.

Occupational health services (OHS)

OHS is a comprehensive total health care programme, made available at the place of work, to take care of the health of the workers from the time of their recruitment till their retirement. It is a multidisciplinary approach to health, involving various disciplines like, occupational medicine, toxicology, occupational hygiene, work physiology and ergonomics, occupational psychology, health education, etc.

The need for occupational health education

The health of the workers largely depends on the healthy behaviour they adopt at the place of work, at home and in the community. Behaviour profoundly influences our health and behavioural

change, therefore, makes a lot of difference in achieving optimal health. Health education is a process by which we can bring about the required positive behavioural change. In any health care programme, it is an important and integral component for achieving purposeful results. So, in a comprehensive health care programme like OHS, the role of health education is vital. This can be substantiated by the following points.

Every occupation is associated with some risk or the other. These risks can be minimised but cannot be eliminated. Employer has a moral obligation to educate his employees about the hazards involved in particular occupations, and also provide all the required facilities to the worker to protect his health.

The saying 'prevention is better than cure' is indeed very true because diseases related to work can, if at all, be prevented only and not cured. So, health promotion by due precautionary measures requires the services of health education.

The prolonged incubation period for many work related diseases to be clinically manifest, makes health education imperative since the workers are blissfully ignorant of what can happen after years. Almost all health promotive and disease preventive activities of occupational health like persuading the workers to adopt the prescribed preventive measures at the place of work, improving their nutritional status, increasing their physical fitness, promoting their mental well-being, improving their standards of personal hygiene, making them participate in immunization and man maintenance programmes, etc., require the active assistance of health education.

The following is the description of the methodology followed in organising the health education programmes at the OHS Model Centre.

PHASE I—PRE-PLANNING

Identification and training of leaders

People often listen to and imitate their leaders. Leaders are important change agents in any community. Studies have shown that leaders have better communication with others than the average person has and messages given by them are well received. To enlist the leaders active interest and participation, it is necessary to involve them from the beginning. Sometimes the leaders we encounter in our day to day life may not be ideal leaders with all the leadership qualities. Even in such cases it is necessary to involve them because sometimes, if we don't do so, they may even work against our programmes.

The leadership pattern in industry is quite different from that of in the community. Among the modern industrial workers there is a tendency for everyone to consider himself as a leader. Normally, trade union leaders, shop council and works committee members are the informal leaders in our industry. The source credibility is often vested with them.

As per the health education principle "work through the leaders and use group influence", educational programmes are organised to actively involve them in our programmes and use them as our change agents. In the educational programmes, the leaders are given inputs on the concepts of occupational health, various approaches to occupational health problems, major hazards present in different areas of the industry, the role of OHS in monitoring the work environment and the health of the workers, and the role of leaders as change agents of employees' health behaviour.

Most of the trained leaders are actively involved in various occupational health programmes and they extend all possible help and co-operation. The leaders play an active role in motivating the employees to adopt the measures prescribed by OHS. They also bring the occupational health problems in their areas to the notice of occupational health staff.

In addition to frequent meetings of the leaders at the shop floor organised by the occupational health team, periodic meetings of the leaders are arranged to brief them about new developments and programmes. These meetings give the leaders an opportunity to express their opinions and put forward their suggestions. These meetings serve to establish a long standing and sustained contact with the leaders.

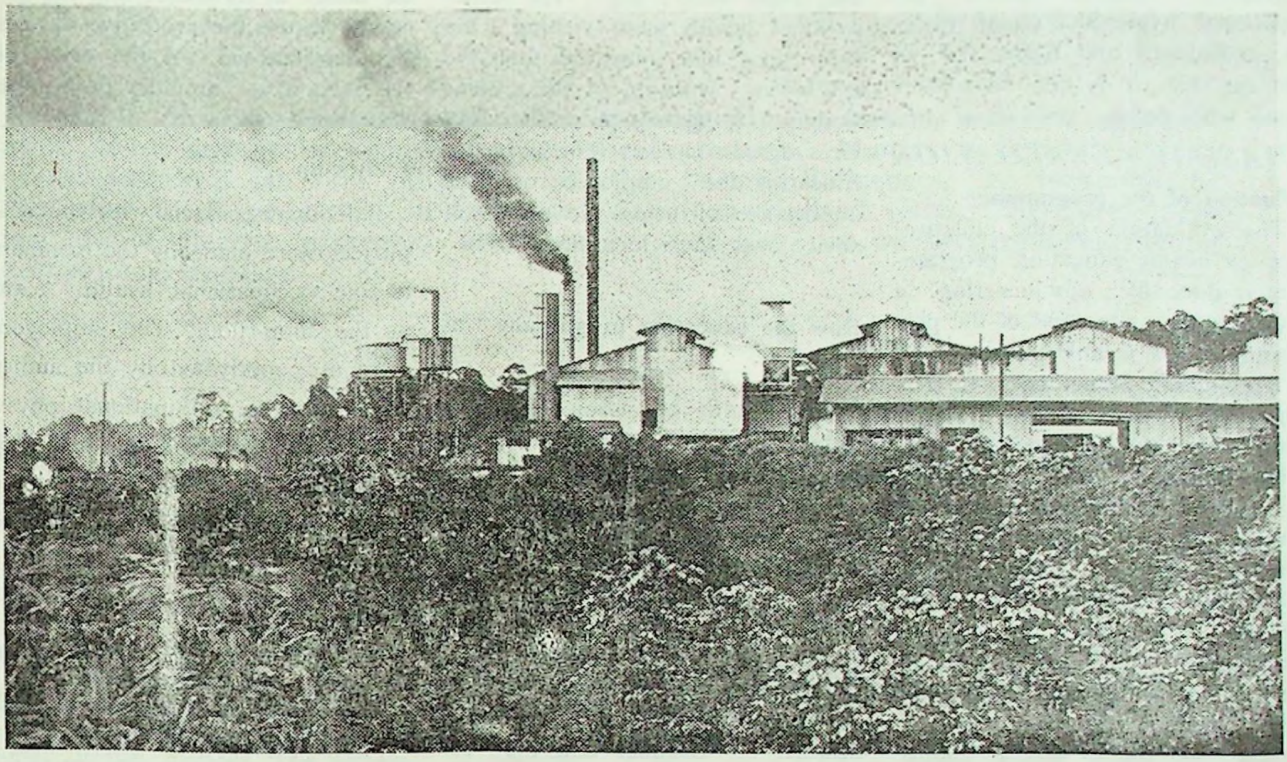
Identification of the target group for health education

The target group for health education is identified in the following manner:

The work environment surveys carried out by the occupational hygiene wing provide the required information on various health hazards present in different operations and areas of industry. On the basis of this information, depending on the seriousness of the hazard, the need for health education for a particular occupational group is identified.

The other approach to identify the target group is visiting the shop floor frequently. These visits are made by a team comprising a medical officer, a health educator and an occupational hygienist. Whenever it is found that a particular section of employees are not adopting the prescribed preventive measures against any hazard, employees of that particular occupation are taken up for health education.

Sometimes the target group for health education is identified on the basis of the findings of a particular survey. For example, soon after the inception of OHS in Bharat Heavy Electricals Limited (BHEL), an industrial dermatoses survey was conducted among the employees who worked in contact with cutting oils and coolants. The survey revealed that 145 employees had early signs of oil folliculitis. So, the need for educating the employees on the importance of personal cleanliness and the proper use of barrier cream was identified and a health education programme for the prevention of oil folliculitis was organised.



In the wake of industrialisation, workers often are exposed to many hitherto unknown physical, chemical and biological and psychological hazards.

PHASE II—PLANNING STAGE I

Planning the health education programme

Once the target group for health education is identified, the content of the health education programme is planned. While deciding on the content of health education, factors like occupation, present work practice, educational status, the level of understanding, receptivity level, religious beliefs and values, etc., are taken into consideration. Sometimes knowledge, attitude and practice surveys are conducted to obtain information in these areas. Taking all these factors into account, tailor made programmes are planned for different groups. The educational methods to be adopted and audio-visual aids to be used are decided on the basis of their availability, and effectiveness.

PHASE II—PLANNING STAGE II

Following this, the area managers of the shop floor are contacted by the occupational health team and the need for imparting health education for the employees working under them is explained. The number of persons who could be relieved from duty for attenting the health education programme, and the exact date of commencement of the programme are decided by taking into consideration the practical constraints at the shop floor. Normally a supervisor is nominated by the manager to coordinate the programme from the shop floor. The nominated supervisor in turn prepares the list of employees who have to attend the health education programme on each day and sends it to OHS team. A copy of this list is also sent to the time office for regularising the absence of the employees from duty. Afterwards the health education unit sends letters to the employees through their heads of the departments. Thus arrangements are made for the employees to attend the programme during their working hours. The venue of the programme is fixed taking into consideration the convenience of the employees to attend the programme.

PHASE III—IMPLEMENTATION

Implementation of the programme

During the implementation of the programme, health education sessions are conducted by health

educators, medical officers, occupational hygienists, social workers, audiologist and nurses. So, as one can see, it is not educators alone who do it.

PHASE IV—EVALUATION

Evaluation of the programme

The evaluation of the effectiveness of health education programmes is done by administering a questionnaire at the end of the programme. This is not done for all programmes. Sometimes programme review sessions are conducted to know the usefulness of the programme to the employees. A change in the behaviour after attending the health education programme is reflected in the form of using the prescribed preventive measures at the place of work by the workers. This is observed by the occupational health team making shop floor visits. In our experience we found that a change in knowledge is not immediately followed by a change in behaviour. This gradual change in behaviour is possible when health education sessions are followed by frequent personal contacts, reinforcements and group influence.

The health education programme organised for employees exposed to noise explains how the methodology described above was put into practice.

CASE STUDY

How the target group for health education was identified?

A noise survey undertaken in certain work stations revealed that the levels were high. The occupational health team visiting the shop floor also observed that the employees working in these areas were not using any protective devices against noise. The need for educating the employees on the importance of using the protective device was thus identified.

How the education programme was planned?

The health education unit in consultation with the occupational physician and audiologist decided on the content of the health education programme by taking all the other factors into account. The duration and venue of the programme, the educational methods to be adopted, the audio-visual aids to be used, the pamphlets to be distributed, the faculty, were all decided in advance and the required preparations were made.

Later the shop floor manager was contacted and briefed about the need of health education programme for employees working under his control. The manager, through one of his supervisors made all the necessary arrangements to relieve the employees from duty to attend the programme.

How the programme was implemented?

With the use of a sound and slide presentation the various aspects of noise were explained to the workers. During the group discussion the practical difficulties to control the noise at its source and the necessity to use the protective devices were emphasised. At the end of the session, a pamphlet on noise was issued.

Follow-up

Individual contacts with the employees were made by the members of the occupational health team at the shop floor. The employees were also motivated by the audiologist and the occupational physicians when the employees came for audiometry and for the Periodic Man Maintenance Programme (PMMP).

Evaluation

As the employees were ignorant about the effects of noise, not even a single worker was using protective devices before the health education programme. During the health education sessions, they were given to know about the effects of noise. Repeated personal contacts made by different members of the OHS team and motivation done through the union leaders, helped them realise the need to wear protective devices. At present 45% of the employees working in these areas are using the protective devices regularly. This positive change in health behaviour should solely be attributed to the effect of health education. ●

WORLD ENVIRONMENT DAY—5 JUNE

June 5 every year is observed as the World Environment Day. The Day seeks to highlight the strategy for environmental protection and rational use of natural resources, assessment of environmental impacts, low and non-waste technology, reutilization and recycling of wastes, management of hazardous wastes, the protection of flora, fauna and their habitats and questions to combat environmental pollution.

This issue of *Swash Hind* is devoted to Environment, Sanitation and Water.

Nature is becoming helpless with every passing day as human activities are creating newer and newer sophisticated chemical products. Human organism, a kind of self-sustained lab that integrates all the harmful influences, is incapable to neutralise these substances in the present day industrialised cities. Therefore, there is a need of effective preventive measures in protecting the workers from contracting occupational diseases.

PREVENTING OCCUPATIONAL DISEASES

PRITAM LAL

HUMAN body responds to everything—noise, radiation, pollution, stress, etc. Every advancing scientific and technological horizons have added concealed professional and accupational diseases to the aforementioned health hazards. The impact of occupational diseases remains hidden for quite a long time. As a result, pneumoconiosis, radiculitis, poisoning with mercury and lead vapour have now become widespread disease phenomena. The use of various chemicals and allergens in industry, as well as working under high pressure, noise, vibration, etc. has become great risk factor to the health of the personnel working under such conditions.

Helpless nature

Nature is very flexible. Like blotting paper it absorbs every thing and reprocesses what is harmful to human race in order to protect it. But nature is becoming helpless with every passing day as human activities are creating newer and newer sophisticated chemical products. Human organism—a kind of self-sustained lab that integrates all the harmful influences —in pressent-day cities' industrial life is incapable of neutralising these substances.

For instance, in recent years it has been discovered that even such a "harmless" operation as videoterminal (display) control has a negative effect on human health. What is more alarming is that such installations are widely introduced today in industry and management. Hundreds of thousands of operators spend their working hours at the flickering screens of the storage tubes of videoterminals, thus risking their eyesight. The main risk factor in this work is a high frequency of eye movements—upto 35,000 movements a day—from the keyboard to the display and back.

Labour Safety and industrial hygiene

The foundation of the International Labour Organisation Occupation Safety and Health Hazards Alert System was an important step aimed at transmitting urgent information on the confirmed, or suspected occupational hazards to competent bodies. But labour safety and industrial hygiene problems have remained as acute as they were in majority of capitalist countries. For instance, 2.5 million industrial casualties and occupational diseases were registered in the USA, about 1.5 million in Italy and approximately 500,000 industrial casualities in the UK every year in the 1970s.

During the last 15 years, more than 50 conventions have been adopted on industrial safety within the International Labour Organisation (ILO) framework. These conventions are obligatory to states to develop and implement comprehensive national policies to guarantee labour safety, industrial hygiene and salubrious industrial environment. State bodies and industrials have been entrusted with the responsibilities to provide labour safety.

The USSR takes necessary steps to prevent the spread of occupational diseases. Specialists are always alert to encounter instances of vibration disease, bronchial asthma and diseases of the peripheral nervous system caused by the extensive use of vibrating tools and the saturation of the environment with chemical compounds, some of which can cause allergy.

All industrial and agricultural enterprises in the Soviet Union have doctors who have been specially trained in occupational pathology, who keep a daily watch on the conditions of work and the changes of the state of health of the staff of a particular enterprise. The state sends teams of doctors—neuropathologists, otoshinolaryngologists, eye-specialists, dermatologists, immunologists, biochemists and experts in functional diagnosis—to factories and plants to detect such diseases at the earliest possible.

(*Contd. on Page 128*)

FAMILY IN URBANISATION NEW MEANING FOR SHELTER NEEDS

There is growing concern world over at the rapid rate of urbanisation and the burgeoning of cities and towns, especially in the developing countries. The degradation of life facing an average family in urban settlements may further worsen at the turn of the century.

A PECULIAR feature of the World population scenario now and for decades to come is the fast urbanisation. The rate is as much that more and more share of the increase in population will be absorbed by the increase in the urban population. At the beginning of the last century only three per cent of the people lived in urban areas. The figure rose to 10 per cent by the turn of the century and 25 per cent in 1950. By the year 2000 this will be 48 per cent and by 2025 more than 60 per cent of the world's population will be living in cities and towns.

While we cannot have any basic quarrel about urbanisation itself, the large number of pshycological and sociological problems generated by this mechanism put governments of most countries at a loss. In the developed countries urbanisation had already reached high levels and will slow down now. But in the developing countries the process will continue to accelerate, and decrease can be expected only by the turn of the century.

The share of the developing countries in the total number of big city agglomerations is also going up steadily. In 1950, 11 out of 15 largest cities were in the industrialised world. By 1975 there were 8 only in the developed countries and by 2000 A.D. only Tokyo, New York, and Los Angeles will be there in this list. Greater Bombay, Calcutta and Madras are among the burgeoning cities of the world, with their population of 17.1 million, 16.7 million and 12.9 million.

Push and Pull

There were various reasons for the urbanisation, but in the developing countries there is a common syndrome of 'push' and 'pull' factors. In the rural areas hard and un-interesting work, low wages, insufficient land and job opportunities and lack of social service all create a push factor. The pull factor operating from the cities attract rural folk with the lure of employment, better educational and health facilities, higher incomes and more entertainment. Nearly 40 per cent of the urban growth during the 1960s in the developing world was through migration from the rural areas and the remaining by natural increase. There are other contributing factors, like village dwellers commuting to work in the cities leading to a sort of 'rural urbanisation' with the population of the semi-urban area in-between increasing dramatically.

There are four main components in the growth generated by the urbanisation. One is the urban explosion totally distinct from the leisurely urban growth in the West. the second is the growth of industrial economy involving considerable shift from agriculture to industry and from land to factory. This brings about a series of changes in areas like capital investment and credit structure. The third is the labour force specialisation—emergence of a middle class providing leadersihp for change and a challenge to the existing power structure and tradition. The fourth component is the growth of nationalism as the unifying course. This is because in the cities there can be a broad social frame of reference that can do away with differences in speech, manner, dress, language and religion.

Gigantic Task

One of the main areas where urbanisation generates problems is that of housing. The authorities in the developing countries have not been able to cope with the ever-increasing demand for shelter, especially in the cities and towns. The result is that the people on their own start constructing their settlements. In this they would like to be as close to their place of work and so make their households on payments, under bridges, against the city walls and so on. More than one third of the urban population in cities now like in such squatter-settlements. Their number will double in six years from now.

Housing needs of a family in a city have social and economic factors that pose big challenges. There is often great disparity between the needs of the urban population and the natural, technical and financial resources available with the authorities. Delhi for example would double its poulation in the next 15 years and would need four times the water now supplied. The sewerage treatment capacity needed would be 900 million gallon per day as against the present available level of just 118 MGD. The power demand by the turn of the century would by 2500 MW, more than four times what Delhi gets now even with borrowing from other States.

One of the main areas where urbanisation generates problems is that of housing. (World Bank Photo)

Colonial Hangover

Governments in the developing countries are no doubt conscious of their obligations but various forces are at work, which not only impede the progress of shelter construction but also create such living and environmental conditions that ultimately will turn a housing project into a seething, unclean slum. In the fifties and sixties, architectural planning and construction was done by engineers and architects trained in European, American and Russian universities. Low-cost housing using traditional and locally available material was often scorned as perpetrating the miserable conditions of the villagers. Instead prefabricated building blocks and apartment-clusters became the style.

This sort of housing development soon creates slums out of housing projects through overcrowding, poor scope for maintenance, breakdown of services and improper water supply and sewerage. In this respect the housing colonies of the poorer sections may present the same picture they in New Delhi, in Mexico city, Lima or Dhaka. In the beginning people make the best use of the available amenities but very soon garbage overflows into the balcony and courtyard and goats and chicken and pets live on the stair case, landing and corridors.

Variety of Aspirations

It has been observed that families can take care of their environment where they can control to some extent. That is why the inside of the dwellings may be well-looked after and in some cases families have even remodeled or added to their plans. In India we have realised this long back and have all along considered the ownership right of the land as a very important aspects of helping a family own a shelter. Once a family has some legally recognised land, over a period of time it will build its own dwelling and this dwelling will reflect the living pattern and the aspiration of the family more than any package housing unit provided to them.

The aspirations of families are varying. Some of them want access to technical and financial resources so that they could build their own house. Some others would like to live in blocks of dwelling as this would confirm some amount of social status and mobility. In any case, special care, has to be given in planning and designing to the requirements of the aged, the handicapped and the children.

Special Needs

India, alongwith other developed countries is aiming at private housing units to each family by the close of the century. The job is not as easy as it seems, for in India the present shortage runs into some 24 million housing units. There have been a number of attempts to discuss and coordinate activities on national and International level on urbanisation but no conference has attempted to cover all dimensions of the problem relating to the family in the urban setting.

Mankind being but one global family, the World community will have to jointly tackle the problems of families in the face of urbanisation.

—PIB

(Contd. from Page 125)

Workers and office staff undergo all-round tests which help detect those who have the disease but do not feel its symptoms as yet and those who are likely to get it. Specialists submit a list of people to the director of the concerned enterprise and recommend necessary changes in the working conditions, in diet and also preventive and special measures. Trade Union committees see that all recommendations are carried out.

Research

Scientists study those factors which can adversely affect the workers health, particularly vibration, noise, chemicals, magnetic and electromagnetic fields, in order to establish their safe levels. Medical researchers also help develop more effective purification facilities, particularly dust catchers. For instance, coal dust and toxic substances are inevitable byproducts of the coke industry. Scientists initiated a reconditioning scheme for the industry—especially the development of a new system of charging coke ovens, which stopped discharge of coal dust into the atmosphere. Remote control and recirculation technology has resulted in substantially reducing the danger of workers' contact with many adverse environmental factors.

These effective preventive measures helped in protecting workers from contracting industrial diseases. The preventive and treatment measures are taken by the health authorities in collaboration with management bodies and trade unions. That is why the maximum permissible concentration of potentially dangerous substances in production premises and in the environment in the USSR is the lowest in the world.

—Soviet Feature

BASIC HEALTH CARE OF CHILDREN

DR MEHARBAN SINGH

Children are the future potential and national asset of a country and both parents are responsible to ensure optimal physical, emotional, mental and social growth and development of their children. They must be cared and reared fondly to evolve them as useful members of the society with a strong body, alert mind, balanced personality and a sense of national pride. It is desirable that mother-craft or art of child care must be taught during school years.

REPRODUCTIVE life is associated with considerable physical, emotional and social stress. Girls with serious physical or mental handicaps should take the advice of a specialist before they get married. The woman should be healthy and having regular menstrual periods before marriage. Child bearing should be restricted between 20-30 years of age which is associated with best reproductive efficiency and lowest risk of developmental defects. Young mothers are inexperienced and have greater risk of giving birth to a low birth weight baby. Marriage among first degree cousins should be avoided to safeguard against genetic defects in the offsprings. Girls must be effectively immunized against tetanus and rubella (German measles) before marriage to prevent congenital defects due to rubella syndrome and deaths due to tetanus in the newborn babies.

Care of unborn baby during pregnancy

The foundation of the baby is laid in-utero. Healthy mother produces a healthy baby while a sick mother may produce a high-risk infant. Growth of the fetus is dependent both upon the seed (genetic endowment) and the soil (maternal health). Mother must maintain an accurate record of her "dates" (menstrual flow) which provides the most useful and accurate parameter regarding duration of pregnancy and gestational age of the fetus. The expected date of delivery is calculated by adding 9 calendar months plus 7 days to the first day of last menstrual period. First three months of pregnancy are most critical and are characterised by differentiation (organogenesis or embryogenesis) of various organs of the unborn baby. During this period all drugs and diagnostic X-rays should be avoided due to their effect of producing possible developmental defects. Self-medication should be avoided throughout pregnancy. To ensure proper growth of the fetus, mother must eat at least 15% extra (balanced food) during second-half of pregnancy as compared to her pre-pregnancy food intake. Supplements of iron and folic acid are also essential during the last 3-4 months of pregnancy to correct nutritional anaemia. Regular antenatal medical check-ups are mandatory to recognize any problems in the mother and her unborn child. Steady weight gain (8-10 kg) during pregnancy is indicative of satisfactory fetal growth. During pregnancy she must be motivated and emotionally prepared for breastfeeding. Anatomical defects of nipples, if any, should be corrected by massage, application of emollients and manual eversion.

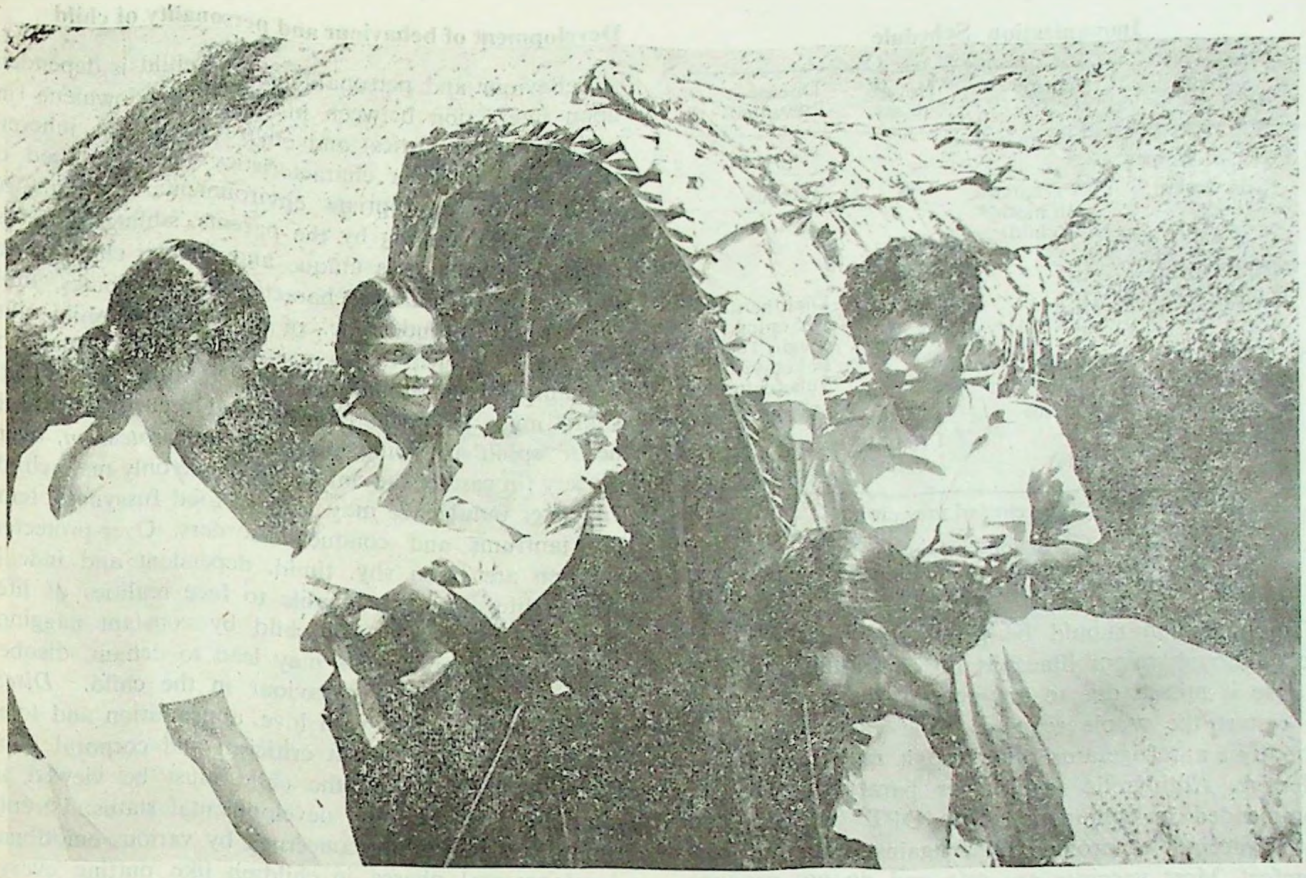
Basic needs of children

Due to their slow growth and development, human infants are dependent and are at the mercy of adults for several years after birth. To ensure optimal physical, mental and emotional growth and development of children, they must be provided with adequate nutrition, protected against environmental hazards, and infectious diseases and exposed to positive, stimulating and healthy environment both at home and School.

Ensure adequate nutrition

Breastfeeding is natural, instinctive and species specific. And the human milk is best for the baby. The infant should be straight away put to breast as soon as mother has recovered from the rigours of labour. There is no need to offer any prelacteal feeds. Infant should be fed on a demand schedule and burped (to break the wind) after each feed. During the first three months exclusive breastfeeding is advised to safeguard against risks of bacterial contamination and diarrhoea. Breastfeeding is economical, convenient and emotionally satisfying for the mother as well as for the baby. It is desirable and best not only for the baby but for the mother too. Breast milk is best suited for the nutritional needs of the human infant and is replete with protective cells and antibodies against microbes. Infants receiving breast milk are less prone to develop episodes of diarrhoeal and respiratory infections which are major causes of morbidity and mortality in infancy. There is some evidence available that breast fed infants are less likely to suffer from allergic disorders (especially eczema), dental caries, obesity and high blood pressure during later life. In order to maintain adequate lactation, the nursing mother must take nourishing food and eat at least 25% extra food (as compared to her pre-pregnancy intake) and take plenty of liquids to replenish fluids lost through milk.

Milk alone is insufficient to sustain physical growth after six months of age. After four months or so, semiliquid weaning foods such as egg yolk (followed by white), curd, cereal, gruel should be given with a spoon. Rice with vegetables and pulses, 'halwa' and soft seasonal fruits are gradually introduced in the diet. After the first birthday infant can eat rice with pulses, bread soaked in pulses or vegetable curry (without spices), minced vegetables, cheese and meat. It must be remembered that the one year old infant needs as much as one-half of food being taken by his mother. In view of the small capacity of his stomach



To ensure optimal physical, mental and emotional growth and development of a child, he/she must be povided with adequate nutrition, protected against infectious diseases and provided with positive, and healthy environment.

he, therefore, needs small and frequent feeds with additional vegetable oil. Breastfeeding should be continued as long as feasible by the mother. Toddlers should be offered everything cooked at home and should not be forced, coaxed or cajoled to eat food Parents should be relaxed at meal times and should not show unnecessary concern and anxiety about the food intake of their child. Excessive intake of candies, sweets, biscuits, ice cream, soft drinks and fruits should be discouraged. During adolescence (12-16 years in girls, 14-18 years in boys) children must eat at least 50% more than their respective parents to meet excessive demands for energy to ensure optimal physical and sexual development.

Prevention of infectious diseases

Avoidance of bottle feeding and maintenance of personal cleanliness and hygiene is essential to reduce incidence of diseases caused by microbes. The house should be kept clean and free from flies/cockroaches and food must be kept covered. The infant's hands should be kept clean because he constantly put everything into his mouth. Children must be taught the habit of washing their hands with soap and water before every meal. They must receive various immunizations at appropriate times as mentioned in the following schedule:

Immunization can protect your child from such dreadful diseases as neonatal tetanus, poliomyelitis, diphtheria, whooping cough, tetanus, tuberculosis and measles. Bring your child at the right age for the full course of the vaccines to the nearest primary health centre, dispensary or hospital where free vaccination fecilities are available.

Immunization Schedule

Age	Vaccine	No. of doses	Disease Prevented
□ Pregnant Women			
16-36 weeks	TT (Protects both mother and child)	2*	Tetanus
□ Infants			
3-9 months	DPT	3	Diphtheria, whooping cough, Tetanus
	Polio	3	Poliomyelitis
	BCG	1	Tuberculosis
9-12 months	Measles	1	Measles
18-24 ,,	DPT	1 (booster)	
	Polio	1 (booster)	

*Give one dose, if vaccinated previously.

Note: The interval between 2 doses should not be less than one month, Minor coughs, colds, mild fever and diarrhoea are not considered contra-indications to vaccination.

Immunization should be given when the child is well although minor illness is no contra-indication. If a dose is missed due to any reason, there is no need to restart the whole schedule. The vaccine must be stored in a refrigerator otherwise it may become ineffective. Antipyretic (aspirin or paracetamol) is recommended in conjunction with DPT, measles and TAB vaccines to provide relief against fever and discomfort. Most vaccines are safe and do not produce any side effects.

Harmful cultural practices

Mother-craft is taught by mothers to their daughters through generations. There are several rituals or cultural practices regarding rearing of children which may be harmful and should be avoided. Colostrum (milk secreted during first 2-3 days of lactation) is often denied to the infant with the mistaken belief that it is unclean and unsafe. In fact colostrum is most beneficial and best suited for the needs of infant by virtue of its low fat and high protein (protective antibodies) content. Application of dirty dressing or cow dung over the umbilical cord is fraught with the risk of development of tetanus. The umbilical stump should be painted with antiseptic lotion and kept open and dry. Application of 'kajal' or 'surma' is associated with the risks of eye infection and possible lead intoxication. Teething 'medicines' and 'janam ghuttis' are unnecessary and unsafe. During early life, medications should be avoided as far as possible and taken only on the advice of a physician. The child should not be starved during febrile or exanthematous illness (measles, chicken pox, typhoid fever, etc.) and instead he should be given nutritious diet.

Development of behaviour and personality of child

Behaviour and personality of the child is dependent upon interaction between his genetic endowment (inherited characteristics) and environment. The inherent personality traits or characteristics can be altered or modified by appropriate environmental stimulation and proper handling by the parents, siblings and teachers. Every child is unique and no two children are alike. The personality characteristics, attributes, limitations and aptitudes, etc., of an individual child must be clearly known to his parents. *Love* is a basic or fundamental emotional need which must be fulfilled. Child must be given comfort and security. Child is never 'spoilt' by being loved but *overprotection*, overanxiety (in case of the only child or the only male child) and over indulgence may lead to food fussyness, temper tantrums and conduct disorders. Over-protected children are often shy, timid, dependent and indecisive in life. They are unable to face realities of life. *Rejection* and neglect of child by constant nagging, scolding and reprimands may lead to defiant, disobedient and delinquent behaviour in the child. *Discipline* must be taught with love, appreciation and tolerance instead of constant criticism and corporal punishment. Behaviour of the child must be viewed in relation to his age and developmental status. Parents should not be unduly concerned by various emotional developmental phases in children like putting everything in mouth, eating mud, thumb sucking and playing with genitals, etc. The rules must be consistent to avoid any confusion in the child's mind. Children are best imitators and adults must set *an example* regarding good habits, truthfulness, honesty and morality, etc., for children to emulate. Hypocrisy, smoking, drinking, etc., among parents are likely to bread similar traits in their children. *Maladjusted* parents produce maladjusted children who grow up to become maladjusted adults. The child is the barometer of family's emotional climate. It is futile to treat symptoms of 'problem children' but instead it is essential to find out the genesis of their behaviour. Above all, it is essential for all parents to know the capabilities and limitations of their children and no child should be pushed beyond his or her capabilities. During adolescence, considerable tact is needed to handle children. Parents must avoid rudeness and threats during this phase and they should establish rapport with their adolescent child and explain to him/her the significance of body changes for smooth transition from childhood to adulthood. During this period, the parents must keep a close watch on the company of their children so that they do not fall into the trap and temptation of various addictions. ●

METAL TOXICITY

--A slow poison of our environment

VINOD SINGH

The major factors responsible for pouring toxic metals in the air, water and soil are our industries. Metallic pollutants, released in the air, are brought either with the rain or due to gravitational force to the soil and pose a danger to the health of the people. Therefore, it is time that precautionary measures are taken to check it.

Increasing use of metals has resulted in a variety of problems. Some metals like mercury, cadmium, nickel, chromium, lead and manganese, etc., are being used and discharged into the environment by the modern industries and are posing a great danger to human life.

This being the reason, even our food articles have retained excess of these toxic metals and their hazardous effects remain unnoticed mostly due to the non-availability of facilities to detect them.

In India, various isolated studies have proved the increase in the contents of these toxic metals in water, soil, food articles and even in human body depending on the area where a person lives, yet the general awareness of their harmful effects is lacking in our people.

The major factors responsible for pouring these toxic metals in air, water and soil are the industries. Metallic pollutants released in the air are brought either with rain or due to gravitational force to the soil. Drained water from the factories, if poured in rivers, pollutes the adjoining soil, vegetables and habitations.

Organic wastes, refuse burning, transport, and power generation are some of the factors responsible

for adding metals in our environment. Sewage, sludge, application of metal containing pesticides, seed dressings, even permitted colours, metallic objects, paints, varnishes, fuelash municipal compost, domestic rubbish, use of electro-plated utensils, steel utensils, vegetable ghee, and tea contribute to these toxic metals.

Affects of nickel

Bhabha Atomic Research Centre (BARC), Bombay, has carried out investigations to analyse the contents of metals in food samples, water, vegetables, etc., in and around Bombay. Blood and urine samples of city dwellers were analysed for the contents of zinc, manganese, cobalt, nickel, copper, chromium, and lead for assessing the baseline levels for the general population. Nickel content in blood was found to be quite high and this was supposed to be due to composition of vegetable ghee or use of stainless steel utensils in cooking. Besides producing systemic poisoning, nickel is also known to cause cancers in the human. Nickel also produces skin diseases and ulcers.

Manganese toxicity

The toxicity of manganese usually has been reported in Industrial workers. However recently the effect of manganese on the nervous system has been reported to occur in a number of families consuming well water containing high contents of this metal, in a village in Japan. In 1975-76, in a village in Unnse district, people developed paralysis and neurological disturbances and these were attributed to the consumption of well water having excess of magnes. Even cereals and legumes were found to contain an alarming amount of this metal.

Lead poisoning

Lead is widely used for various purposes. It has been found to be present in the water flowing through lead pipes, paints, varnishes, pigments, fine glass, lead glazed potteries, exhausts of motor vehicles, vermilion and even in *surma*. Lead has also been reported to be present in various vegetable and animal food stuffs. Though certain food stuffs do not contain lead, after cooking with oil, ghee, salt, turmeric, pepper, and other spices, they get enriched with lead.

Lead reaching in food stuffs kept in glazed pottery and its accumulation in the body due to the application of *surma*, or spraying of *gulal* powder has also been reported. Chewing of coloured coatings or printed paper may also lead to its absorption in children. Different tea samples have also been reported to contain appreciable amounts of this metal.

It has been pointed out that the modern man is having 100 times more lead than pre-historic man (Report: Singh V., Gupta A., KNK Institute of Life Sciences, Kanpur). In cities like Kanpur and Lucknow the presence of this metal in water has been reported.

Since lead is a non-essential metal, its presence may produce symptoms like fatigue, sleep disturbances and constipation in early stages, and colic, anaemia and neuritis-like symptoms in chronic stage. Children are more prone to it than the elders, as hypertension and irritability-like symptoms develop in them due to this metal.

Toxic affects of mercury

Mercury poisoning was reported in inhabitants of Minerals Bay due to consumption of fish containing discharged methyl mercury from the adjoining factories. Exposure to this metal produces toxic effects in the nervous system which include anxiety, depression, lack of concentration and tremors.

Cadmium

Many cases of food poisoning from the contamination of food and drink by cadmium plated containers have been reported. Drinking water may also be polluted as a result of this metal from solders containing this metal in fittings of water heaters and taps. By swallowing tobacco, this metal has been found to reach the body. This metal causes proteinuria due to kidney damage. The most serious disorder of cadmium-toxicity is known as Itai-Itai disease which occurred after world war II in Japan. Testicular damage, chronic bronchitis, hypertension and cardiovascular diseases have been reported.

Dietary factors like iron deficiency, alcoholism, vitamin deficiency, protein deficiency and also stress enhance metal toxicity to a great extent.

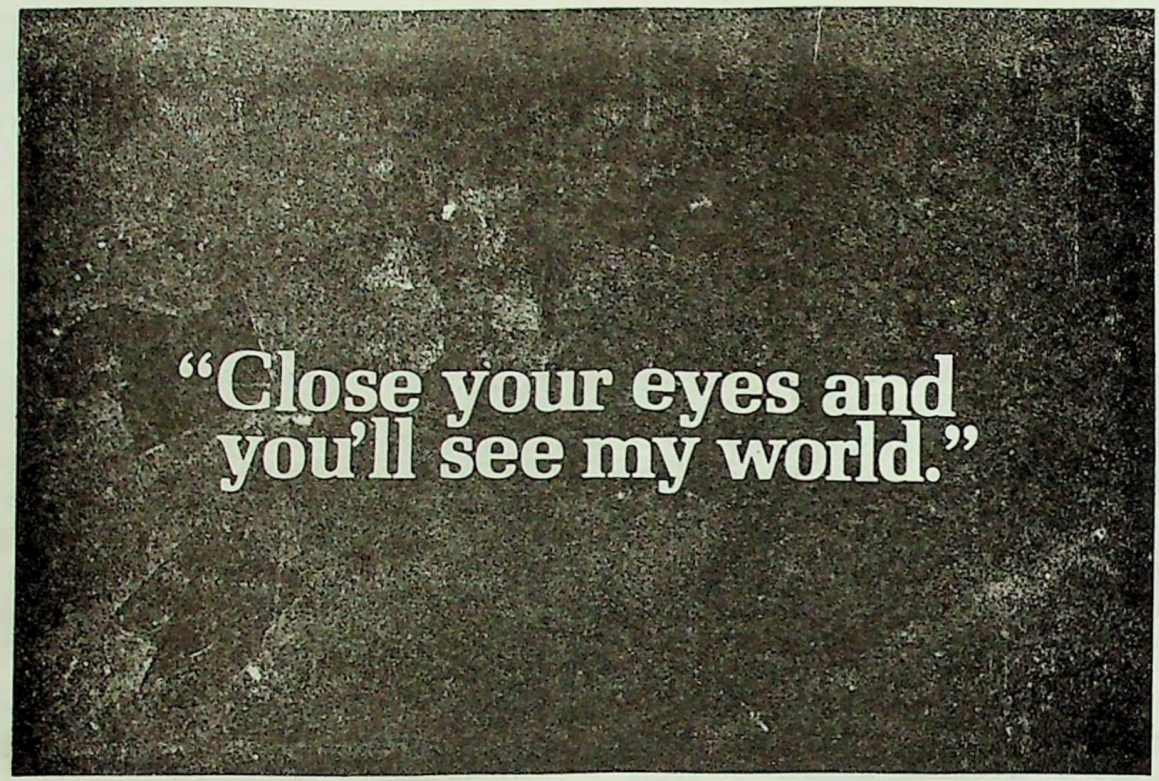
Such reports give a clear picture of the danger these metals have started posing to public health. Such harmful effects of these metals are creeping on us gradually. Therefore, it is time that precautionary measures are taken to check it. △

ENVIRONMENT AND PUBLIC ADMINISTRATION

V. K. SREENIVASAN

The job of different arms of public administration is to foresee the environmental hazards, weave into the plant design as many preventive measures as possible and to ensure later on unrelenting vigil on the daily operation at the Units.

Protection of environment and control of pollution became topics for raging debates after the Bhopal gas tragedy. Though the Union Carbide affair was mere a terrible accident in a chemicals unit, the pace of policy planning and imperceptible results of environment protection got a shot in the arm after the tragedy.



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Atmosphere and water pollution and damage to the nature and ecology cannot be prevented entirely. This is the physical "cost of living" we have to pay for rapid industrialisation and the cornucopia of comforts and gadgets it provides. For example, as long as we use more and more automobiles of all sorts, working on diesel or petrol, our streets are bound to be polluted with exhaust fumes. As long as we have giant manufacturing units using complex chemical processes we will have the problem of pollution of air and water.

The job of different arms of public administration is to foresee the environmental hazards, weave into the plant design as many preventive measures as possible and to ensure later on unrelenting vigil on the daily operation of the units.

Different Interests

In 'administration' can be included different decision-making bodies right from the highest echelons of the Cabinet and the various departments and ministries of the Government of India, through the State Governments, city and municipal corporations and panchayat and village level bodies. Where the question of environment is concerned, most often it is a local issue left to be taken care of by the State and regional administration.

There appear also areas of centre-state interaction where a high-level policy decision is to be taken about a cost-benefit analysis of a hydro-electric project for comparative considerations of ultimate economic and developmental benefit accruing from the proposed project, and the possible damage to the environment the project would entail. The most recent instance was that of the Silent Valley Project of Kerala. After a prolonged ding-dong battle between environmentalists and hydel power specialists, the Government at the Centre came strongly in favour of abandoning the project.

As part of the Green Revolution we had introduced a large number of high yielding varieties of foodgrains, pulses and oil seeds in the country. No doubt production went up by leaps and bounds but it remains a fact that high yielding varieties are more prone to diseases than traditional varieties. There may soon come a stage when all our crops and all our reserves of seeds will be very high yielding varieties only and then will start the journey downhill. In this context it is important to think of preserving the vast forest reserves which can provide new genres that are healthy and disease-free so that our life system can be supported and sustained.

No Fire-Fighting

Another example where anxiety about environmental degradation came 'after the completion of the project' is the Mathura Refinery Project and the effect of the fumes on the Taj Mahal. Only after trial production started, did monument enthusiasts and environmentalists make a hue and cry and only after the newspaper reports and Parliament questions did the authorities think of ordering a Committee to go into the question of the refinery *vis-a-vis* the Taj.

Administration at all levels, has to adopt a perspective and systematic approach in place of 'fire-fighting' methods of environmental protection. Just to cite one example, for long years forests were used to be cleared by farmers for extensive cultivation. In some States the government departments themselves had allotted forest land for terraced cultivation of a variety of items including cash crops. After two or three decades they awoke to the need of avoiding wood as fuel and the need to protect trees.

Similar was the case with rapid industrialisation. Over the last twenty years we forged ahead with small-scale industries, industrial estates, district industries centres and the like. We did not include pollution control measures in these schemes.

Administrations have to take measures with vision. All industrial undertakings should indicate at the time of applying for licence the scope for expansion and diversification in addition to their ensuring pollution control measures in the first instance. The local administration should work out projections of population growth for coming decades and segregate habitation areas strictly from industrial areas. It is well-known that when Union Carbide set up their plant in Bhopal, the surrounding areas were uninhabited.

The zeal for industrialisation should not overlook environmental needs. Recently it has been reported that the Government's policy is to have at least one

major industry in every district. Great discretion in choice of site and care in planning and implementation are required here as in outlying and hilly districts it will be a sheer impossibility to monitor day-to-day implementation of pollution control measures.

Projects for sewage and waste disposal have to be given priority by city and town councils with a view to minimising the pollution of water courses. Ostentatious expenditure should be kept to the minimum and enough funds diverted for pollution control projects.

Practical Approach

The decision-making in the higher units of public administration will have to gear themselves up the threshold of confidence to fix priorities and to go for perspective planning. It is high time we come to grip with the fact that the two main areas of environment protection, viz. pollution control and preservation of nature are inexorably linked to the energy use pattern that we will be adopting. We have wood, coal, oil, electricity, biogas, solar and wind energy. It is well-known that when the Netherlands people found that they have enough reserves of natural gas they took the bold step of closing down all their coal mines.

Let us now consider two type situations from two different parts of the country to show how environment is being eroded because of the administration's lack of priorities and measures to keep close watch on people's lifestyle. In the north Indian villages—why in most of our villages for that matter—the main household fuel is wood. The administrations now tell people that wood is scarce and they should switch over to alternate energy sources. People know this very well. Often they have to forage in search of firewood or do poaching on private reserves.

What is the alternate fuel? They can't afford kerosene, electricity or cooking gas, the latter two in any case not being available in most villages. Solar cookers? The village lifestyle demands an early meal with a packed lunch for the workplace. The villagers might be returning to their huts by sundown. Of what use are solar cookers to them?

Take the case of the building boom in Kerala created by the flow of the 'gulf money'. Paddy fields are being raised with earth work to build homes and shopping centres. Coconut groves are being wiped out to build lodging houses and industrial units. Now the administration that created an Overseas Employment Development Corporation never thought it worthwhile to impose any restrictions on the conversion of farmland into built-up areas.

A well-conceived plan for environment, protection of farms, factory or roads cannot only save life and property later but can prevent closures of units leading to inconvenience for employees. △

DR M.D. SAIGAL IS THE NEW DIRECTOR GENERAL OF HEALTH SERVICES

Dr M. D. Saigal has taken over as the Director General of Health Services in the Ministry of Health and Family Welfare on 11 April, 1986.

Earlier Dr Saigal was the Additional Director General of Health Services (Public Health).

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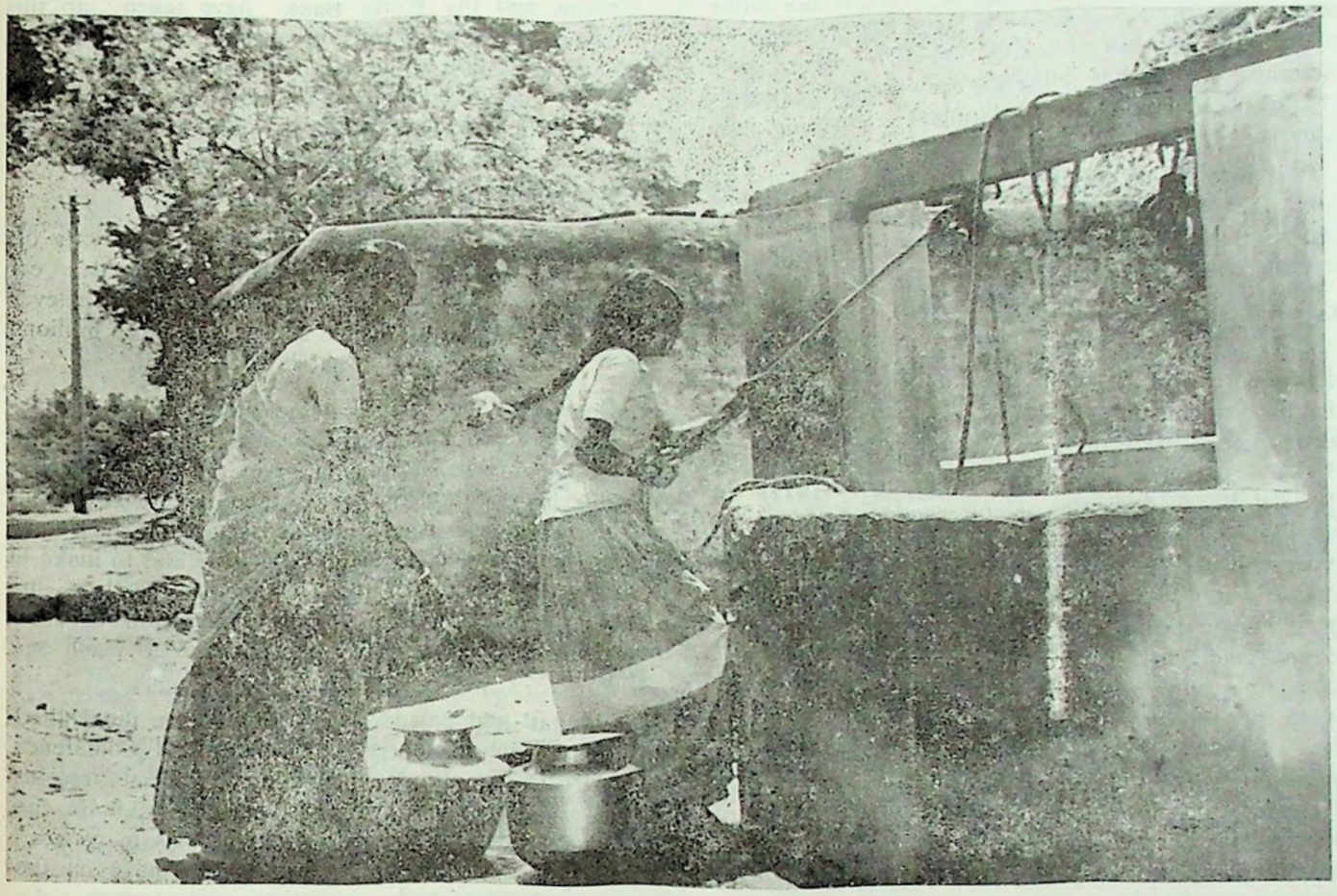


WATER AND SANITATION

—Investment in Human Potential

Jesus answered and said unto her. If thou knowest the gift of God and who it is that sayth to thee: Give me to drink: thou wouldest have asked him and he would have given thee living water. The women saith unto him thou hast nothing to draw with and the well is deep; from whence then hast thou that living water.

—Gospels. St. John IV, 10, 11

Where is that living water that is the great sustainer of life? But today, it is a great destroyer as well. It covers 81 per cent of this earth's surface. It is salty and of no use to most earthlings. Another 1.9 per cent of fresh water covers the earth—the rivers, the lakes, the ponds, etc. We use only 5 per cent of it to drink. From what is known, the consequences of having no safe drinking water are astounding. By using water that should not be used, coupled with poor sanitation,

* 50 crores are afflicted with trachoma and blindness
* 25 crores suffer from swollen limbs
* 16 crores shiver with malaria
* 20 crores have blood in urine
* 10 Crores have diarrhoea
* 3 crores discharge blood with urine
* 105 crores under-5 children die every year from water borne disease
* 50 per cent of world hospital beds are occupied by these patients
* India loses 730 lakh mandays every year as workers fall sick
* Approximately Rs. 450 crores are spent for their treatment every year.

To put it in another way, it is as if the entire western Europe has gone blind with trachoma, as if each Russian has filarially swollen limbs, each American was having bilharzia and the entire people of Japan, Malaysia, and Philippines shivering with malaria.

It is astonishing that in spite of these terrifying facts, the problem did not receive the serious attention of public health experts till the middle of the current century.

Recent Awakening

A concerted effort to deal with the colossal problem emerged in 1976 when the UN Conference on Human Settlements (HABITAT) in Vancouver laid down the specific proposal "fresh water for all by 1990". Later the UN Water Conference (1977) in Mar del Plata, Argentina, recommended that the International Drinking Water Supply and Sanitation Decade be observed from 1981 to 1990 by which time potable water was to be made available to each and every human being. The Conference did not draw up any guidelines or programmes, but exhorted all States to achieve this aim. Next year International Conference on Primary Health Care, held in Alma Ata (USSR) declared safe drinking water and basic sanitation as essential for primary health. The World Conference on the International Decade for Women stressed that absence of potable water and proper sanitation imposed a special burden on women. The International Drinking Water Supply and Sanitation Decade was finally launched by the United Nations General Assembly in New York on 10th November 1980. It stressed the importance of good water and sanitation on economic productivity, increased purchasing power, and better health. Effort of the Decade was termed as "investment in human potential, a moral imperative and sound economics".

Children are the most vulnerable to water and sanitation deficiencies. About 1000 million children have virtually no access to potable water in Third World countries. Of the 25 million under-5 children who do not survive, almost 9 million fall prey to diarrhoea. Even those who survive are permanently impaired physically and mentally.

Magnitude of the Job

To give safe drinking water to every human by 1990 is a gigantic task, the magnitude of which is seldom fully understood. It means that every day during the Decade, water and Sanitation should be made available to five lakh new individuals. The cost of this venture is calculated to be 600,000 crore dollars (roughly 600,0000 crore rupees). The United Nations and the World Bank have taken up this challenge very seriously. When we consider that the annual arms bill of the world is around 800,000 crore dollars, the decade aim does not look impossible. The world spends about 4380 million dollars on smoking and 365 million dollars on non-essential painkillers every year.

The UNDP is funding many research projects on low cost sanitation. We are all learners in this essentially new field of low cost sanitation. Whatever is evolved has to be feasible and acceptable to millions who do not know well what it is all about.

One factor may make all the endeavour of the UN and world nations in this regard look futile. The explosive growth of population in the poor countries is this imponderable. Today, there are more people in the world who need water and sanitation than there were in 1975. Yet to make it an issue and to make it work is the motto of the UN and its members, including India. With an annual river flow of 1360 million acre feet, we have enough water to reach our aims.

'Habitat' had passed special resolutions, the United Nations Water Conference and the World Conference on UN Decade for Women adopted special resolutions recommending women's incorporation in the Water Decade Programmes. All this was in recognition of the impact which women can have on the success of water and sanitation programmes. An Inter-Agency Task Force for women and water has already been established. The strategy envisages involvement of women in policy making, management and technical levels for programming, monitoring and evaluation of the decade activities.

Women's Role

Experience has shown women as primary users of water resources and the primary influence on family habits. So it is evident that they can contribute substantially to progress of the decade programmes.

Since women are traditional water carriers, they spend a lot of time upto six hours a day—hauling water. By virtue of their predominant functions at home, women are particularly vulnerable to waterborne diseases, which amounts for 80 per cent of all illnesses according to WHO studies. Also to be taken into account is the fact that it is women who mostly take care of the children and any ageing housebound relative. Unfortunately, wherever poverty is persuasive, the perception of priorities becomes a male prerogative. This has to be changed by education and increased social awareness. △

CLEANING OUR RIVERS

—Anti-pollution measures for all major rivers

R. S. MATHUR

THE initiative and dynamism of Prime Minister Shri Rajiv Gandhi has given a start for "cleansing" the Ganga waters of all pollution throughout its course. Priority, however was given to the Hardwar-Rishikesh sector because of the Kumbh Mela of 1986.

A "crash" two-and-a-half months programme to chem pollution of the Ganges waters was launched by the Uttar Pradesh Jal Nigam alongwith the State Pollution Control Board to implement a programme of the Central Ganga Authority. It included plugging of ten inlets at Hardwar and six at Rishikesh which brought sullage. Through pipes the sullage water flow has been diverted to pumping stations, which in turn pump it on to agricultural fields in the area for irrigation purposes.

Similarly, effluent discharge from the industrial units, flowing through channels, have also been plugged and the water diverted away from falling into the river Ganga.

Pollution of the Ganga waters near the twin cities of Hardwar and Rishikesh was 'temporarily' controlled for the Kumbh Mela of 1986, as a start. Steps were also taken to check any sewerage flow from the camping sites and townships got readied for the Kumbh pilgrims.

Tackling Major Towns

The 'crash' programme to check pollution was only for the Hardwar-Rishikesh region and for the Kumbh Mela period alone.

The Central Ganga Authority has drawn up a two-phase programme for cleaning the Ganga, to be implemented during the Seventh Plan Period as also during the Eighth Plan.

In the first phase, apart from the action taken for the Kumbh Mela, 29 class I cities along the river in the three States of UP, Bihar and West Bengal, which account for as much as 86 per cent pollution of the river, are to be covered. What is proposed is to provide pumping stations for sullage and effluent discharge from the city drains and inlets, for being transported to sewage treatment plants to be installed. After treating, the water would be made available for irrigation, while the 'solid' remnants would be used as manure.

Each of the 29 first class I cities, including Hardwar and Rishikesh, would have separate long-term schemes for preventing pollution on a permanent basis. An outlay of Rs. 242 crores is earmarked for the first phase, to be completed during the current Seventh Plan Period. Varanasi would perhaps get the major chunk estimated at Rs. 42 crores according to a project report prepared for the city.

Second Phase

In the second phase, the remaining 71 cities and towns along the Ganga in the three States are to be taken up. This programme will be implemented during the Eighth Plan.

An outlay of Rs. 50 crores would be available for the second phase of the operation. The Central Ganga Authority would provide funds and approve scheme which are to be excecuted by the State Government agencies.

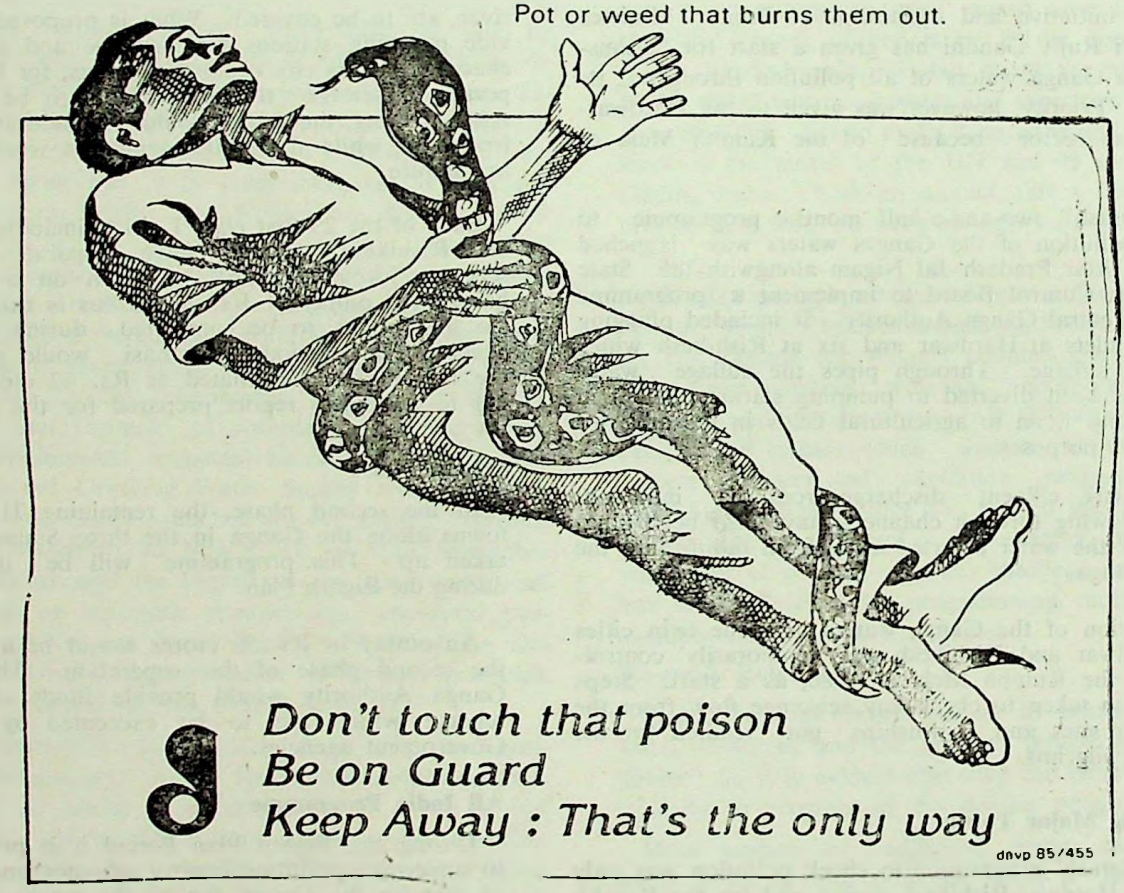
All India Programme

During the Eighth Plan Period it is proposed also to undertake pollution control schemes on the pattern of that for the Ganga, for all the major 12 rivers of the country. Surveys and studies are to be conducted and project reports submitted for each river. Funds would then be allocated from the Centre.

And happily all these anti-pollution measures for the nation's rivers—sacred in their respective areas—shall make the dip on sacred occasions or really holy! Clean and wholesome water to drink for man and beast, would lead to a new 'awakening' and improved health for those for whom filtered water supply is still a distant dream. △

Who will suck venom to seek Pleasure?

No one.
Yet, that's what some do.
Carried away by the viles
of the Marijuana Medusa.
And taken in by its tangles—Charas,
Pot or weed that burns them out.



Don't touch that poison
Be on Guard
Keep Away : That's the only way

dnvp 85/455

LOW COST DRINKING WATER FOR RURAL AREAS

THE Conference of State Ministers and Secretaries in charge of Rural Water Supply and Sanitation, at its meeting held on 12-13 February, 1986, have noted with satisfaction the physical achievements during the Sixth Plan truly impressive as 1.92 lakh out of a total of 2.31 lakh identified problem villages had been provided with at least one safe source of drinking water.

The Conference arrived at the consensus to make an all-out effort to provide adequate and safe drinking water supply to the entire rural population of the country. The highest priority would be given to cover the hard-core 39000 problem villages spilled over from the Sixth Plan period followed by problem villages identified subsequently and coverage of partially covered problem villages.

The Conference was of the opinion that the coverage of Scheduled Caste and Scheduled Tribe habitation should be given the highest priority and the sources meant to benefit SC/ST population should essentially be located within their habitations for providing them easy accessibility.

The Conference was of the view that there was urgent need to develop low cost options for provision of safe drinking water in rural areas as an alternative to the capital intensive schemes.

Regarding the launching of Techonlogy Mission on Drinking Water Management the Conference felt that the Mission would aim at finding low cost treatment for problems of fluorides, salinity and brackishness, bacteriological contamination, improving the recharging of ground water through proper micro-level ecological planning and developing the traditional water retention structure in hill, desert and tribal areas through the use of appropriate technology. The Conference felt that developing low cost science and technology will help to expand coverage with the available resources and achieving the goal of providing drinking water to the entire rural population.

The Conference was of the view that there was urgent need for integrating the drinking water supply programme with Health Education and promotion of health consciousness amongst the rural population. Health Education pertaining to drinking water supply and sanitation should be made an integral part of formal primary education and non-formal education programme for children and in all adult education programmes.

The Conference expressed the need for mobilising local resources for supplementing the governmental efforts in the rural water supply sector.

The newly launched integrated programme for provision of sanitary latrines in the rural areas during the Seventh Five Year Plan was welcomed by all the States. They assured that necessary efforts would be made for the implementation of the integrated programme of sanitary latrines. The close integration of the rural sanitation programme with the health education programme and involvement of the community and the voluntary organisations in the implementation of the programme was emphasised by all the States.

Under the new rural sanitation programme, Rs. 30 crores would be provided under each of the programmes of Rural Landless Employment Guarantee Programme and National Rural Employment Programme for construction of five lakh sanitary latrines in rural areas during the Seventh Plan.

Sanitary latrines would also be provided as an integral part of the housing programme for one million Scheduled Caste and Scheduled Tribe families under the Rural Landless Employment Guarantee Programme.

Construction of sanitary latrines would be taken up in village level institutions like health sub-centres, schools, 'anganwadis' etc. and, to the extent possible, sanitary latrines would be provided to all rural housing projects sponsored by State Governments.

Under the new sanitation programme, the States could draw up projects under RLEGP for complete coverage of those villages where the population of Scheduled Castes and Scheduled Tribes exceeds 25% of the total village population.

The programme would involve voluntary agencies and mass media for health education and promotion of use of sanitary latrines in the rural areas. A massive drive would be undertaken to train masons in construction of low-cost sanitary latrines.

—PIB

ICMR NATIONAL AWARDS FOR BIOMEDICAL RESEARCH

THE Indian Council of Medical Research (ICMR) has selected 24 scientists for its various national awards in the Biomedical research for the year 1985. These scientists have been honoured for their outstanding contributions in their respective fields of research.

The scientists who have received awards are: Dr N. Kochupillai, Associate Professor of Medicine, Department of Endocrinology & Metabolism, All India Institute of Medical Sciences, New Delhi; Dr N. C. Misra, Department of Surgery, K. G. Medical College, Lucknow University, Lucknow; Dr S. N. Saxena, Director, Central Research Institute, Kasauli; Dr S. K. Bhargava, Former Head, Department of Paediatrics, Safdarjang Hospital, New Delhi; Dr V. K. Gupta, Lecturer in Preventive & Social Medicine, University College of Medical Sciences, New Delhi and Dr Raj Kumar, Senior Research Officer, (Epidemiology) Department of Preventive & Social Medicine, All India Institute of Medical Sciences (AIIMS), New Delhi; Dr Soumen Kumar Mitra, Associate Professor of Paediatrics Surgery, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh; Dr C. V. Bapat, Emeritus Medical Scientist (ICMR), Department of Microbiology, Grant Medical College, Bombay; Dr Pradeep Seth, Associate Professor, Department of Microbiology, AIIMS, New Delhi; Dr M. V. R. Rao, Prof. of Chemistry, Delhi University, Delhi; Dr Digamber Behera, Lecturer, Department of Chest Diseases, PGIMER, Chandigarh; Dr S. P. S. Teotia, Prof. and Head, Chief Consultant Physician, Postgraduate Department of Human Metabolism & Endocrinology, LLRM Medical College, Meerut; Prof. L. K. Kothari, Prof. & Head, Upgraded Department of Physiology, SMS Medical College, Jaipur; Dr Leela Raman, Deputy Director, National Institute of Nutrition, Hyderabad; Dr R. C. Mahajan, Prof. & Head, Deptt. of Parasitology, and Dr N. K. Ganguly, Assoc. Prof., Deptt. of Experimental Medicine, both of the PGIMER, Chandigarh; Dr N.N. Wig, Regional Advisor (Mental Health) WHO, Eastern Mediterranean Regional Office, Alexandria, Egypt (UAR); Dr. J. B. Dilawari, Assoc. Prof. and Head of Hepatology, PGIMER, Chandigarh; Dr Om Prakash Ghai, Prof. and Head, Deptt. of Paediatrics, AIIMS, New Delhi; Dr W. Selvamurthy, Principal Scientific Officer, Defence Institute of Physiology and Allied Sciences, Delhi Cantt. Delhi; Dr S. S. Hasan, Reader, Faculty of Life Sciences, Rohilkhand University, Bareilly; Dr Deepak Anant Gadkari, Senior Research Officer, National Institute of Virology, Pune; Dr R. B. Narayanan, Research Officer, Central Jalma Institute of Leprosy, Agra; and Dr (Mrs.) Vinod Kochupillai, Assoc. Prof. Medical Oncology, IRCH, AIIMS, New Delhi.

WATER AND WASTE DISPOSAL SYSTEMS

The number of rural inhabitants in the developing world served with water supplies increased by 150 million between 1980 and 1983, according to figures in the World Health Statistics Annual, 1985, released recently by the World Health Organisation.

In absolute numbers, this represents a rise from 430 million to 580 million, or from 30 to 38 per cent, in the three years since the launch of the International Drinking Water Supply and Sanitation Decade.

That is "probably the most significant achievement of the Decade so far", WHO says in an assessment of progress and problems to date, and adds that "increasing attention is being given to areas of real need—namely, rural and urban fringe populations."

The aim is to cover 85 per cent of populations projected for 1990. The provision of safe water to rural populations is just one of the four goals set for the Decade. The three other goals are: rural sanitation; urban water and urban sanitation.

—W.H.O.

A MILLION DEATHS EACH YEAR FROM TOBACCO

The world pandemic caused by tobacco results in a million deaths each year and health authorities may be losing the fight they are waging against tobacco to protect health. This is clearly stated in a report presented to the Seventy-seventh Session of the WHO Executive Board held in January 1986 in Geneva.

Although the damage tobacco causes has been known for a long time the latest report is particularly hardhitting: "Cigarette smoking is the major avoidable cause of ill health and premature mortality in countries where it is widespread. It is responsible for about 90% of all cases of lung cancer, 75% of chronic bronchitis and emphysema, and 25% of cases of ischaemic heart disease, as well as for a number of other types of cancer, pregnancy complications, and respiratory diseases in children exposed to passive smoking".

BOOKS

Primary prevention of coronary heart disease: report on a WHO Meeting. Copenhagen, WHO Regional Office for Europe, 1985, 96 pages (EURO Reports and Studies, No. 98) ISBN 92 890 1264 I.

Coronary heart disease is still the major killer in many countries of Europe. Yet the number of deaths from coronary heart disease has declined sharply in some countries, because people are now living healthier lives—eating better, drinking and smoking less and exercising more. Experts meeting at the WHO-sponsored Conference on the Primary Prevention of Coronary Heart Disease, reported in this book, believe that the "epidemic" of coronary heart disease in most European countries could be stopped if people would follow the example of their healthier neighbours.

In this book the public, the health services and governments can find many practical ways to prevent coronary heart disease. It shows that, to start with, they must accept two fundamental ideas: that we know enough to be able to cut the incidence of coronary heart disease; and that individuals have a substantial responsibility for their own health.

The way forward is then clear:

(1) Everyone should know the main causes of coronary heart disease and the main ways in which they can reduce the risk.

(2) To act on this knowledge people must be able to create a healthier life-style, and they may need protection from the powerful interests that resist such changes.

(3) Success calls for a broad-based approach involving the medical services, many departments of government, the food and agricultural industries, and a wide range of agencies and skills in the community.

The Conference's recommendations are based on scientific and public health evidence, common sense and practical examples. Its report includes chapters describing the present situation, outlining what is needed from governments and international organizations and going into the behavioural changes needed if we are to reduce the incidence of coronary heart disease.

This book should be read by all physicians and nurses—who, as they have demonstrated with their effective antismoking advice, have a vital role to play in changing people's life-styles. It should also be read by health researchers and by health administrators and politicians concerned with the health, food, alcohol, tobacco, sports and other sectors affecting our daily lives and our health.

—WHO Chronicle

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Health Care Expenditures in a Rural Indian Community. Parker, RL Social Science & Medicine 1986; 22(1) : 23-7.

Financing health services is an increasing concern that looms as one of the major obstacles to achieving an equitable distribution of primary health care in developing communities. An important step in solving this problem is the assessment of current levels of health care expenditures in these communities in order to determine the extent to which local resources are being used for these purposes. Ways to maximize the effectiveness of these resources can then be sought. Village level studies carried out between 1968 and 1974 in Punjab, India, revealed that at least 80% of all health care expenditures in this rural area were for services of traditional practitioners or private 'modern' doctors. This paper explores various aspects of these expenditures including the source of services and the effect of individual characteristics such as caste on the amount spent on health care. Out-of-pocket expenditures are contrasted to expenditures in the government system. Assessment of the impact of 'free' village level primary care services in this setting revealed that the poor reduced their expenditures on health care more than the wealthy, but both groups took almost equal advantage of the 'free' services. The results raise the possibility of mobilizing some of the savings accruing to the community to help support the 'free' services as well as the potential of encouraging private traditional and modern practitioners to cooperate in achieving primary health care goals.

—National Medical Library

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