

## HEALTH CARE OF INDUSTRIAL WORKERS

Dr. B. Banerji

It is a truism that unless one is hundred per cent fit one cannot work to the best of one's ability. It has also been known for centuries, that many industrial operations expose the workers to disabling health hazards. The need, therefore, to look after the health of the workers to keep them fit on the job is well understood; but unfortunately very few industries paid any attention to worker's health until the problem was felt in an acute form during the period of Industrial Revolution in England. It was noticed during this period that a large number of workers were being thrown out of industry every year, injured, crippled or disabled. Public enquiry revealed that all these were preventable and, therefore, legislation was made to compensate disabled workers. With the coming into force of Workmen's Compensation Act, many employers took the help of doctors to prevent disability amongst workers arising out of work. However, a large number of employers did not feel this necessary because replacing disabled workers was easy. A large number of unemployed able-bodied men always waited outside the factory gates seeking employment. This situation, however, changed during the world wars when able-bodied men were mobilised in the Army. It then became very difficult to replace the disabled worker, this was the time when production had to be kept at its maximum level to feed the war. It was at this time that employers realised the importance of keeping the worker healthy on the job. This enlightened realisation of self-interest of the employers brought doctors in industry.

Although history of industrial medicine is as old as Hippocrates (300 B.C.), very little advance was made in industrial medicine until the beginning of this century, until doctors came in industry to look after the health of the workers. Research institutes were established in different countries to study the effects of different kinds of industrial operations on the health of the workers. Not only doctors, but scientists of other disciplines joined together to study the hazards of different occupations and determine how best to protect the workers from these hazards. As a result, a fund of knowledge is growing up and this is known as industrial medicine.

At the beginning of this century, industrial medicine concerned itself mainly with the treatment and prevention of industrial diseases and injuries. However it was soon noticed that although workers suffered from injury and diseases arising out of work, they suffer more often from common ailments like colds, diarrhoea etc. which are non-industrial in origin. In fact it was found that out of 100 instances of absences from sickness, 96 per cent suffer from non-industrial diseases. It, therefore, became clear that by protecting workers from the diseases and injuries arising only out of work, one cannot ensure keeping them fit on the job. In order to keep them on work, one must also protect them from non-industrial diseases, because after all a worker spends 2/3rds of the day outside the factory in the community in which he lives. His need for safe drinking water, good nutrition, good housing etc. is the same as that of any other citizen. The health programme in industry, therefore, should be one which will be comprehensive and will aim to prevent all diseases, and injuries, industrial or otherwise. In fact, one should go still further and try to build up a reserve to promote the health of the workers; in other words a positive approach towards health is indicated. This means not only freedom from disease, but promotion of health.

There are a few other facts which should be taken into account in a developing country like ours; where medical help for the general population is scarce, where the number of hospital beds are wholly inadequate to meet the demand; where epidemics like small pox and cholera spread like wild fire in the country every year; where preventable diseases take a heavy toll of life; where people suffer from chronic malnutrition; where population is increasing at a dangerously high rate. The health programme in industry in such a country has to be much more comprehensive than in western countries. Based on these considerations, we have been following a health programme in our industry for the last twenty years. It is not my intention to suggest in any way that this is the ideal programme. In fact we have made many modifications during these years, suiting to our requirements and we like to keep it fairly flexible. My intention is to give you some details about it. This programme consists mainly of two parts - clinical work; and preventive and maintenance work. (See Table I).

### I. CLINICAL WORK:

We believe that for the successful implementation of any programme of preventive health in industry, the medical service must do some amount of clinical work also. In our country the E.S.I. Scheme takes a large part of the burden, but unless arrangement for prompt treatment of minor ailments and injuries are made available at the work-place there is a very positive danger of the employees neglecting minor ailments till they assume serious proportions. We, however, limit it to prompt treatment at the start of a disease or injury. We believe that effective treatment at the start of a disease cuts short its course and prevents complications. We do not give domiciliary treatment, nor do we aim to compete with the E.S.I. Scheme physicians, or the experts in hospitals. Whenever, therefore, a case needs treatment at home or in the hospital, we advise the patient accordingly and give relevant details about the case to his panel or family doctor or to the hospital doctors. Our aim is to obviate the need for domiciliary treatment, as far as possible, by preventing diseases where they are preventable and by giving quick and effective attention at the earliest appearance of symptoms. For special reasons, we have to make two exceptions to this procedure:-

- (a) In cases of pulmonary tuberculosis, where the facility for treatment outside is very limited, we provide treatment to ambulatory patients under specialists' care.
- (b) In chronic ailments where the patient can work but needs supportive treatment as in the case of anaemia, or general run down conditions during convalescence after a long period of illness, we provide treatment with the approval of his doctor. This saves the patient's time and ensures continuity in treatment.

Employees make use of surgery on a voluntary basis and we do nothing that may carry even a hint of compulsion. In spite of the voluntary nature of the services, all employees make use of our services and about 6 per cent to 10 per cent of the employees attend the surgery daily. Of these, new cases of sickness and accidents account for about 2 per cent, the rest being visits for medicines, repeat attendance, visits for periodic health examinations, inoculations, medical counselling etc.

Health Programme  
 Medical Service - Hindustan Lever Ltd., India

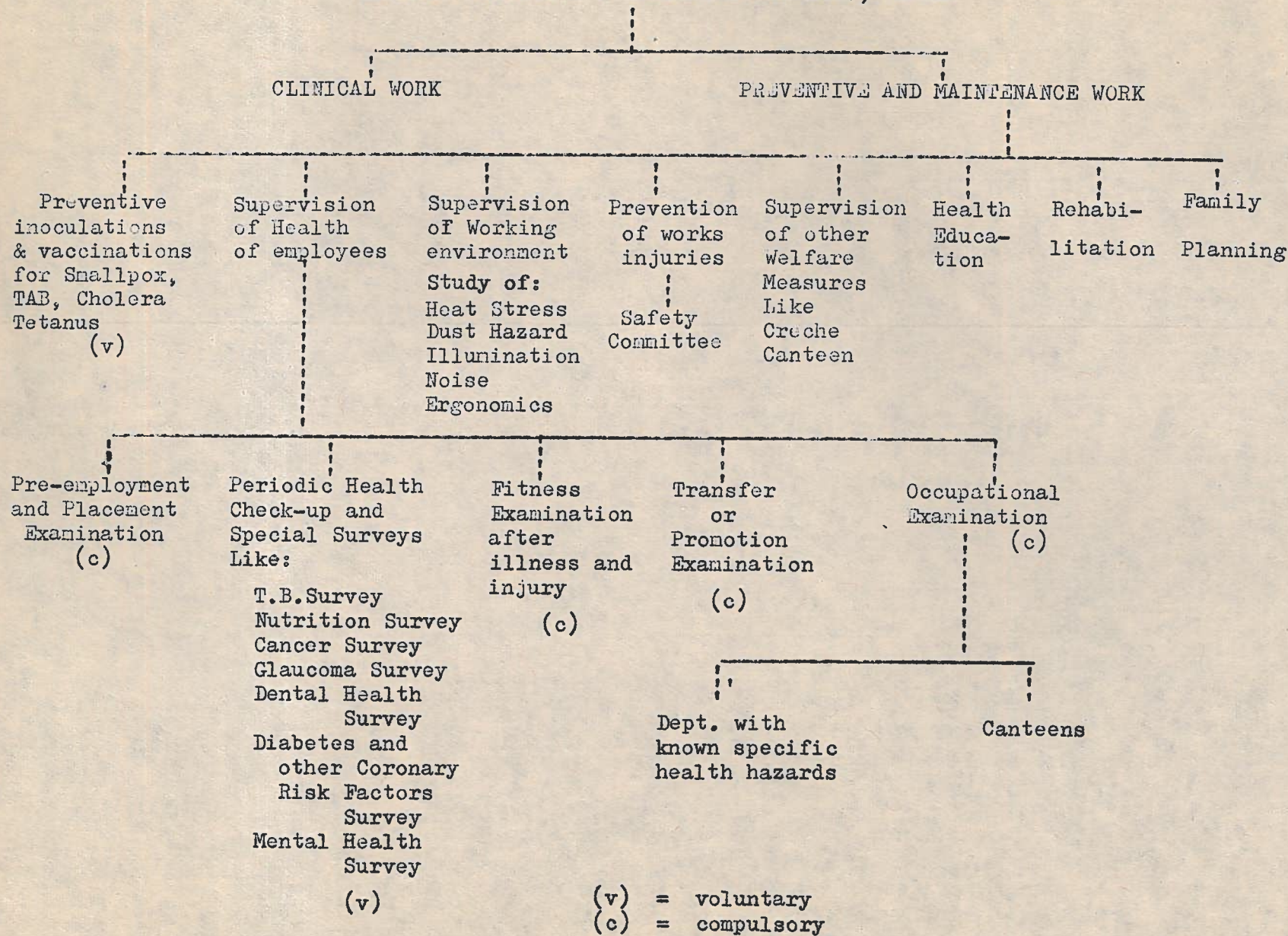


TABLE I

## II. PREVENTIVE AND MAINTENANCE WORK:

1. Inoculations and vaccinations: As stated earlier, we still have epidemics of preventable diseases in India and therefore, steps are taken to protect the employees from them. Although this is a function of the public health authorities, we help them and arrange inoculations and vaccinations for our employees in the surgery itself. This helps us to keep a check and maintain regularity in these preventive methods. This is done purely on a voluntary basis but there is excellent response from employees; 98 per cent of a factory workers, 81 per cent of office staff and 86 per cent of salesmen take these preventive inoculations regularly. We give inoculations against typhoid fevers, cholera and tetanus (by vaccine or toxoids).

We are convinced of the usefulness of these preventive steps. During the last twenty years, we did not have a single case of small pox or cholera in our organisation, although, the cities in which our factories are situated are regularly visited by severe epidemics of small-pox and cholera. Inoculations against polio are not done on a mass scale, but facilities are made available to the children in the creche and to those who are willing to take this (like expatriates and their families). On a very limited scale we have used influenza vaccine, but this was on a **trial basis.**

2. Health supervision: A series of physical examinations are made to ensure proper maintenance of health. This starts from the very day of employment.

(a) Pre-employment health check up: This is a compulsory examination for every candidate before employment. We want to ensure that: (i) the candidate is fit to do the work for which he is selected, (ii) that he is healthy and does not have any progressive disease or deformity which is likely to make him unfit in the near future and (iii) that he is free from infection. In other words, we want to ensure safety, both for the candidate and his colleagues to work together.

During the years, our ideas regarding this examination have undergone some changes. In earlier years, if a candidate had any organic defect or partial permanent disability that would make him unsuitable for most jobs in the factory, we rejected him. In a country where there is no shortage of able-bodied unemployed men, such luxury is possible; we are, however, convinced now, that such a procedure, although practicable now in our environment, is not in keeping with the spirit of industrial medicine. We have, therefore, accepted the principles of preplacement examination now. So long as the defect is not of a progressive character and does not interfere with the safe and efficient performance of the duties for which the candidate is being employed we accept the candidate. If during this examination, any remediable defect is detected, we advise necessary treatment for correction before employment. The candidates are also advised at this stage what service we offer for maintenance and improvement of their health and how we expect them to co-operate with us.

(b) Periodic health check-up: Every employee is encouraged to come to us for a health check-up periodically. This facility is extended to all categories of employees at all levels. Although this is done on an entirely voluntary basis, we are pleased to say that over the years, there has been an increasingly satisfactory response from the employees and at present, we are able to give periodic check-up to every employee within a period of about 2 years. It may be

of interest to mention here, that initially there was some apprehension amongst the employees about this type of check-up. They feared that health defects detected during these examinations would be used against them but when they realised that the results of the examination were treated by us as strictly confidential, they started co-operating readily.

The value of periodic health check-up has been questioned by many authorities. We are, however, convinced of its usefulness specially in the environment we work. I have already mentioned that medical assistance is not easily available in the country; people therefore, do not normally visit their doctors for health check-ups. They visit the doctors only when they are ill. Our experience shows that there are always some cases where diseases, defects or degenerative processes start and remain silent and unsuspected until they assume serious proportions. A large number of employees benefit from these examinations, specially those in the older age-groups.

When we introduced this examination for the first time, 31 per cent of those examined were found to have some health defects, and the incidence was highest (57 per cent) among those aged 49 years and above. This is inspite of the fact that they had to pass through a rigorous medical check-up before employment. Most of the defects were minor and remediable - the commonest defect noticed was error of refraction. Among other defects detected, anaemia, obesity, hypertension, diabetes, early tuberculosis, hydrocele, joint-ailments and diseases of the skeletal system were common. These employees were properly advised about the corrective steps and during subsequent health check-ups, we noticed that in the majority of instances, these health defects had been corrected or attended to. We follow the concept of early detection for early correction. It is true that not all these conditions were correctable, but early detection certainly helps to take steps for arresting the progress of the disease and preventing complications. Our findings during the first periodic health check-ups and the position after an interval of 3 and 5 years are given below. (See Table II).

Table II

Incidence of disease or defect in different age-groups

Age group	1st check-up	Check up after 3 years	Check up after 5 years
19 to 28 years	9 per cent	3 per cent	3 per cent
29 to 38 years	27 " "	9 " "	5 " "
39 to 48 years	36 " "	11 " "	9 " "
49 years & above	57 " "	20 " "	17 " "

Apart from disclosing disease at an early stage, this examination reveals conditions which limit the working capacity of the employee. Decision for proper placement of such an employee is then made.

We do not believe in making the check-up a routine or unnecessarily elaborate affair. Chest X-ray to detect early tuberculosis, urine examination for detecting abnormalities like glycosuria, blood tests for anaemia, blood sugar or for other defects are made in every case. Every case is given a straightforward physical check-up keeping in mind the age of the employee. Special investigations like E.C.G.,

blood cholesterol, blood sugar, etc. are made for those above 45 years of age. During examination if we come across any finding which indicates special investigations we arrange these.

We try to ensure that nobody leaves us with a feeling of either (a) a false sense of security, or (b) anxiety neurosis, or (c) with the idea that they themselves have no obligation to look after their health. For the aged, we do this periodic check-up once every year; for others, we do it once every 2 years. We, however, examine our salesmen every year, as they do not have the opportunity of meeting us throughout the year. Recently we have introduced, on a limited scale, special examination for early detection of cancer, specially amongst ladies and the aged. Special surveys by experts for detection of glaucoma, dental health, etc. are arranged at intervals of 3 to 4 years.

During the periodic check-up, we compare health data like weight, haemoglobin percentage, chest measurements, nutritional status, etc. to assess the state of health of the individual. These figures are compared with the data recorded during previous check-ups. On the basis of these comparisons the individuals are given advice. Group health-surveys are also undertaken on the basis of these figures and it was noticed that there has been a statistically significant improvement in the weight, haemoglobin and nutritional status. We give below figures relating to our experience during the first periodic health check-up and the position after 5 years in the same group.

Level of nutrition in factory employees

Attribute	1st check	2nd check after 3 years	3rd check after 5 years	Results of Significance test
Weight (lbs)	109.5	115.6	120.3	S (I & II & III)
Haemoglobin %	75	85.5	87.1	S (I & II & III)

Medical counselling: During this health check-up we also discuss with the employee his health problems, his habits regarding food, tobacco, alcohol, etc. and advise him suitably. We generally spend sometime in a friendly chat with the employee when personal problems of home, jobs, health of the family crop up invariably. We try to give whatever advice and help we can give in these matters. Our clients often find such discussions helpful. They can often view their problems clearly and without distortion when discussed frankly in a friendly atmosphere. During these interviews, we sometimes come across emotional or mental health problems, cases of anxiety, nervous depression and maladjustment. Although we are not experts, where possible, we give 'first aid' but where necessary we arrange psychiatric help. These discussions help up also in many ways; for example, it may bring to our notice problems relating to work which, if left uncorrected, would probably affect others also in the group.

Health education: In our experience health education to the employees is best given individually by personal contacts as is possible during these interviews. Although a limited use of pamphlets, film strips, talks to groups, is made we find personal contact is the best means of imparting health education in our environment.

In a country, where literacy is very low the need for health education becomes extremely important. Basic principles of healthful living

have to be discussed keeping with particular reference to the health hazards to which one is likely to be exposed in the society one lives, in the job one does. That a large number of diseases are completely preventable, that there are again many diseases which come in a silent form and need to be detected early for a cure, have to be explained. Such education is best given during discussion, specially when the individual is not literate. We find the time of periodic health check up to be very suitable for this purpose. This is the time when we speak to them individually and the employee also can frankly ask questions, expressing his views and doubts. Special emphasis is given during this discussion, on the need of giving inoculations, ~~vaccinationn~~ to their family members; on the need for making the drinking water safe by boiling; on the need for providing a balanced diet for the family which is low cost but nutritious so as to suit their budget. Advice on family planning is also given at this time. Health talks by specialists on subjects like heart disease, cancer, family planning are also arranged for the employees occasionally.

We also make use of film strips, charts, slides for giving health talks, to different groups of employees like executives, salesmen, foremen with particular reference to their special health problems.

Transfer examination: When a person is transferred from one job to another in the factory we give him a check-up in the medical department to ensure proper placement, to make sure that he is fit to carry out the duties of his new job. This applies to cases of promotion also.

Fitness examination: When a person comes back to work after long absence due to illness or injury, he is examined by the medical department to ensure that his resumption is not unsafe either to himself or to his colleagues. For those who have repeated illnesses, we discuss with them their health problems and when necessary arrange special laboratory investigations and expert consultations.

Occupational examination: This covers 2 categories: (i) When a job carries with it a certain known specific hazard, every worker on that job is examined periodically to make sure that the job has not had any adverse effect on the health of the individual. In one of the departments, where there is a silica-hazard, we carry out this examination every six months with chest X-rays.

(ii) When the job is such that any illness in the employee becomes more than normally dangerous to (a) other employees or (b) consumer of our products because of the special nature of the illness; e.g. (a) a canteen cook suffering from chronic dysentery ~~or~~ (b) people handling baby food should not be carriers of infections. Persons involved in occupations of this nature are given special check-ups.

Health Card: A health card is maintained for each employee in the surgery. This is treated as a confidential document to which only the medical team has access.

The findings of the pre-employment check-up like, weight, haemoglobin percentage, height, B.P., pulse-rate, nutritional status, defects detected etc. are noted down in the card. These serve as excellent baseline data of the health of the individual for comparison during subsequent health check-ups.

The results of other examinations, and all relevant details about the health, sickness and injuries of the individual are also noted in this card, so that a glimpse at the card gives a dependable account about the individual's present and past health conditions.

may infect all the factory population with dysentery

3. Study of the working environment: We spend a good bit of our time on the factory floors, visiting departments and seeing people at work. Whether the seating arrangement or posture of work is correct or not can only be studied or corrected by watching people when they are actually at work. Also, to ensure that the working environment is safe and healthy, we study the working environment so that steps can be taken to get rid of the hazards. Usually, factors like the ambient temperature, dust, illumination and noise are studied.

In a tropical country like ours, ambient temperature during the hot summer months constitutes a serious hazard in many industries. The air temperature in places like Delhi and Calcutta on a hot summer day goes on occasions above 120°F. Humidity is also very high in places like Calcutta, Bombay and Madras (varying between 80 per cent and 100 per cent). A combination of these factors is sufficient to make things not only very uncomfortable but often hazardous to health.

Inside the factory, where there is always some amount of radiant heat emanating from the machines, walls and roof, the position becomes worse. We, therefore, study the air temperature, radiant heat, humidity and air ventilation in the different departments of our factories, especially during the hot summer months in order to find out the combined effect of these factors on people working there. Our idea is to find out if the safety limit or the limit of tolerance is exceeded and take corrective steps to reduce it.

The total heat-load on the workers depends not only on the environmental heat but also very much on the amount of work they have to do. On a small scale we therefore, studied the effect of total heat-load by studying the physiological response while at work on hot summer days. The rise in the pulse rate, water-balance, sweat-rate (P<sub>4</sub>SR), chloride-loss, rise in skin-temperature etc. were studied on some workers (volunteers) in our Bombay and Calcutta factories. The study indicated that as the work is not of a heavy manual type and does not differ much from person to person, or department to department, the study of the ambient temperatures alone will give us, for all practical purposes, a fair idea of the total heat-load on the workers. We are, therefore, at present studying the ambient-temperature (air-temperature, humidity, air ventilation and radiant heat etc.) and we depend mainly on these factors in taking corrective steps.

We study also the concentration of dust (dust count) in departments. If the concentration of dust is found to be higher than the recommended level (safe limit), steps are taken to reduce it in the department. Frequent check-ups are made by taking air samples at breathing level of the workers in the department to make sure that the steps taken are functioning effectively. Noise level may be another hazard, we therefore, determine the noise level in different departments to determine corrective steps. Lack of proper illumination not only leads to accidents but reduces production. This is determined periodically and adequate illumination for different jobs ensured.

4. Accident Prevention: There has been a very steep rise in accidents during work in factories in India. Compared to 1935, it is estimated that the accident rate in the country has gone up by over 300%. Although this is the general picture, fortunately conditions in our factories have been better as there has been a steady decrease in the accident rates.

Traditionally the Medical Service in our organisation has taken great interest in accident prevention. Our idea is prevention - of both sickness and injuries. To obtain both management and employee co-operation,



Safety Committees have been set up in all our factories, with representatives of workers, supervisors, foremen and management on the committee. The main purpose of these committees is to create safety consciousness amongst all levels of employees and advise management about existing hazards. We work in close collaboration with these committees and supply them the necessary information like accidents that take place in the factory, analysed according to departmental incidence, their mechanism of occurrence, etc. Such information tells the safety committee exactly where, how and when accidents are happening, so that effective steps may be recommended by them. On the basis of such recommendations preventive measures are implemented departmentally by the management.

The Safety Committee periodically inspects the factory departments to spot hazards and make recommendations to correct them. Sometimes our attention is drawn to a hazard after an accident has happened. The Safety Committee, therefore, always visits the department and investigates the cause when any serious accident happens.

The Committee also takes great interest in educating workers, specially new entrants, and foremen on the safe methods of work and getting the management interested in safety. Various competitions, safety slogan contests, good house-keeping contests, spotting the hazards and safety suggestion contests, etc. are arranged to make safety popular. Job safety courses for the management, supervisors and workers at different levels are conducted in the factories.

We are convinced that if the management, right from the top level is interested in safety, the safety committees continue to function effectively. Fortunately, starting from our Chairman and Directors, our management takes a keen interest in the activities of the safety committees. Periodic safety figures are examined with keen interest by all concerned, even at the highest level. The recommendations of the Safety Committee are given importance and implemented. As a result of these activities, the incidence of accidents have gone down considerably in our factories. The following table gives the frequency rates of accidents in all our factories:

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Frequency rates (lost time accidents per 100,000 man-hours worked)

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	1959	1961	1963	1965	1967	1969	1970
HLL Factories	2.77	1.5	0.9	0.67	0.64	0.62	0.46

In this context, we would like to mention our experience regarding the necessity and usefulness of paying constant attention to accident prevention activities. In 1951, the frequency rate in our Bombay Factory was 28. We started a Safety Committee there and since then, the frequency rates have progressively improved and at present it is 0.53. At this time, in 1951, the Frequency Rate in our Garden Reach Factory was 2. We thought that since the accident figures were fairly good in Garden Reach, there was no particular need for starting a Safety Committee there. We soon realized how wrong we were. The accident figures started deteriorating there until in 1956 the frequency rate rose to 15.72. A Safety Committee was started then in Garden Reach and the figures started improving immediately. We are convinced that there is no room for complacency in safety activities, these must go on in all earnestness even though the factory figures are reasonably good.

5. Rehabilitation: We follow a programme of rehabilitation for the partially disabled workers. As a result of our accident prevention activities, we do not have to face the problem of people disabled by injuries at work. We, however, get a number of cases of debilitating diseases, chief among them being pulmonary tuberculosis. The treatment of tuberculosis during the last few years has improved to such an extent that in a majority of instances the disease gets arrested within a short time, and the problem then arises of rehabilitating these employees. We think it is our duty to try to help them to try to 'add life' to the few years that have been added by means of treatment.

Tuberculosis is a major problem in our country. It is estimated that there are about 5 million active cases of tuberculosis of which 1.5 million are infective. This is a modest estimate and that there are probably another 3 cases undetected, for each detected case. The country's resources to deal with this gigantic problem are wholly inadequate at present. Every attempt is being made however, to improve the situation. We, therefore, felt that we should do our bit in tackling the problem in our organisation. Our idea is to give treatment to ambulatory cases; fortunately more than 90% of cases are ambulatory. The recent 'Madras experiment' has proved the efficacy of this type of treatment.

We, therefore, follow a special programme for our tuberculosis cases which consists essentially of: (i) early detection, done by means of periodic chest X-ray; (ii) treatment and (iii) rehabilitation. We arrange treatment of all ambulatory cases in consultation with the chest specialists. If the employee is covered by the E.S.I. Scheme he gets treatment by the Scheme doctor. As soon as the disease is arrested, we put the patients on some very light work to start with and then in a graded manner we take them to more and more strenuous work until they can be reposted to their former occupation. At each stage, however, they are given a thorough medical check-up and investigations are made to ensure that their health is not showing any signs of deterioration due to the increasing strain. During this awkward phase the patient needs reassurance and encouragement. We are happy that we get excellent co-operation from our management and workers and with their help we have been able to send 85% of our tuberculosis workers back to their original job. So far we have rehabilitated about 265 workers. In our experience their performance compares very favourably with others who did not have this disease. The rate of relapse is also small, as will be seen from the following table:

	(1956) Average	1970
1. Morbidity rate (per 1000 employees)	28	4
2. Period of disability (absence from work)	26 weeks	10 weeks
3. Period for which light job was necessary	27 "	8 "
4. Percentage of patients who could be placed back on their former jobs	85%	87%
5. Rate of relapse	5%	5%

The figures given above are the average for the last 15 years. At present due to our preventive programmes like routine chest X-ray and periodic health check-ups, cases are detected at an earlier stage and the period of disability (1, 2 as above) are going down. In 1971, the average period of disability (absence from work) was 5 weeks. The period for which light job was necessary has also declined and is now 5 weeks. We have studied the incidence of sickness, accidents, and

and absence records of these groups of workers and find that they compare very favourably with those of other groups of workers who did not suffer from tuberculosis, in other words once a tubercular need not be a disabled man throughout life.

Their supervisors also find their performance comparable. There is a feeling that these workers are more health-conscious. In our opinion, their presence amongst their colleagues have helped to improve the morale and we find other employees coming to us for chest X-rays at the slightest suspicion of disease.

Occasionally we come across cases of heart diseases, bronchial asthma, etc. and we try to do whatever is possible in such cases to rehabilitate them depending upon the merits of each case but our major problem in this country is pulmonary tuberculosis.

#### Supervision of other Welfare Services:

Welfare Services like the canteen, creche, supply of drinking water, sanitation and toilet facilities are, strictly speaking, not medical service, but nevertheless, they have direct effect on health of the employees. The medical service, therefore, takes an active interest on their proper functioning.

For example, the canteen where the workers take snacks and meals. It is essential that in preparation of these food items proper hygienic conditions must be observed, so that it is safe for the workers to take food in the canteen. Cleanliness of the kitchen, proper washing of the utensils are a must and we ensure this by periodic check-ups. The cooks and bearers serving food are also periodically examined to ensure that they are not carriers of infection.

Apart from this, the medical department has a responsibility to see that the food served is wholesome, nutritious, balanced and supply the necessary amount of calories. There is widespread calorie-cum-vitamin and protein malnutrition in the country amongst the lower class from which the industrial workers come. Also, unless the worker gets adequate amount of calories, he will not be able to spend necessary amount of energy for doing this job. To perform heavy manual work the worker must have much more calories in his food than is necessary in light secretarial work. If the worker does not get necessary amount of calories, productivity will go down. These facts must be taken into account while planning the menu in the canteen. It had been our endeavour to palm the menu in such a way that the workers get about 50% of his calorie requirement through snacks and mid-day meal. It may be relevant to repeat here that the nutritional status of our workers have improved over the years.

Similarly, attention to the running of the creche is necessary. Young children of working mothers stay here for about 10 hours daily. Attention to ensure that the food supplied to them is safe and nutritious is essential. For preventing diseases, we arrange for them triple vaccine, polio, smallpox inoculations.

Family Planning: We follow a special programme for family planning. This is done mainly by:

1. Induction, orientation and persuasion of employees in family planning by educative methods like arranging periodically health talks, celebrating family planning weeks, arranging exhibitions, showing films and film strips etc.
2. Advise individual employee about the special methods that would be ideally suited to him or her.

3. a. Make freely available contraceptives on a cafeteria basis at the work place.
- b. Arrange operations like vasectomies for the male employees, tubectomies and loop insertions for women employees and wives of male employees. Where possible these are arranged in the medical service itself. Tubectomies are arranged in outside hospitals.

The response of this programme has been increasingly satisfactory. We obtain co-operation of the employees by educating them and not by offering monetary 'incentives'.

Mental health: Our aim is to provide a suitable working environment which will be conducive to the highest degree of physical as well as mental well-being. Although we are making some progress in looking after the physical well-being, quite frankly, from the medical side we have not been able to do much on the mental health side.

We are fortunate, however, to have a progressive personnel policy in the organisation which goes a long way to reduce tension and maintain equanimity and good industrial relations. Our contribution from the medical side, in this respect so far has been mostly limited to: (i) detection of cancer at an early stage; (ii) medical counselling during health check-ups, and (iii) giving 'first aid' as early as possible. We also emphasise the importance of paying attention to this aspect of employees' health, to the management and supervisors during their training courses.

We have been trying for some time to implement a method by which we can screen during selection (pre-employment check-up) those candidates who are liable to breaking down by the strain of the working environment. We have not yet been able to introduce a simple (not too elaborate) but dependable method for such screening. At present we are making use of a questionnaire method but we have not enough data to substantiate its value yet.

Our experience: To sum up, serious doubts have been expressed in many quarters about the value and effectiveness of industrial health programme in countries where the living and social conditions of workers are not satisfactory. The general argument seems to be that health supervision of industrial workers for eight hours when he is within the premises of the factory cannot have any effect, if after working hours he has to go back to conditions which are unhygienic. Our experience has been that in spite of such difficulties, good results can be obtained if a scientific programme suitably modified to improve the local requirements and adjusted according to local difficulties is followed. Epidemics like cholera and small-pox have been completely controlled. Accidents while at work have been effectively reduced. Rehabilitation of the disabled goes on satisfactorily. The period of disability due to chronic disabling diseases like pulmonary tuberculosis have been effectively reduced. Significant improvement has also been noticed in the health status of the employees. It is our experience that intelligent and active co-operation from workmen can also be obtained provided we have the right attitude towards our work.

We have achieved some satisfactory results but we are fully aware of our limitations and feel we have still a long way to go. As I have already mentioned we have so far given inadequate attention to the mental health of our employees. Much more remains to be done in improving the working environment on a scientific basis, more attention on ergonomics, or to the problem of the aged is necessary. We have to make family planning programme more successful. We, however, confidently look forward to being able to tackle these tasks.

## EXECUTIVE HEALTH - JOB PRESSURE

B. Banerji.

There may be some truth in the belief that the executive is over-worked, overloaded with responsibility, constantly exposed to stresses and tensions of modern business and as a result, he is tired, passes sleepless nights, and becomes victims of stress disorders. The National Association of Mental Health (U.K.) found in a survey that

- (1) 17% of executives show stress symptoms
- (2) 75% of stress and tension in executives arise from work conditions and only 25% from home conditions and
- (3) 43% of stress arises from basic or inherent personality inadequacies.

### What is stress?

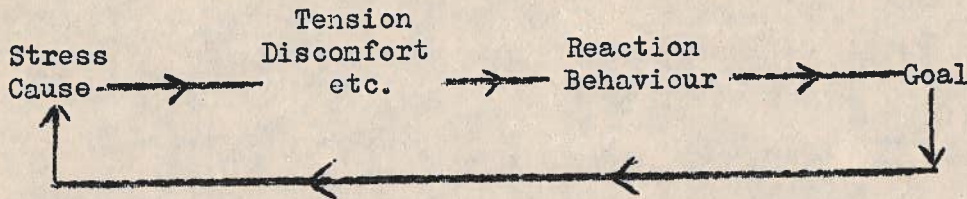
The term stress is often used in a vague manner by us giving rise to confusion to its precise meaning. Physicists define stress as a force tending to deform a system. The simplest example is putting a weight at the end of a vertical wire. The weight is the stress and the resulting effect is the "strain", which we laymen, call "Tension". As a result of the strain due to the weight, the wire gets de-formed (is lengthened). In human beings anything that brings out or tends to bring out change, either in the environment or in himself, will act as a "stress" and will produce "strain" or "tension". This strain or tension produces certain reactions in the body, severity of which depends upon the degree and severity of the stress.

The reaction is one of alertness of the entire body for immediate action. There is a preparedness, as if to meet an emergency. The heart goes on beating faster to supply more blood to the brain and muscles of the body, the stored energy in the body is mobilised as glucose in blood so that the muscles can use it readily, the blood pressure rises, the respiration increases to improve oxygen supply to the body - in fact the whole body becomes ready to do what is most advantageous to save himself from the situation. It is a reaction to fright to make us ready, either to fight or take to flight to save ourselves. Tension thus is a life saving reaction when the organism is exposed to danger.

Unfortunately, the reactions are the same irrespective of whether it is a mental threat like a reprimand from the boss, or a physical danger. When the danger is physical, it is a very useful reaction to combat the situation, but in most instances where the threat is mental, this type of explosive reaction does not serve any useful purpose. In fact it will only harm the individual, if it is constantly repeated.

We may ask, we are not being faced with life threatening situations every day, why then should we be the victims of such explosive reactions? The answer to this is that although the environment may not threaten destruction all the time, there is constantly some change going on both

within ourselves and in the environment so that we always have to act either to meet some needs or to adapt ourselves to the change. Every time such a situation arises we are exposed to "stress" and the resulting effect on us is the "strain" or "tension". We then act to cope with the situation to get what we need, the "goal". The tension is released as the need is fulfilled or when we reach the goal. The following diagram\* illustrates the cycle.



In order to reach the goal, we act and our behaviour depends on many factors. Let us assume that in reaching the goal we are faced with some obstacle, what do we do? We may attack the obstacle; we may try to circumvent it; or we may just sit helplessly. In the first two situations there is some amount of anxiety. Shall we be able to overcome the obstacle? How do we know that the route we have chosen is the right one and that there would not be further obstacles ahead? This uncertainty will naturally give rise to anxiety and worry, which, of course, will be removed when we reach the goal. There is of course, a third action possible where we sit helplessly and do not try to reach the goal by accepting it as hopeless and beyond our ability. Here, tension will remain unsolved and may result in frustration. Some of us at this stage, shall use one of the defence mechanisms like rationalisation and will say that the goal is not worthwhile, or shall try to identify the goal with something more easily attainable or try other wellknown means of ego defence mechanisms. Reactions to frustration are different in different individuals. Some will attack themselves, while some will accept it objectively according to their personality development.

#### Tension causing Situations

Work in modern organisation is becoming increasingly complex and there are many conditions which expose the managers to various stressful situations. Some of them, according to Zaleznick and others, are

1. Time Lag: In modern business, there is usually considerable time lag between decision, action and result. One has to wait to know if the decision has been correct. This delay gives rise to tension until the result is known. As sophistication increases, a good deal of forward planning is required, which ~~then~~ tends to prolong the period of tension due to longer period of uncertainty about the wisdom of such plans and decisions.
2. Confusing Feedbacks: The stress caused by time lag is often heightened by conflicting feedbacks. Many times, a certain course of action would bring forth success, again on many occasions, the same course of action in seemingly identical situation will bring failure, depending upon other less obvious environmental factors like economic, union or government pressures, over which the manager has little control.

\* (According to Harold Leavitt - Managerial Psychology)

Success or failure would then appear less related to competence and effort but more dependent on outside forces. This leads to confusion and the manager is at a loss regarding the course of action to be taken when a similar problem faces him in future.

3. Conflicting obligations: The executive has a number of obligations.

He is time pressed but he has to take into account many different problems of other departments over which he has seemingly little control but those nonetheless might affect the work or production in his own department, for example, the buying department may be unable to supply the raw materials in time. He is constantly under pressure of target dates but he cannot take a short cut to circumvent difficulties because of laws, rules and company practices. The anxiety to meet the target date and the inability to do so for reasons beyond his control creates a lot of tension. Added to this are the ever-increasing controls and pressures from the Government, unions, etc. which tend to increase further his discomfiture and create a situation which will affect his balance and equanimity.

4. Technical and Role Obsolescence: There is today an increasing

sophistication and constant technical change in operation, so that the individual's skills, knowledge and competence become outdated long before the working life is over. The advent of the computer in industry is a typical example. This technical obsolescence not only hits the worker following the technological changes, but even the highly educated professional employees like the engineers, scientists of different disciplines find after a few years that new knowledge and techniques have outdated their training and usefulness.

There is yet another type of obsolescence that sets in with organisational changes. The role of a position gets often devalued in relation to other roles in the organisational set up. This creates considerable stress not only to managers whose role has been devalued but other managers also constantly fear of getting devalued in the near future.

Again in industry, constant change takes place in interpersonal relationships of associates, causing a great amount of stress. People who joined later, and were much junior in position, go high up in the hierarchy and there is a constant pressure to adjust oneself to this change. Events leading to sudden role obsolescence, such as being side-tracked in an organisation or being put under one who had worked as a junior, may produce considerable stress and dissatisfaction.

5. Career advancement: Everyone aspires to go up in the hierarchy, get more responsibility and acquire more status.

Some want to reach the top at the shortest possible time, some in stages, while some realise that they can go up only upto a few steps. Only, very few are content at where they are. The first group, executives who want to reach the topmost part of the ladder in the shortest possible time, are most prone to tension disorders. They strive hard, after setting their goal at a very high level, often an

unattainable level, and invariably, in majority of cases atleast, fails to reach it. In the process they burn themselves up with aggression, overwork, and anxiety. This is followed by dissatisfaction, frustration jealousy and hatred.

Under-promotion: Let us consider the next two groups who want to go up in stages. Both these groups are mature and sensible people, the only difference being their extent of ambition. Both do their present jobs well and further develop their skills, techniques, and potentialities to do their job more efficiently. After sometime, however, they start realising that the developed abilities are not being fully stretched in their present jobs. They want then more responsibilities. If this does not come within a reasonable period they too become frustrated and dissatisfied. This happens particularly when executives with high promotional potentialities are selected but cannot be given more responsibilities as they grow. The seniors often make this mistake in selection and also in thinking that since someone has increasingly improved performance and is doing an excellent job at a particular position, why shift him? This attitude causes a great deal of frustration and dissatisfaction leading to unnecessary doubts in the mind of the individuals as to whether their work is valued and whether they are being side-tracked.

Over-promotion: In contrast to under-promotion, over-promotion may also give rise to tension and anxiety. If a person is promoted, when his skills and competence have already reached the peak of his abilities, so that there is no possibility of his developing further, then the person may soon find out that he is incapable of shouldering the added responsibilities of his new job. He is torn between the desire of keeping his newly acquired status and his realisation that he cannot deliver the goods! This conflict gives rise to a sense of guilt and anxiety and often leads to what is popularly known as 'promotional depression'. This according to Peter Principle, happens when the promotion has been to the level of "incompetence" from a level of peak competence.

Promotion & changed relationship: When an individual is promoted, he no doubt is happy and encouraged at the appreciation and advancement of his career. But he finds that along with his promotion a change takes place in his relations with his seniors and associates. The seniors who have liked him as a bright young man with potentials, and have given him encouragement, guidance and support, suddenly have to accept him as a colleague to be watched, who may compete with them in future when a promotional opportunity arises for them in future. The open hearted appreciation and support are often replaced by aloofness, criticism and suspicion. This changed relationship may cause some amount of stress.

A similar change in relationship takes place with his erstwhile colleagues. They appear jealous, become cautious and somewhat constrained in their approach. Some become openly hostile, some critical behind his back, some indifferent, while a few become highly servile sycophants, ready to butter him for favours. The easy friendly relationship is no longer there. From a position of brotherly relationship, he has to establish a fatherly or 'big brotherly' relationship. He has to be



careful in mixing with them, frankness has to be sacrificed for tact. He certainly cannot continue to discuss with them his personal problems as he did before this promotion. The "loneliness of command" comes more and more as one goes high up the ladder. He realises only too well that "love flees authority" and becomes anxious to get back the former comradeship and be the "nice guy", by stripping off the status acquired. This leads to more difficulties and "he is torn between the responsibilities of the newly acquired authority and the strong need to be liked".

He may start feeling guilty of the success and, in future, may develop 'a fear of success'. This in some people leads to a peculiar pattern of behaviour - striving hard to reach the goal and then when the goal is in sight, fight shy to reach it. At this stage, he often sabotages himself and thus salvage "failure out of the jaws of victory".

6. Insecurity: The executive who has established a high standard of living would find it extremely difficult to maintain it if he is to be out of job for atleast some time. The growing fear of such an eventuality is always at the back of his mind and in some individuals, it may affect his day to day routine work in such a manner that eventually he loses his perspective. Even routine minor problems appear to him to be serious and vital and he is afraid that if his decision on them is wrong he may lose his job or atleast his chances of promotion will be affected. Such constant fear may create persisting worry and anxiety in the mind of the executive.
7. Too much Responsibility: Executive have often to shoulder very heavy responsibilities which they can hardly delegate to juniors. Some find it difficult to carry such a heavy load and become constantly worried at something going wrong at some place, because of the fear that they will have to face the music, if anything goes wrong, no matter if this has been due to the fault of one of their juniors.
8. Over-work: There is no doubt that executives, in general, work very hard both at home and in the office. This reduces the time for relaxation and other recreational activities. This may be due to several reasons:
  - (a) The work may be too much and cannot be fully delegated to juniors.
  - (b) It may be due to inability on the part of the executive to organise and delegate work properly.
  - (c) It may be due to some inherent weakness on the part of the executive. He may be a work addict - he has always found hard work in his young days rewarding and therefore, he continues to strive harder irrespective of the need for it.
  - (d) It may be an escapist phenomenon on his part to avoid unpleasant family situations.

Whatever the reason, overwork causes physical and mental fatigue, and leaves little time for recreation. It also produces overloading, leading to a situation where less and less time can be devoted to each item of work with the result that nothing is satisfactorily achieved.

Neglect with family life: The time available to spend with the family is also considerably reduced.

This creates many problems. Apart from relaxation that one gets from spending time with family members, it is essential that the head of the family should hear to the problems of his wife and children should help them to solve those, give them guidance and advice, where necessary. Lack of such opportunities that over-work may create leads to the emotional separation of the family members from the executive. The children either ignore him or resent and go their own way. This also creates a good deal of problems leading to anxieties.

9. Transfers: When an executive is transferred from one city to another he and his family have to face a great deal of stress. He is taken out of familiar environment, from friends, colleagues, juniors to a completely new group of people, with whom relationship has to be established. It creates a great deal of stress. The new colleagues are not always ready to receive him with open arms - they are often suspicious about him, often jealous and some may even try to sabotage his easy settling down. The situation is aggravated by what happens to the family. A new house has to be set up; arrangement for schooling for children, engaging new servants, getting accepted and becoming friendly with new neighbours and a thousand other similar problems face the family. In a way, it is uprooting the family from where it has grown deep emotional roots to a completely new environment. Adjustment is not easy in these situations and becomes extremely difficult if such transfers are made very frequently.

It may not be irrelevant to mention here that in some jobs, like sales and marketing, there is too much of touring involved. This also causes, apart from physical strain, considerable amount of mental strain to certain individuals. Fortunately, many executives even enjoy it but a few find it very difficult to be away from the family. They start worrying particularly if the son or wife keeps indifferent health. Fortunately, such individuals are not in the majority, but those who are emotionally disturbed to leave the family should look for jobs which do not require frequent touring.

#### Personality and Job:

The personality of the executive is more often the cause for tension. The executive is basically a person who is ambitious, hard-working, organised, methodical has considerable drive and patience to achieve his goal. These excellent personality traits have helped the executive to reach the job position that he is in today. But these are not tools or techniques that can be laid aside after the goal is reached. This is why many executives go on becoming more and more ambitious, more and more aggressive in their efforts to go up still further even after reaching their goal. While ambition is most desirable, over-ambition results in frustration. Drive is an excellent virtue, but unless tempered, it may lead to over-aggressiveness. These over-ambitious and over-aggressive individuals never realise that there is a limit to which one can go up. This applies not only in their job situation, but also in their other spheres of activities like social climbing, running after Joneses. This ratrace happens to those who do not have maturity enough to ask themselves what they are after.

Apart from this general traits there are some special traits which should be considered in relation to the job of the executive. An executive in an organisation, according to Chester Bernard, operates in two spheres simultaneously. One sphere relates directly to the professional or technical aspect of the job, such as, preparing a capital expenditure budget, deciding what should be the name or price or packing of a new product, etc.

The other set of function deals with the organisation as a co-operative system. In this, interpersonal relations play a very significant part. Organisational functions may be broadly divided into three main categories. These are:

1. To reduce internal conflicts in the organisation.
2. To improve the organisation by innovative means.
3. To protect the organisation from environmental forces like economic, social and political pressures.

These three types of functions demand different styles of behaviour and thinking. Problems relating to these functions are best solved by people who are predominantly person-oriented, task-oriented and fusion-oriented.

The person oriented values company of other human beings much more than anything else and functions admirably in dealing with problems arising out of internal conflicts like indiscipline, jealousy, etc. in the organisation. He is most unhappy in innovative functions where he would not get company of other human beings.

The task oriented, to whom achievement in work gives the greatest satisfaction, are best suited for the improvement of the organisation by innovative means. He is uncomfortable if asked to deal with interpersonal problems, but would not mind if he has to face the challenge of changing the external environment for promotion and improvement of the organisation.

The fusion oriented wants achievement as well as human company. He is partly person oriented and partly task oriented. He will be comfortable in most of the situations but will be happy to strike a balance between the two extremes and do well in making necessary changes in the organisation to save it from outside pressures.

It is thus necessary to put the right type of man to the right type of job. Wrong placement will create unnecessary and avoidable stress in individuals. A task oriented person, for example, will not tolerate the indolent, the fools, or the inefficient. He is hard-working and will expect others to be so. He will not be comfortable to spend hours with the labour leaders discussing subjects like whether or not, spitting should be forbidden in the departments! A person oriented manager will be more suited for such jobs. President Truman said that "if you cannot tolerate heat don't be in the kitchen". This principle should be followed for selection and placement of managers in different jobs ensuring that the manager has been placed in the right type of job which is most suited and compatible with his personality. To my mind, such placement is an important step, to reduce stress amongst managers.

Steps for reducing tension:

From what has been said so far, it is obvious that to reduce tension, attention has to be paid to the executive himself as well as to his job condition.

As personality cannot be changed overnight it is necessary to arrange

- (i) Proper selection and placement of the individual - in the right type of job suiting his personality. Also it should be ensured that person with high promotional potential is not put in a job where there is poor promotional prospects.
- (ii) Arrange proper counselling at all levels, so that the executive learns to make an objective assessment of himself and does not get unnecessarily frustrated because of setting up an impractical ego ideal. Counselling to develop a sense of perspective should be arranged so that trivial day to day problems do not appear unnecessarily big to cause worries.
- (iii) Arrange training facilities so that they can keep themselves in touch with what progress is going on in their respective fields which is likely to change their work in the near future.
- (iv) Avoid as far as possible frequent transfers and help the family to settle in the new place when the executive is transferred.
- (v) Advise how to delegate work to avoid overwork. However, the risk of over delegation resulting in underwork should also be avoided.
- (vi) Apply sound and fair administrative principles and make company practices wellknown.
- (vii) Take special precautions before introducing any change so that the executives are fully aware of their implications beforehand and take necessary steps well in advance so that the introduction of change is smooth and painless.
- (viii) Make regular periodic management review to (a) assess progress made by each management (b) to decide and assign more responsibility to those who are ready to take more (c) to decide and arrange further training and counselling for those who have high potentialities to grow up (d) to decide who should not be promoted any further. After such assessments the individual manager should be counselled accordingly.
- (ix) Arrange regular health check up programme and provide specialist help at appearance of early signs of stress disorders.

Basic Emotional Needs:

According to Harry Levinson, work must also provide opportunities for satisfaction specially of the four basic emotional needs. These are:

- (i) Love: This does not mean that the executive should chase the pretty secretaries. In work situations, the executive looks for fellow feeling, admiration and friendship from his colleagues and appreciation from his seniors. His concern and appreciation of the juniors and respect and admiration from them in return will also satisfy this need.
- (ii) Hate or Aggressiveness: Another basic human impulse is aggressiveness. There must be some way of its expression. These feelings have to be channelised into socially acceptable forms, like competitiveness, drive etc. Even competitive sports offer opportunities of giving vent to these feelings. While hitting the golf ball, you can imagine hitting the head of your boss or any other person you are angry with. Competitiveness in production, selling, in breaking others' records, are useful opportunities in industry for satisfying this need.
- (iii) Dependency: Although the executive has to provide feelings of security to his juniors, he also wants to feel that in case of a crisis his superiors will be by his side to help him. This dependency is a very basic need, and as the executive goes higher up the ladder, he has less and less people to depend upon.
- (iv) Self-esteem: Everyone sets up an ideal for himself called ego-ideal which he wants to reach in future. As one grows up, one knows his potential, he learns to readjust his ego-ideal on a realistic basis. However, some people are unable to make realistic assessment of themselves and adjust their ego-ideal, with the result that they strive to achieve something which is impossible for them. When self esteem is low, one suffers from inferiority, low morale and frustration. Overambitious, unrealistic executives thus often burn themselves with unnecessary feelings of frustration. Some amount of counselling is necessary in this respect to make them realise the importance of a realistic adjustment of ego-ideal.

What happens if stress continues:

Depending upon his personality, stressful situations may or may not produce harm to an individual. Many people develop a capacity to deal with these stressful situations without being unduly tense, but this capacity varies from person to person. Signs and symptoms of stress disorders also differ from person to person. A recent study by the National Association of Mental Health (U.K.) has shown the following disorders as early manifestations of Stress. As many had more than one symptoms, the total makes more than hundred per cent:

Sleep disorders	34%
Dyspepsia	23%
Fatigue	19%
Headache	16%
Tenseness or Irritability	16%
Work disturbance	8%
Frank Psychiatric disease	17%
Other (e.g. Allergy, Diarrhoea Impotence)	22%

How to deal with them?

It will be noticed from the above, that all these early (manifestations) symptoms are rather vague and could be due to purely physical causes as well. It is therefore very necessary to keep the possibility of stress disorder in mind so that one does not miss it at the early stage.

The first step thus is recognising that the problem exists. For this regular check-ups are most valuable in the early detection and treatment of stress disorders. When any stress disorder is detected, it is necessary to explain the cause and effect relationship between one's stress and symptoms, so that one may come to terms with the conflict and accept the lesser of the two evils. In time, these stress symptoms become a warning light to help us to live within the limits of our tolerance.

Apart from what has been said earlier, certain general measures are also found most valuable, like cutting down too many commitments and taking regular holidays. Outside interests, hobbies and sports provide excellent distractions. Physical exercise is very helpful, specially certain yogic exercises help a great deal to relax. Playing with children and spending more time with the family help a great deal to relax. Religion, faith, meditation are also very helpful to many. Last but not the least, one must learn to satisfy the basic emotional needs at home as well as at work.

Use of medicines like tranquilisers should be strictly according to medical advice. It should never be on self-medication basis. Apart from tranquilisers, there are many other useful but powerful medicines available today which may help to tide over a crisis and can be used for a specified period, without hesitation if the doctor advises it. However, these should not be continued indefinitely merely because the doctor had once prescribed it some months back. All these may give rise to dependance and addiction if taken for prolonged period. One final advice, alcohol may be a relaxant but it would be dangerous to use it for releasing tension. Addiction to alcohol is the easiest way to ruin not only the career but also the person and his family. It is unfortunately becoming common even in India.

In spite of the innumerable sources of stress to which the manager is exposed, the managers, contrary to pupular belief, do not suffer from stress disorders more often than other employees in the organisation. Probably this is due to the managers having a high tolerance towards this special type of stress to which they are exposed.

Acknowledgments:

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## APPLICATION OF ERGONOMICS IN INDUSTRY

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The term Ergonomics is derived from two words in Greek, Ergon meaning work and nomos is a law or rule. Today the term is used to designate, a lot of scientific and technical knowledge, relating to man and his conditions of work and now a higher standard of productivity can be achieved through proper adaptation between the man and his work. This needs to be done for humanitarian and economic considerations. A simple definition of Ergonomics could also describe it as fitting the job to the worker or fitting the machine to the user. In United States this is also known as science of human engineering.

I.L.O. defined ergonomics in 1961 as the application of human biological sciences along with engineering sciences to achieve the optimum mutual adjustment of man and his work, the benefits being measured in terms of human efficiency and well-being.

This mutual adaptation reduces stress, lightens the workload and increases safety resulting into reduction in the number of industrial accidents. All this helps in better utilisation of plant and equipment and thus improving the reliability of both.

### Application of Ergonomics :

Ergonomics may be considered as the meeting points of many disciplines. It takes into account anthropology, biometrics, bio-mechanics, occupational physiology, occupational health, work measurement and planning, operational research and even cybernetics.

Industrial problems and the overall analysis of specific situations are taken into account in each of the disciplines described above. However, improved work position, method and equipment results into comfort and better productivity of man without getting him unduly fatigued. All the above considerations should, therefore, prompt all of us to carry out studies of working conditions of our men to make them more comfortable as well as productive. Considering that improving an old plant and conditions of work are very expensive later on, it is only fair that we need to carry out such studies during the erection stage of our plant and make suitable recommendations right at the design stage.

At what level, when and who should carry out studies might vary from plant to plant. But I cannot help feeling that the industrial medical men need to take an initiative in the matter. They need to work in conjunction with the design engineers, project engineers and others, who alone

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can help them in implementing their recommendations.

Ergonomic surveys need to be planned as regards their location, the type of problem that they are meant to study and finding out solutions to the problems. Work in this field does not end at just finding out solutions but implementing them as well. A repeat study, to find out their effectiveness is therefore very necessary.

Now, I shall deal with various aspects of ergonomics namely, posture, environmental warmth, lighting, ventilation, noise, space to work, convenience of operation, colour codes, design of guards, layout of controls etc. All these factors contribute to the comfort of man. Why is it so important for the man to be comfortable in industry? Because a man who is comfortable is less likely to meet with accidents, there would be less energy expenditure and will be faced with less environmental stress. The man who is uncomfortable is subjected to some form of stress and fatigue. H.M. Vernon in 1918 observed that the incidence of accidents went up with increase in environmental warmth and discomfort. Mr. Bedford confirmed this from his work in 1948.

Why does this happen? A person under environmental stress is not the same man. He cannot hear properly, see clearly or understand and act with the same speed, precision and judgement. All this can lead to an accident before the man has been able to react. The application of principles of ergonomics will always ensure that the man is kept in a comfortable environment, while working in the kitchen, workshop or an aircraft.

Mechanisation sometimes lightens the burden of man, but sometimes it adds new problems like increase in energy expenditure in repetitive manual operations at the infeed or outfeed end of the plant etc. Hence mechanisation alone will not be an answer to all the problems that the worker has to face.

#### 1) Ergonomics & Energy Expenditure :

Recently we have carried out studies on rosin breaking operations, work on crusher offtake belts etc. to find out energy cost and stress that is produced by these operations. We have done this by means of physiological studies consisting of recording body temperature, oxygen-uptake and studying loss of body fluids and salt depletion. We have made recommendations to reduce the workload and environmental stress by changing work posture, rest allowances to reduce physical fatigue and provision of easily accessible drinking water. All this has been directed (a) to maintain worker health, (b) to improve their productivity and (c) their safety at work. In all these, our main consideration had been of human work capacity. To determine this, physical activity, effect of environmental conditions, biological data, and several other factors were taken into consideration.



Man and his machine and application of ergonomics :

What does ergonomics do in industry? It brings the people who know about machines and the men closer. This helps in fitting men and machines better. But such a process will necessarily involve careful thought in design of the machine, consideration for the machine operator and regard for his ability to operate the controls. This will also mean that we will have to give consideration to anthropology of man, for his height, posture and movement pattern as well as his sight and hearing capability. As a matter of fact, although there is virtually unlimited scope for mechanisation and automation in industry, paradoxically process safety and human capability have always been the limiting factors in the design of any machines used by man.

Having thus established that ergonomics has a lot to do with productivity and safety of people, we decided to carry out a number of surveys in our factory. All of them were aimed at looking at the environments from various angles. They are as follows :

2) Ergonomics and Anthropology :

The first study was based on the height and size of man and his working environments. Our study showed that at some places, the operating valves were not within easy reach of our men. These were so placed that the operator would have had to be with an  $8\frac{1}{2}$  ft. arm span ! we also found that there is quite a lot of difference between height, reach and capability. Our study showed that while designing the machines, and the layout, the manufacturers in UK and Germany had taken the European physical standards into consideration instead of the Indian. This made it difficult for our staff to operate these valves and therefore trying to reach the used to result in a number of operational difficulties and even mishaps.

3) Ergonomics and Biomechanics - Locomotion and posture :

In the second study, we decided to look at the work position accessibility etc. There were instances of inaccessibility pointed out by our study, due to new projects, like vessels, pipelines, tanks, having been installed, without a regard for the man, who was to operate the controls. A series of recommendations to reposition these valves, cocks, etc. have been made to reduce unnecessary strain on the body and thereby avoiding an awkward work posture and the muscular fatigue.

4) Ergonomics and sensory and motor tasks :

Our third ergonomic study showed us that machine controls need to be positioned in such a way that they are related to the frequency and order of use. They should

be well designed, laid out with regard to reach, direction of movement and necessary operating force to the fingers. They also need to be distinguished one from another to avoid ambiguity by special separation, colour, size, shape and even the feel.

On one of the Chambon printing presses, we found that there was some confusion about 'run', 'inch' and 'jog' buttons as they were not clearly marked in different colours, felt alike and looked alike. They were also placed at a point which was not convenient to operate. All this used to result into accidents while threading a paper on the machine etc.

At one location we found that the limiting switches were situated at such place that they could be wedged by a piece of soap or a rag, or otherwise held in an unauthorised manner. We made sure that they were suitably shrouded or protected to prevent accidental operation or misuse.

On our stamping machines, we found that we were having accidents due to dual starters, one for the examiner of the soap, and the other for the operator. On enquiry, we discovered that the examiner never really needed to start the stamper and hence the dual starter switch was unnecessary. This has, therefore, been eliminated. All this, will go to show that there is a lot of scope for the application of Ergonomics to make machines safer and thereby preventing accidents.

#### Inadvertent operations :

We have several instances of things going wrong due to inadvertent operation of machines. Controls were found to have been placed at such a point where they can be operated by mistake. Accidents of this type, we are sorry to say, have resulted into serious accidents to the operator's finger when their colleagues started the machines.

#### Built in Safety - in design and behaviour pattern of the operatives.

In our fourth study we discovered that the machine operator had been forgotten while designing the seaming machine of the tops of dalda and vim tins. A machine needs to be designed in such a way that it is incapable of inflicting injuries on the operator. If this cannot be done, at least the dangerous moving parts need to be guarded so well that the operator cannot get injured. Providing a mere plate on these seaming machines, separating the moving parts, provided the answer and has made sure that the operators fingers were pushed out of the machine while seaming this. Sometimes, the immediate cause of accidents on some machines may be thoughtlessness, forgetfulness or a misadjustment of the operator. But these are all common factors in a man's behaviour and allowance must be made

for all these while designing the machine. Thus 'Safety by Design' is absolutely essential. This can be achieved by having a close liaison with the Engineering Development Section. Efforts are, therefore, being made to introduce safety at the Drawing Board stage itself.

Guard Design :

Our study showed that some guards were defective in nature - at the design stage. We had more than one accidents on Gardener mixers, when the operators had tried to clean the discharge chute while they were in motion. Our survey showed that an effective cut off, to stop the machine the moment someone tried to interfere with the mixer in motion, was the only answer to prevent mishaps. This new type of guard has again taken the operator's behaviour pattern into consideration. By and large, however, if we want guards to be accepted by the staff, they need to be incorporated right from the beginning, as an integral part of the machine in the design instead of adding them as an after thought or a patch work.

Visibility during operations :

We found that workers were co-operative with respect of guards when their vision was not interfered with while running the stamping machine. Our answer to this was providing 1" wire mesh guards on stamping machines through which they could see clearly whether the machine was stamping the soap properly. Since these guards have been provided, there are no instances of interferences with the guards and the resultant miseries.

Mechanisation and maintenance :

Safety by Design could also be achieved by feeding the material by mechanical means. This has been done by us on the paper shredding machine as well as on Dalda filling machines, thereby making sure that the operators' hands are kept away from the dangerous moving parts.

Permit to work system, and colour code for identification

Accidents have often occurred when production staff have started operating the machine while the engineers are still working on it. This happens when there is no 'permit to work' system and human behaviour has not been taken into account, while designing the operation of the plant. Our surveys have showed that we needed to have 'Permit to work system' to achieve maximum safety on a number of operations. This has eliminated, as far as possible, the human element from the accidents, by requiring to have a formal sanction before starting work.

In conclusion :

I have in my short paper tried to highlight the importance of ergonomics in industry to improve workers health and safety as well as efficiency, reliability and productivity. Because of shortage of time, I have illustrated only some examples that we came across in our surveys but a lot more could be demonstrated. In the past, attention has been directed specially to machines and processes and our staff was expected to adapt themselves to the new systems involved. There is now a compelling and urgent need to take the 'man' behind the machine, into account while designing the machines and processes. It is only then that the productivity, safety, health and the well being of our workers can be safeguarded. It is essential for all of us to study ergonomics and to work with Engineers who are designing machines and the layout of plant and various controls etc. New discoveries and processes can now be exploited and developed without any delay. However, unless simultaneously there is a proper consideration for the 'man' in the scheme of things, so called progress, may be a menace to the mankind than being a blessing. Despite advances in thinking and the obvious military and even space applications of ergonomics, studies on ergonomics have had only limited effect on the worker. There are far too few scientists, who are conversant with this discipline and even the managements' need to be made aware of the benefits of this new science on productivity and safety of men. Similarly workers need to be convinced that job simplification through this discipline will not alter their job classification or grading with any financial loss to them. It will only improve their conditions of work and make them comfortable.

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## PROJECT BASED APPROACH TO ACCIDENT PREVENTION

K.C.GUPTA\*

### 1. Introduction

Among the various known approaches to accident prevention, the Central Labour Institute has recently been laying emphasis on the unit based safety projects. The objective is to concentrate attention and available resources on selected factories having a high incidence of accidents. A substantial reduction in the incidence of accidents in this comparatively small group of factories would help to considerably reduce the total number of accidents in the country for reasons that would be explained in a later part of the paper. The emphasis began in 1972 and since then a number of projects have been completed. The units for projects are selected in consultation with the State Chief Inspectors of Factories.

The objectives of these projects have been as follows:

a) To study, analyse and evaluate the past accidents, the major physical working conditions and work practices and the existing safety organisation and its safety programme and make recommendations on the methods to be adopted for prevention of accidents and improvement of the safety organisation.

b) To design and conduct tailor-made in-plant safety training programmes for key senior management personnel so as to stimulate their interest in safety and enlist their involvement in implementing the recommendations of the project.

### 2. Basis for Selecting Factories

Reportedly, it had been the general experience of some State Chief Inspectors of Factories that a small percentage of factories accounted for a disproportionately large percentage of the total accidents in each State. Therefore, it was hypothesised that this pattern

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would also be true in respect of all India. For the verification of this hypothesis, a survey was undertaken by the Directorate General Factory Advice Service and Labour Institutes in which data was collected in respect of the top 20 factories from each of 18 States/Union Territories for 3 years 1971-73. Analysis of the data collected from about 300 factories led to the conclusion that around 1/3rd of the total industrial accidents (reportable under the Factories Act) in the country are contributed by less than 1/2 per cent of the total number of working factories employing around 12 per cent of the total estimated employment of workers. In terms of major industrial classification, the industrial group "Textiles" including "Jute Textiles" and "Transport Equipment" accounted for over 70 per cent of the accidents in the high incidence group of factories. This suggested that it would be advantageous to concentrate accident prevention efforts on this high incidence group of factories particularly in the three industrial groups mentioned above.

### 3. Method of Study

To initiate the project, general data such as the number of accidents, average daily employment of workers, man-hours worked, mandays lost due to accidents, etc. is collected from the factory for a period of the latest 5 years through a proforma. The data collected is used to evaluate the accident rates and the comparative trend. This is followed by field investigations in the factory for about two weeks by one or two experts from the Central Labour Institute.

In the first phase of the field work, typical accidents are investigated and the existing system of accident investigation and analysis is reviewed. A representative sample of accidents spread over a period of 18 to 24 months is analysed and the key facts about the accidents determined. This helps in finding out (a) the major causes of typical accidents, (b) the defects or deficiencies in the system of accident investigation and analysis and (c) the various factors of accidents such as types, sources or agencies, parts of the body injured, departments, etc.

In the second phase, major physical working conditions and work practices, as obtaining in the factory at the time of the project, are reviewed through plant safety inspections and discussions with the concerned officials. A number of photographs are also taken for the purpose of illustrating the different points.

A review of the existing safety organisation and its programme of activities constitutes the third phase of the field work of the study.

#### 4. Tailor-made Training Programme

At least one tailor-made training programme is conducted in the factory immediately after the field work of the project. The training programme constitutes a most important part of the project. Usually it is attended by departmental heads and their seniors who because of their key positions are able to initiate meaningful action to translate the recommendations into practice. The soundness of this approach has been well proved as in almost all cases, measures were taken by the management to reduce the accidents.

Thus in **essence** the training programme has been a means of educating and motivating management into taking the required accident prevention measures as determined through the study. It has been a forum for effective communication between the project experts and the management personnel. The discussions held are purposeful and conclusive since they are held in the light of a thorough knowledge of the working conditions and work practices. The photographs taken earlier help in these discussions. Also the informal discussions held during the field work with the individual members of the group are found helpful in creating an informal atmosphere and providing a wealth of information for feedback and development of positive attitudes.

Training programmes are also conducted for other levels of the management and representatives of workers.

#### 5. Report

After the completion of the project, a report is prepared for the management. Besides analysis of the data, the report contains important findings and recommendations for prevention of accidents.

#### 6. Typical Examples

6.1. Factory 'A' - This is a shipbuilding and ship-repair yard employing over 10,000 workmen where a safety project was conducted in 1972-73. The management of the factory did not wait for a formal report of the project but started implementing its findings in consultation with the project expert. A full-fledged safety department was established under

the charge of a senior officer at par with a departmental head, transferred from one of the production departments. A safety policy was formulated and high level safety committees were constituted. This was followed by a series of safety training programmes for groups of senior and middle management personnel and shop stewards. In these programmes, discussions were held on important findings and recommendations of the safety project, the future safety programme and the hazards discovered in the shipyard alongwith their remedial measures. These discussions helped in creating safety awareness and mutual understanding of the role of Line Officers and the Safety Officer. This prepared a good ground for planting the safety programme. After sometime, a manual of safe work practices applicable to the shipyard operations was prepared and published by the Central Safety Committee. The results achieved through the above measures and the continuous efforts of the Safety Department are reflected in the accident statistics shown in the table given below.

Year	Av. daily employment.	Number of Accidents Reported under the Factories Act			Mandays lost due to accidents.	Rate of accidents per 1000 workers.	Value of production (Rs. in crores)
		Fatal	Non-fatal	Total			
1972	7,930	18	1,682	1,700	15,700	214.3	21.10 (71-72)
1973	8,307	-	987	987	9,023	118.7	28.93 (72-73)
1974	9,350	4	846	850	7,537	90.9	31.00 (73-74)
1975	10,780	1	817	818	6,491	75.88	37.00 (74-75)

6.2. Factory 'B' - This factory is also a ship-repair yard with an average daily employment of over 14,000 workers. The field work of the project in this factory was conducted during August - September '73. This was followed in October by a safety training programme which was attended by 33 senior management personnel. Subsequently, 2 more training programmes were conducted - one for the management personnel and the other for the welding supervisors. Since then, the management has been



regularly deputing participants to attend the training programmes being conducted by the Central Labour Institute and the other agencies.

The management has also prepared a proposal for setting up a safety cell. In the meantime, a number of other recommendations have also been implemented. These include improvement in the design and construction of scaffoldings and electrical earthing of ships, welding sets and sub-stations; providing and ensuring the use of life lines and eye protectors; obtaining sanction for issuing 5,000 safety helmets; preparing and issuing booklets of dos and don'ts and introducing a suggestion scheme.

Due to these measures, the frequency rate of accidents per million man hours has come down from 20.20 in 1972 to 11.56 in 1973 and 10.95 in 1974. This means a reduction of 45.8% in 2 years.

6.3. Factory 'C' - This factory employs over 5000 workers and is engaged in shipbuilding, ship-repair and general engineering work. The safety project here was conducted in 1974. Following the project, the management appointed a Divisional Safety Engineer who was then given <sup>training</sup> in 2 shipyards and at the Central Labour Institute. The project report was utilised in formulating the safety programme and constituting safety committees. In addition to the improvement of housekeeping and general working conditions and provision of personnel protective equipment to the required categories of workers, efforts were concentrated on creating safety awareness among the supervisory staff and workers. These measures have paid off and the frequency rate of accidents per million manhours has come down from 156.3 in 1974 to 85.2 in 1975 showing a reduction of over 45%.

Reports of almost similar good results have been received from some other factories also. The conclusion which emerges is that a definite reduction in accidents has been achieved in all such cases where managements' active support and involvement have been achieved through these projects.

## 7. Summary of Common Findings

It is neither feasible nor intended to list here the findings applicable to the individual organisations covered by the projects. It will, however, be useful to summarize below the salient findings common to most of the organisations covered:

a) Lead from top management - It was a common feature that the top management did not take time and efforts to demonstrate their interest in safety. Neither were the safety objectives clearly made known to the middle management and supervisory personnel. The safety project helped in achieving the desired objective of winning the support of the top management and making it known to the other levels of management.

b) Safety organisation - The factories covered have generally been without a proper safety organisation. Consequently, the safety efforts were generally poor. This combined with the lack of demonstrated management interest constituted the most important factor responsible for the high rate of accidents in these factories. Accordingly, one of the general recommendations was that a proper safety organisation should be set up. General guide-lines were provided on the functions, role and the type of set-up that would suit a particular factory.

c) Safety programme - Generally a two or three stage safety programme was recommended based on the requirements of the individual factory. The minimum requirements such as formulating a safety policy, improving the system of accident investigation and analysis, rectifying those working conditions and practices which merit immediate attention from consideration of the extent of accident potential and also the impact on the accident prevention programme in general, and organising a series of educational programmes are normally included in the first stage of the safety programme. The remaining measures were included in the other stages.

d) Involvement of the line organisation - It is clear that for the safety effort to become permanent in an organisation, it must be accepted by the line organisation. The general position, however, was that the groups of management personnel who attended the training programmes conducted as a part of the projects, did not fully appreciate their role in safety. Also they generally had a vague idea about the role of a safety officer. Efforts were therefore made to change this view-point and bring about their involvement. Further success in achieving and sustaining their involvement, however, depends on the practical human relation and motivational skill of the safety officer.

e) Training of a safety officer - It is generally recommended that after the management appoints a safety officer, he should be given training in safety. This recommendation has been implemented in some cases

by deputing the designated safety officers for training at the Central Labour Institute.

f) Workers' participation in safety - Undoubtedly, much better results can be achieved in safety through worker's participation. It is, therefore, invariably recommended in the project reports that the management should include suitable workers' representatives in the safety committees and also associate them with the various safety activities. However, every management was found reluctant to implement this recommendation. They somehow had a feeling that workers were not in a position to appreciate the importance of accident prevention measures and that they were more anxious to put forward, in the name of safety and health, extraneous demands, which if not considered, could even lead to disturbance of industrial peace. Even when the industrial relations were at their best, it did not strike some managements that they could take advantage of this relationship for workers' participation in safety. On the other hand, some of the managements firmly believed that the workers were to blame for non-cooperation in safety.

g) Personal protective equipment - This was generally found to be a neglected area. The managements pay little attention to the selection of equipment to ensure that it is functionally suitable, good looking and comfortable. Also the maintenance of the equipment in clean and usable condition was found lacking. Similarly, the workers' representatives were not consulted and taken into confidence while selecting the equipment. Due to these and other factors, the use of personal protective equipment was widely disregarded.

However if the matter is taken up in a right spirit by the management, success can be achieved in ensuring the use of the required equipment. For example, after the project was conducted in a machine tool factory where the incidence of eye injuries was 40% of the total injuries, the management seriously pursued with the union the matter of using eye protection. After about a year's negotiations, they succeeded in reaching an agreement on a sample of the safety spectacle to be used by the machine operators. To remove the doubts of the workers, the management even obtained the opinion of an optician regarding the quality of the sample selected. Finally, 220 pairs of the safety spectacles were purchased and put into service.

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## HEALTH OF THE EXECUTIVE

B. Banerji, Chief Medical Officer,  
Hindustan Lever Ltd., Bombay

I have the opportunity of looking after the health of 7000 people of different age groups from different social classes. I find from experience during the last 20 years that health problems differ in different social classes. We find that with improved sanitary and hygienic conditions of living, social class I, i.e., the affluent group, suffer less from microbial infection and have a better life expectancy. The pattern of diseases from which they suffer (and this is going to be more pronounced as the health conditions in the country improve) are mainly of the degenerative varieties which make their appearance slowly, with advancing age.

If we have a look at the diseases which claim this group as their special favourites, two things become clear. Firstly, they come silently and unless the progress is stopped at an early stage they turn out to be major killers; secondly, many of them have direct or indirect relationships with some of our daily habits.

The only way to detect these diseases at an early stage is to have a regular periodic health check up. This should be done more often as age advances. In our experience, a thorough physical check up with some investigations like Chest X-ray, blood and urine check up are sufficient for the young group. Those who are above 40 should have a few more investigations like looking for arteriosclerotic diseases, E.C.G. and special tests for cancer. In our experience a large number of people who are apparently healthy show some health problems in an early stage and if they are given proper advice to control or rectify, majority of them become free from these health problems. In our concern this periodical check up has resulted in a substantial drop in such conditions amongst employees of all groups.

### OBESITY:

We find that some of our daily habits have pronounced effect on health problems that particularly face the affluent group. Take obesity for example. Obesity is due to overeating and comparatively less expenditure of energy by exercise. There was a time when every one believed that to have a little extra weight is a good thing, the extra reserve would come in handy in case of crisis like illnesses; but today as a result of several studies all over the world particularly by the Life Insurance Corporations, it is accepted that obesity is a health hazard. In fact, it is a major health hazard of western countries. This applies to the affluent group of our country and overweight person has a reduced life expectancy and is more susceptible to some major diseases like high blood pressure, diabetes and heart attacks. The most encouraging feature is that when the weight is reduced to the ideal range the life expectancy again comes back to normal.

If we are only conscious about our body-weight and start taking steps right when it shows an upward trend, it can easily be controlled;

whereas, it becomes extremely difficult to reduce if one has become overweight by more than 10/15% of the body-weight. In reducing, one should always try to reduce slowly but steadily - any crash dieting is not only harmful but the reduction effected quickly reverts to original weight after the crash programme stops. Obviously, no one can continue a crash programme for a very long period of time.

In our eating habits there are two particular types of foods which require special mention in relation to health. (1) Fats and (2) Sugar, both of which are expensive, add to the taste of the food and therefore, are consumed in large amounts by people who can afford them i.e., the affluent group. There is evidence today that high consumption of fats, especially saturated fats, gives rise to high cholesterol level in bloods which predisposes to heart attacks. A little judicious planning of food by adding more unsaturated fats like oils in our cooking helps to keep the cholesterol level low.

Sugar again gives nothing but calories in our diet and there is a growing belief that excessive consumption of sugar is related to several health hazards like caries of teeth, high blood sugar in potential diabetics leading gradually to frank diabetics, atherosclerosis leading to heart attacks, and last but not the least increasing body-weight.

The best way to reduce is to eat less calories and burn it by means of physical activity and exercise. Some people try to reduce by skipping their breakfast and lunch and take a satisfying meal at dinner. This is unphysiological and experiments have shown that nibbling is much better than gorging i.e., if we take the same amount of calories in 24 hours, it is much better to have it divided in three or four small meals than have all the calories in one heavy meal. Foods like green vegetables, salads have very little calories in them and can be taken as much as one likes if one feels hungry after a small meal.

#### SMOKING:

Smoking has been proved to be a health hazard for quite some time. Association of cigarettes smoking with high incidence of lung cancer (42 times more in cigarette smokers than non-smokers) have been proved beyond doubt. But this leaves us unimpressed because, fortunately, so far the incidence of lung cancer in our country is not very high. Unfortunately, the other bad effects of smoking with regard to heart attacks, sudden deaths have not received much publicity. It may be mentioned here that it is less harmful to smoke pipes and cigars than cigarettes.

Experiments have also revealed that when people, who have been heavy smokers for quite a number of years, give up smoking, they enjoy better health, their persistent smokers' cough disappear, their vital capacity i.e., capacity of the lungs to expand fully and thus take more oxygen, increases making them less breathless when they undertake physical activities. But this is not all. Their increased chances of getting lung cancer and heart attacks are also reduced like the case of overweight persons regaining higher life expectancy when they reduce to normal weight.

### DRINKING:

The next habit that I would like to discuss is a common habit amongst the affluent group. Fortunately, drinks within moderation is not as harmful as smoking but here moderation should be emphasised over and over again. We all know that drinks make us feel relaxed, more sociable, inhibitions are reduced and we become more communicative. It gives us better appetite and sleep also when we take in moderate quantity but when it goes to excess the comradely feeling turns to loquacity, reduced inhibition to tactlessness and debauchery with emotional outbursts and lessened sense of responsibility and judgement. This is invariably followed next morning by headaches, tremulousness, nausea and pronounced malaise. It is often asked what is moderation in drinking and my personal opinion is the moment you exceed two drinks you have exceeded moderation. The other point I would like to mention is, Alcohol has, like any other medicine, some toxic effect on the body specially on the liver, stomach, and the nervous system when taken in excess. To counteract it, one must take good nutrition in the form of vitamins, proteins after drinks. It has been said that we get cirrhosis of liver not because of taking drinks 'before' dinner but because of taking drinks 'instead of' dinner. Unfortunately, this happens in many instances specially in those who are used to heavy drinking. It not only removes one's reputation but it removes one's capacity to provide proper food and nutrition to the family and himself. It also, by acting on the stomach, causes some amount of irritation leading to nausea and later loss of appetite. It must also be remembered that for those who want to reduce, alcohol is a taboo. Every ounce of alcohol gives approximately 100 calories and along with it, it reduces the determination to keep to one's prescribed diet.

### PHYSICAL ACTIVITY:

Modern civilisation is bringing us a lot of convenient gadgets which directly or indirectly have reduced the necessity of physical activities. The car, the lifts give us very little opportunity to even do some walking during our daily chores. As a result, our muscles are not worked, our joints are not moved and some amount of disused atrophy takes place. The muscles are slowly replaced by more fats; the joints become stiff, the body becomes heavy and slight exertion gives rise to breathlessness, joint-pain etc. This state of things is very unphysiological because the human body was made for movement. Many studies have revealed that those who have to do physical activities in their work not only keep fit and keep their weight down, but suffer much less from heart attacks. Physical activity lowers cholesterol level. Physical activity increases collateral circulation in the heart. Studies undertaken in London Bus Transport and Washington Postal Service have proved beyond doubt that people in sedentary jobs have a high incidence of heart attacks as compared to their colleagues whose job includes lot of walking about.

It may be mentioned here that while regular physical activity or exercise is desirable for everyone, whatever his age, sudden bursts of unaccustomed severe physical exertion is not desirable. It can do lot of

harm particularly after certain age. Regular daily exercise, to a moderate degree, whether it be walking, or playing golf, tennis or swimming is quite beneficial to those whose jobs are essentially sedentary in nature but severe stringent exercise like playing hockey, squash, badminton should not be started after the age of 40. Physical exercise again should not be taken in any form after a heavy meal.

RELAXATION:

The next important habit I would like to discuss is relaxation. The speed of our daily life, the heavy pressures to which we are constantly being exposed, the stress and tension of our job, make it sometime difficult to relax but the only way we can keep our mental balance is to find some opportunity to completely forget our worries for sometime and relax. This relaxation is possible if we develop some interesting hobby or play some games, spend some time with children and family, go out for some picnics or week-ends out of the normal environment and if possible and agreeable to take part in religious activities. Generally, very minor things keep us tense and worried because we attach undue importance to them. A sense of perspective must be developed. Over-ambitious and over-aggressive persons generally find it difficult to reconcile with the present state of life. No doubt, ambition is an excellent virtue and drive is an excellent force to move us forward, but over ambitious and aggressive persons generally burn themselves up within a short time. They take, to give an example, money from their health bank to boost up their career bank until one day they detect that the health bank has become completely bankrupt. A sense of realism, proper perspective and periodic reassessment of ego ideal, are essential.

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17-6-71.

DESIRABLE WEIGHTS FOR MEN, AGED 25 AND OVER  
ACCORDING TO HEIGHT AND FRAME

Heights (in inches)		WEIGHT IN POUNDS (in indoor clothing)		
		Small Frame	Medium Frame	Large Frame
Feet	Inches			
5	2	112 - 120	118 - 129	126 - 141
	3	115 - 123	121 - 133	129 - 144
	4	118 - 126	124 - 136	132 - 148
	5	121 - 129	127 - 139	135 - 152
	6	124 - 133	130 - 143	138 - 156
	7	128 - 137	134 - 147	142 - 161
	8	132 - 141	138 - 152	147 - 166
	9	136 - 145	142 - 156	151 - 170
	10	140 - 150	146 - 160	155 - 174
	11	144 - 154	150 - 165	159 - 179
	6	0	148 - 158	154 - 170
1		152 - 162	158 - 175	168 - 189
2		156 - 167	162 - 180	173 - 194
3		160 - 171	167 - 185	178 - 199
4		164 - 175	172 - 190	182 - 204





PERIODICAL MEDICAL EXAMINATION

Significant changes only.

I Examination

II Examination

III Examination

IV Examination

PREVENTIVE INOCULATIONS :

DATES :

T. A. B.									
CHOLERA									
SMALL POX									
TETANUS									

V Examination

VI Examination

VII Examination

VIII Examination

DEPARTMENT  
OF  
INDUSTRIAL  
HEALTH  
**TATA SERVICES LIMITED**

ANNUAL REPORT 1974



Printed in India at  
TATA PRESS Ltd., Bombay 400 025  
December 1975.



*Mr. N. H. Tata delivering the welcome address at an Indepth Course in Family Planning for Industrial Medical Officers organised at Taj Mahal Hotel, Bombay. Dr. C. Hetata, Regional Adviser on Labour and Population, ILO is also seen in the picture seated near Dr. Rafiq Zakaria.*

*Mr. S. G. Sahasrabudhe, Assistant Engineer (Central Planning), TELCO, Poona, receiving the first prize for the Safety Poster Competition at the hands of Mr. A. N. Maira, Senior Dy. General Manager of the Company.*



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## CHAPTER I

### INTRODUCTION

1. Increasing use of science and technology is producing rapid changes in environments of Man, both at home and at his place of work. Besides the increasing risk of accidents, the reports of damage done to human system by new chemicals are pouring in daily. While industrialisation is inevitable to attain prosperity and a higher standard of living, we cannot afford to close our eyes to the problems that arise in its wake. Pollution of air, water and soil is assuming an alarming proportion not only in the developed countries but even in the developing ones, where industry is yet in its formative stage. Migration of rural population to industrial cities and estates with consequent over-crowding is creating imbalances, both physical and mental, which are reflected in the form of industrial unrest and rise in mental diseases.

2. Need for protecting the health of the workers from hazards and to make work environments safe, is therefore more acute today than ever before. No industry can afford to have its machinery run down to a point of failure, nor its premises getting adversely affected to the detriment of a smooth flow of production. What applies to Machines holds equally true for the MAN behind the Machine. New materials and processes need unremitting vigilance and the economic advantages these bring in need not be at the cost of health and safety of the workers. It is only through a well organised Industrial Health programme that we can protect the Man behind the Machine. It is in fact a need of the hour. To an employer it is of utmost importance because it is through Men that he runs his Machines and gets production. To the worker, it should be a question of survival and to the Government everything that a Welfare State can hope to provide.

3. In the foregoing is narrated an account of the activities undertaken at the units served by this Department, viz. 4 Textile Mills, Tata Oil Mills, Tata Chemicals, Tata Electric Cos., Indian Hotels, Poona Complex of TELCO, Voltas and National Electronics. This year, some statistics in respect of the Companies not regularly served by Department viz. TELCO, Jamshedpur, Tata Yodogawa and Tata-Robins-Fraser have been included for which we are grateful to the managements concerned.

4. In presenting this Report covering 18 Tata Establishments with an approximate employee population of 39,000, we are happy to state that no occupational

condition of any serious nature was observed except a few cases of dermatitis. The response to preventive inoculations has, on the whole, been satisfactory. The response to periodic medical examinations has maintained its upward trend even though these are voluntary. Introduction of laboratory and x-ray facilities at some of the units has helped to improve the quality of these examinations and possibly their popularity too. Following in the footsteps of Tata Mills, Svadeshi Mills have also decided to go in for these facilities during the current year. The programme of a detailed medical check-up introduced at Empress Mills during the year was one more step in this direction. Efforts are being made to follow-up long absence cases with a view to finding out the incidence of chronic ailments like TB, Diabetes, heart conditions etc. among the workmen and to arrange for their proper treatment and rehabilitation. Medical Aid under the Industrial Health Programme is essentially prevention orientated. All the same, curative facilities have to be included. These are being extended to employees not covered under the E.S.I. Scheme whose number during the year increased with rise in wages. There was not much change in the morbidity pattern except the emergence of malaria cases reported from Tata Chemicals, Mithapur, and the rural divisions of Tata Electric Companies.

5. With regard to safety performance all the units except one showed improvement during the year. Advance Mills maintained its foremost position and were once again the winners of the National Safety Awards for the 5th year in succession. The Mill was also winner of both the Awards in the Inter-Mill Safety Contest among the 4 textile units in the group. It worked without an accident for a period of 58 days aggregating to 12,27,124 manhours. The progress achieved by Empress Mills deserves a special mention. Frequency Rate of accidents at this unit came down to less than half of the previous year. The performance at Tata Oil Mills, Sewri, was also noteworthy. Their Frequency Rate of accidents during the year viz. 3.23 has been the lowest touched so far. This unit worked for 100 days without a lost-time accident and showed an improvement of as much as 70% over its standardised NORM. The total number of accidents have also gone down at all the units. A mention may also be made here in respect of the improvements in Safety and Environmental Hygiene achieved at Tata Electric Companies during past 2 years. The Central Safety Cell at this Company organised an extensive training and motivational programme covering

supervisors and operatives. It undertook a Marathi translation of their Safety Manual which by itself is a very fundamental activity. Results of environmental studies carried out at Voltas, Thana, were satisfactory.

6. It is indeed a happy augury to note that there is a declining trend in industrial accidents all over the country during past 3 years. Against a total of 324,992 accidents during 1971 which was an all time high, the accidents during 1972, 1973 and 1974 were 285,033, 278,579, 245,840 respectively.

7. Mental health in the present day industrial relations climate depends on the ability to create an environment in which a worker can thrive. No amount of monetary gain can help an individual to put in his best for the job unless there is job satisfaction. His performance and productivity will depend on his abilities to withstand the stresses and strains of modern environment, his regular attendance at work and his chances of meeting with an accident on the training and development opportunities offered to him. Members of the Industrial Health Team at the units lost no opportunity in helping those afflicted with mental illness.

8. In respect of rehabilitation, NELCO factory has figured once again as a recipient of a National Award for the third time in a period of 4 years. With increasing diagnostic aids more cases of Pulmonary TB and cardiovascular conditions which came to light were rehabilitated on suitable jobs. This programme was also extended to the blind and the handicapped.

9. In respect of Family Planning, noteworthy events during the year were winning of FICCI Award on an all India basis by Tata Electric Companies for "the success of the Companies in covering 90% of its employees, 40% of them by terminal methods". Two other Bombay units viz. Svadeshi and Tata Mills also won similar awards from the Municipal Corporation. In fact, it is for the second time that both these units have been given this Award. At the end of the year, between 28 units (refer Chapter V) having a permanent employee population of 1,15,000, 29,027 sterilisation operations have been performed on employees/spouses. Thus 1 out of 4 employees have adopted this terminal method. The number of sterilisations performed during the year was 2587 (previous year 2,501) of which more than 65% (1669) were Tubectomies, reflecting an increasing

popularity of female sterilisations. The overall sterilisation percentage was highest at Bhira Division of Tata Electric viz. 50%, with Bhivpuri standing second at 44.5%. The MTP is also encouraged and the couples are persuaded to accept either sterilisations or contraceptives thereafter to avoid future pregnancies. Family Planning facilities at various units are also available to non-employees.

10. The expertise of the Department is availed of by a number of associations and voluntary agencies, the foremost amongst which is the Employers' Federation of India. The Chief Industrial Health Officer of the Department besides functioning as a Chairman of their Central Family Planning Committee, was requested to help them in organising an In-depth Course in Family Planning for Industrial Medical Officers. The experience of the Department was also availed of in respect of ILO recommendation on Benzene and on the Report of the Special Committee appointed by the Central Government to frame "Model Rules for Occupational Diseases" under the Workmen's Compensation Act.

11. An additional Industrial Physician, as well as a Safety Officer were added to the Industrial Health Team at Empress Mills. This was a long felt need looking to the size of the unit. The services of Mr. N. L. Gadkari, part-time safety consultant and Dr. S. M. Mahaluxmivala, part-time plastic surgeon were continued as in previous years. We acknowledge their respective contribution in the field of safety and in reducing morbidity amongst the injured, and also their rehabilitation. Liaison with Companies in the Group not served by the Department on a regular basis was maintained. Advisory services in respect of Family Planning were provided to all Companies.

12. "Occupational Health can never develop widely nor have its correct status nor be an effective influence without active participation of workers!" This realisation is inevitable and has to come sooner or later. It is with this guiding principle and the inspiration drawn from the enlightened policy of the House of Tatas that members of the Department have in their humble way tried to help the Worker in pursuing his job with satisfaction.

Dr. P. V. Thacker,  
M.R.C.P. (Lond.) D.T.M. & H.(Lond.)  
Chief Industrial Health Officer.

## CHAPTER II

### MEDICAL AID

13. Medical Aid under an Industrial Health Programme is essentially prevention orientated. The activities of the Industrial Physicians therefore consisted of Pre-employment examinations, periodic examinations, surveillance of occupational diseases, immunisations, environmental sanitation etc. which are described below in detail. In respect of curative aid, employees earning upto Rs. 500/- per month are covered under the E.S.I. Scheme. With the rise in emoluments under inflationary pressures, the number covered under this Scheme declined considerably during the year. For those falling outside the purview of this Scheme, while the routine treatment was provided from the factory dispensary, a scheme of Medical Insurance under which expenses incurred are reimbursed, exists at almost all the units. Repeat dressing facilities for injury cases on work were provided at all units. The Medical Officers at Bhira, Bhivpuri and Khopoli Divisions of Tata Electric also rendered curative aid to non-employees residing in nearby villages as per the Company's policy.

14. At Advance Mills, Ophthalmic and Dental facilities were continued as in the past through services of part-time specialists. At the Eye Clinic, 290 new cases and 171 repeat cases were treated. New cases consisted of 30 acute and sub-acute conjunctivities, 153 chronic conjunctivities, 38 injuries on work, 16 injuries while not on work, 29 refractive error cases and 24 others. Attendance at the Dental Clinic was 158 new and 86 repeat cases. Dentures were provided to needy employees at subsidised cost. The Svadeshi and Tata Mills, and Tata Oil Mills, Sewri, also make available services of an Oculist firm for examination of refractive error cases and supply of spectacles at concessional rates. A part-time Surgeon visits Tata and Svadeshi Mills once a week for examining accident cases and advising them proper treatment so as to enable them to be on duty. Other surgical cases were also examined and given necessary advice. Total cases attended to were 290 accident cases and 31 surgical cases at the former and 140 and 8 respectively at the latter.

15. At Empress Mills, a scheme to provide a medical check-up including laboratory investigations for the supervisory staff was introduced during the year. 206 members of the staff were sent to a Diagnostic centre. Besides a clinical examination, the investigations included examination of blood for fasting and post-prandial sugar level and for cholesterol, x-ray chest and an ECG. In view of some abnormal findings 38 members of the staff were re-checked at this Centre to exclude possi-

bilities of any organic condition. Wherever required the concerned members were counselled.

16. At Tata Chemicals, besides preventive services rendered by the Industrial Physician, services from 5 Specialists viz. Eye, Skin, ENT, Orthopaedic and Psychiatrist were made available at the In-Plant Clinic. The number of cases seen by these specialists were 70, 22, 29, 24 and 5 respectively. Better supervision and follow-up of healed TB cases on duty has helped in a reduction in the incidence of relapses among these employees. Compared to 17 relapse cases during the previous year, there were only 7 during the year under report.

17. The Department attended to 15 employees of this Company needing specialist investigation and treatment at Bombay. Of these 8 were new and 7 were old cases. New cases consisted of a case each of spondilosis, prolapsed disc, pulmonary TB, contusion elbow, Hodgkins disease, haematuria, cancer cheek and cancer larynx. The cancer check patient after an initial improvement died in the following year. Old cases followed up were an inflammatory opacity in the lung, a case of laryngectomy for training in speech therapy, a case of thickening of vocal cords with a nodule, papiloma bladder, cancer lip, oral leucoplakia and motor neuron disease. The last case died during the year under report.

18. The Central Follow-up and Coordination Committee for Industrial Health of Tata Electric Co. with Chief Industrial Health Officer as a permanent invitee, reviewed the progress in respect of Health, Safety and Family Planning work carried out at various Divisions. These consisted of progress on implementation of standards for pre-employment examination, record keeping, frequency of periodic examinations and use of various pathological tests therein, Family Planning surveys, coordination of family planning work between the Lady Medical Officer and the Divisional Medical Officers, improvements in working conditions, particularly protection against noise, industrial injuries etc. The Pathology laboratory set up at the Head Office last year has helped the Industrial Physicians at the Division in their curative and periodic medical examinations work.

19. At the Poona Complex of TELCO additional Medical Officers were appointed during the year for providing a round the clock medical help at the factory dispensaries. Medical examination of management staff as well as their wives inclusive of a gynaecological check-up

were continued. During the year the dispensary at the Pimpri unit treated 31,187 new cases and the one at Chinchwad 35,892 new cases. 728 pre-employment medical examinations were carried out at Pimpri unit, 47 of whom were rejected. Similar figures for Chinchwad unit were 327 and 15 respectively. Further, 282 periodic medical examinations, 6 specific and 5 follow-up examinations were also carried out at Pimpri. Such figures in respect of Chinchwad unit were 23, 49 and 18 respectively. A well equipped Vasectomy Centre was established at the Chinchwad Dispensary for benefit of employees, contractors' employees and outsiders. This has enabled to boost up the Family Planning work.

20. The Indian Hotels Company and the Calcutta, Madras and Ghaziabad units of Tata Oil Mills were served by part-time Medical Officers. Details in respect of the Indian Hotel Company are given under respective tables. At Calcutta unit of Tata Oil Mills, there were 7 Pre-employment medical examinations. Medical services at NELCO, Bombay, were looked after by the Assistant Industrial Health Officer of the Department who visited the factory once a week. The Voltas factory at Thana has a full time Medical Officer. Besides the routine preventive and curative facilities, Medical Centre at this unit is equipped with ultra-violet, infra-red and short wave diathermy units to provide physiotherapy facilities to employees on work. In absence of hospital facilities nearby, a Recovery Room is also provided for observation of emergency cases. Under a scheme to carry out annual medical check-up of management staff, 111 persons were examined and suitably counselled.

**Morbidity Attendance:**

21. Morbidity statistics of attendance at dispensaries in 4 textile units, 3 Oil Mills, Tata Chemicals, Indian Hotels and Voltas, Thana, appear under Table I A whereas similar statistics for 5 Divisions of Tata Electric are given under Table I B. Majority of the ailments comprised of respiratory tract infections, gastro-intestinal conditions, rheumatic group of diseases, pyogenic infection of the skin and dressing cases. Statistics given under these tables pertain to new cases only. These do not reveal the actual incidence of morbidity among the employees because as stated earlier, curative services provided at the factory dispensaries are mainly in respect of medical emergency and industrial accidents.

**Medical Examinations:**

22. With a view to assessing the suitability of the applicants for the job, pre-employment examinations for new recruits and pre-placement examinations for temporary employees to be made permanent were carried

out. Table II A gives statistics in respect of such examinations and Table II B an analysis of defects detected during the same. These were mainly dental, visual, underweight, nutritional and skin diseases. Wherever possible these examinations were supplemented by screening/x-ray and BCG Vaccinations. At Empress Mills, 117 persons were tuberculin tested of whom 33 were found negative and given BCG vaccination. The overall rejection rate during the year was 8.65% as against 18.51% during the previous year. Similarly the percentage of examinees without defects has also gone up as much as 13%.

	1973		1974	
	No.	Percentage.	No.	Percentage.
Without defects	1629	63.24	3319	76.53
With permissible defects	470	18.25	643	14.82
Rejected	477	18.51	375	8.65
	2576	100.00	4337	100.00

23. Besides the above, the Industrial Physician at Tata Chemicals examined 1545 Contractor's employees of whom 68 were rejected—40 for under age, 3 for over age, 20 for defective vision and 5 for chronic bronchitis with emphysema. On the same lines 1429 recruits for temporary jobs were examined at 5 Tata Electric Divisions of whom 41 were rejected.

24. Table III A gives details in respect of periodic, specific and follow-up examinations carried out at various units. Periodic examinations were carried out as a routine at specified intervals. Specific examinations were undertaken for those engaged on hazardous occupations and also for those seeking promotions/transfer. Follow-up examinations pertain to chronic ailments like TB, Leprosy etc. and for those returning after long leave due to sickness or injury. It may be pointed out that although these examinations are voluntary, the response over the years has been showing an upward trend as will be evident from the following table:

	1969	1974
Periodic	1456	1835
Specific	585	1509
Follow-up	857	1392
<b>TOTAL</b>	<b>2898</b>	<b>4736</b>

25. Tables III B and III C analyse the defects found during periodic examinations. Some of the important conditions detected were Pulmonary TB—37 (2.1%), respiratory conditions—41 (2.2%), High BP—42 (2.3%), other cardio-vascular conditions—12 (0.7%), Glycosuria—35 (2.0%), Hydroceles—15 (0.8%), Hernia—11 (0.6%).

**Follow-up Work:**

26. One hundred and fifty-three long absence cases were followed up at Empress Mills. These comprised of 24 injuries on work, 20 gastro-intestinal tract, 18 fever cases, 14 pulmonary TB, 12 skin diseases, 11 respiratory conditions, 8 surgical conditions, one cardio-vascular, one neurosis and 44 other medical conditions. Three other cases of cardiac emergencies among the supervisory staff who were admitted to an ICC Unit in a local hospital were also followed-up. All of them recovered. A case of cerebral stroke which was also hospitalised recovered but had residual aphasia (loss of speech). A case of diabetes in a canteen worker and a case of bilateral gynaecomastia (enlargement of male breast) in a young worker were also followed up.

27. At Tata Mills, 473 employees returning after long absence either due to sickness or injury were followed-up during the year, as against 411 in 1973 and 390 in 1972. The above cases consisted of 109 Pulmonary Tuberculosis, 36 respiratory cases, 28 infectious diseases, 92 gastro-intestinal cases, 12 cardio-vascular, 64 fever cases, 39 injuries on work, 4 skin conditions, 5 psychoneurosis, 41 surgical conditions, 4 neurological disorders and 39 other medical conditions. This speaks of the excellent liaison between the Industrial Physician, the Time Office and Departmental Heads and has enabled the Industrial Physician to render assistance to these employees for their treatment and subsequent rehabilitation. A number of hidden TB cases came to light during these examinations which explains higher incidence of the disease at this unit compared to other Textile units (reference Table IV). Other cases followed-up were 19 respiratory, 8 anaemia, 7 High blood pressure, 3 cardio-vascular, 14 glycosuria, 8 gastro-intestinal and 1 nervous system. Respiratory cases comprised of 4 chronic bronchitis, 5 asthma, 9 eosinophilic lung and 1 lung abscess (old). Of the 8 anaemia cases, 4 had hook worm infection, 3 bleeding piles and in one no cause could be determined. Among the 7 High Blood Pressure cases, 3 were atherosclerotic and 4 had essential hypertension. The Industrial Physician also followed-up 22 diabetic cases—17 old and 5 new. Of these, 14 were on oral tablets, 7 on diet and one on insulin. Among the 3 cardio-vascular cases, two had mitral stenosis of whom one underwent surgery and the other is being followed-up. The third was a case of aortic

regurgitation reported last year who continued to remain compensated.

28. The Industrial Physician at Tata Oil Mills, Sewri, followed up 3 new cases of hypertension along with 19 old cases. Other cases followed-up were 10 diabetes (8 old and 2 new), 8 pulmonary TB and an old case of leprosy. All the diabetic cases were on oral tablets. There were 2 cases of myocardial infarction among the supervisors, both of whom had an uneventful recovery. A case with a swallowing difficulty and pain in chest was referred to Tata Memorial Hospital for investigations. No abnormality was detected.

29. The Industrial Physician at Tata Chemicals followed up 5 cases of chronic bronchitis with emphysema and one of diabetes. One more case of diabetes with a fasting blood sugar level of 175 mg and post-prandial level of 308 mg with a blood pressure of 130/90 came to light. Five cases of hypertension were referred to the hospital for further treatment. Fiftysix employees with visual defects—16 myopia, 15 pressbiopia, 6 corneal opacity, 4 incipient cataract and 15 hypermetropia, were followed up. Three cases of non-occupational dermatitis, one from Instrument Department, a second from BHC Plant and the third from Workshop were followed up. All these cases improved on treatment.

30. The above officer maintained data in respect of gain and loss in weight observed during 472 periodic examinations carried out by him during the year. 212 (44.9%) of the examinees gained in weight, 198 (41.9%) lost in weight and the remaining 62 (13.2%) were stationary. In the weight-loss group 7 had lost weight between 4 to 6 kgs. and 5 over 6 kgs. They were investigated to find out the underlying cause. No definite cause could be established except in four cases two of which had chronic bronchitis with emphysema, one had diabetes and one hyperacidity. Details in respect of gain and loss in weight are given below:

Weight	Gain	Loss
Below 2 kg.	109	128
2—4 kg.	62	58
4—6 kg.	18	7
6 kgs. and above	23	5
	212	198

31. At Bhira 2 TB cases were followed-up. One TB case was transferred to other Division and the second was

under treatment at the end of the year. At Bhivpuri, 2 cases of Pulmonary TB, 3 of hypertension and 2 of coronary thrombosis were followed-up. One of the coronary cases had to be rehabilitated on an alternate job. All these cases were under control and on duty. At their Kalyan division 12 cases of hypertension, 2 of cardiac ischaemia, 2 of diabetes and 2 of Pulmonary TB were followed-up. All these were on duty and were kept under regular surveillance. At Khopoli 5 TB cases were followed-up, one of which retired, another was transferred to other Division and in the remaining 3 the disease was arrested. The Medical Officer at Trombay followed-up 41 cases which consisted of 3 diabetes, 3 hypertension, 4 heart cases, 5 each of hypercholesterolaemia, dysentery and bronchitis, 8 eosinophilia, 4 intestinal parasites, 2 skin diseases and one each of hernia and hydrocele.

32. At Voltas, 30 drivers were examined and followed-up. Eighteen of them had normal vision, 10 needed glasses, one who had poor vision was declared unfit and the last one with a slightly raised blood pressure was kept under treatment. Out of the 15 forklift operators who were also examined, 13 were healthy, one was in need of glasses and one who had raised blood pressure was given necessary treatment. The Shot Blast operators had their annual x-ray examination in addition to routine examination. No abnormality was detected among them.

#### Retirement on Medical Grounds:

33. Forty-seven employees retired on medical grounds during the year. These consisted of one from Advance Mills, 23 from Empress, 12 from Svadeshi, 9 from Tata Mills and one each from Tata Oil Mills, Sewri, and Tata Chemicals. Main causes for retirement were general debility 12, pulmonary TB 6, respiratory conditions 7, malignancy 4, cardio-vascular conditions 4, eye diseases 5, other causes 9.

#### Occupational Diseases:

34. The Industrial Physicians at the 4 Textile units kept under surveillance old Byssinosis cases. One case of Byssinosis in Advance Mills left service during the year. At Empress Mills, 29 old cases and 5 new cases were followed-up during the year. Of these two were superannuated and one resigned. At Tata Mills, 28 old cases were followed-up. Old cases of calosities on palms and fingers among the bale carriers and navganis were kept under surveillance. At Empress Mills, one case of allergic dermatitis was observed in the Printing Department. As the employee was engaged in colour preparation work, he was given an alternate job in the same Department

where he had not to handle any colour. He was advised to use barrier cream for some time.

35. At Tata Oil Mills, Sewri, cases of mild skin irritation among those exposed to detergent dust were observed during the periodic check-up. Condition was arrested by persuading the workers to use barrier cream and protective appliances provided by the Company. An interesting case of contact dermatitis bringing out a need for proper record keeping and prior consultation with the medical department was reported from Tata Oil Mills, Cochin. A Soap Plant Worker transferred to an alternate job a year ago was posted once again to the Soap Plant. This happened because of a general reallocation of workers. Within a couple of days of his work in the Soap Plant, he started getting itching and redness over his forearm. Symptoms disappeared as soon as the affected worker was re-transferred to an alternate job. One more case of allergic dermatitis arising from contact with lubricating oil was observed in a Soap Plant worker. His symptoms disappeared after his transfer to alternate job.

36. Occurrence of skin affections (oil acne) from among those exposed to cutting oils was reported from TELCO, Poona. The lesions were mostly on the dorsal aspect of the arms, forearms and hands. A few were affected on the thighs in front. The Assistant Industrial Health Officer of the Department was deputed to study the problem and recommendations were made for provision of adequate washing facilities to improve the personal hygiene of the workers, provision of oil proof aprons so that the oil does not affect the clothing underneath, use of barrier cream, improving the housekeeping and education of the workers in respect of personal hygiene, changing the oil at regular intervals, improving the filtration process and medical surveillance of the exposed workers. Most of the exposed workers improved with treatment and with adoption of measures recommended. Two workers in whom the condition persisted were transferred to other Departments. These are being followed-up and are showing improvement.

#### Infectious Diseases:

37. TUBERCULOSIS: Table IV gives details in respect of Pulmonary TB cases. Owing to difficulties involved in gathering particulars from the E.S.I. Doctors who treat these cases, information given under this table cannot be regarded as complete, except at Tata Chemicals and Tata Electric Companies where all cases are treated at the Company's hospital/dispensaries. During the year Empress Mills introduced a scheme for supplying vitamin tablets to TB patients with a view to hastening their recovery and cutting down absenteeism. The scheme was

initially restricted to 50 patients, but gradually many more cases were registered. A follow-up done every 3 months to find out the impact of the scheme revealed that with only a nominal expenditure it had enabled all the beneficiaries to be on work.

38. At Tata Chemicals, while the number of new cases increased from 7 to 10, there was an appreciable drop in the relapse cases i.e. from 17 to 7. The practice of issuing anti-TB drugs to these cases from the In-Plant Clinic enabled the industrial Physician at this factory to exercise better supervision and control on these cases. In between 5 Divisions of Tata Electric, 5 new cases and 2 relapse cases came to light.

39. LEPROSY: At Empress Mills 20 old cases and 2 new cases were followed up, of whom two were superannuated. At Svadeshi Mills, 11 old cases were followed-up. At Tata Mills 14 old cases along with one new case were followed up during the year. Two of these were in an infective stage and the remaining 13 were non-infective and on duty. At Tata Oil Mills, Sewri, one old infectious case of leprosy continued to be away from duty during the year. At Bhira Division of Tata Electric, one old infective case became non-infective and resumed duties whereas at Bhivpuri one continued to be off work. No new case was reported from Tata Oil Mills, Cochin, and Tata Chemicals.

40. OTHER DISEASES: Thirty-one cases of other infectious diseases were reported among employees between 3 Textile Mills and two Oil Mills. These consisted of 9 infective hepatitis, 8 chicken pox, 4 enteric fever, 4 mumps and 6 leprosy. Twenty-seven cases were observed among the dependents comprising of 3 measles, 2 chicken pox, 8 mumps, 4 whooping cough, 2 infective hepatitis, 6 enteric fever and 2 leprosy. The Medical Officers at Bhivpuri, Khopoli and Trombay Divisions reported a total of 14 infective hepatitis cases—9 at Bhivpuri, 3 at Khopoli and 2 at Trombay. Among the dependents and outsiders taking treatment at 5 Divisions of Tata Electric Company, 26 cases of measles, 63 chicken pox, 39 mumps, 23 infective hepatitis, 10 whooping cough and 2 enteric fever were reported.

#### Preventive Immunisation:

41. Table V gives details in respect of preventive immunisations carried out during the year at different units. Smallpox, cholera and typhoid inoculations are carried out with the help of the local public health bodies as and when necessary. Efforts were also made to cover as many employees as possible under tetanus immunisation programme which is voluntary. Figures in respect of

employees fully immunised under this programme are given below:—

	Emp. Pop-ulation	No.	TATA CHEMICALS:	Emp. Pop-ulation	No.
ADVANCE	3595	333		2800	2427
EMPRESS	8718	532	BHIRA	148	131
SVADESHI	4367	1850	BHIVPURI	155	148
TATA	5460	N.A.	KALYAN	274	262
TATA OIL, SEWRI:	1308	347	KHOPOLI	220	168
INDUSTRIAL PERFUMES:	137	45	TROMBAY	553	230
TATA OIL, COCHIN:	1087	718	VOLTAS	2687	1669

42. At BHIRA Division of Tata Electric, cholera and smallpox vaccinations were undertaken for 2500 temporary workers engaged on alternate approach channel work at a nearby Camp at Davdi. Similar programme was also undertaken at Dongarwadi and Mulshi. Twenty-nine children received the first dose of polio vaccine, 30 second dose, 33 3rd dose and 2 children received booster doses. At BHIVPURI, triple antigen and polio immunisation were given to children in the Camp and also for children of contraceptors from neighbouring villages participating in the Rural Family Planning project. At KHOPOLI a BCG vaccination programme was arranged with the help of Rotary Club of North Bombay and Zilla Parishad, Kolaba, when 94 children received this vaccine. Twenty-five children received oral polio vaccine through the local Lion's club.

#### Public Health Activities:

43. Public Health Activities on an extensive scale were required to be carried out at Tata Chemicals and Tata Electric Divisions. In other units assistance of local Public Health bodies was sought for anti-mosquito and anti-larval campaigns, testing of drinking water, disinfection of tanks and other conservancy work. Both the Industrial Physician and the Safety Officer worked in close cooperation with each other for creating sanitary and healthy conditions. A filaria survey was carried out at Empress Mills with the help of Filaria Prevention Unit of local Municipal Corporation. Fifty blood slides were collected. All were negative for micro filaria.



44. At Tata Chemicals, the Sanitation and Conservancy work in the factory was looked after by a full time sanitary inspector. Activities in respect of the township were undertaken by the Health and Sanitation Department under technical guidance from the Senior Medical Officer and with assistance from a special committee appointed for the purpose. These consisted of anti-mosquito work, fly control, inspection of vegetable markets and food stalls, catering establishments, slaughter houses, destruction of food found unfit for human consumption, disposal of refuse, vaccinations, water supply, smallpox vaccination etc. Records of births and deaths were maintained and every opportunity was availed of for carrying out health education propaganda among the employees as well as the residents of the township. During the year 1158 blood smears from fever cases were taken by the government health team for evidence of Malaria. Eight malaria cases were observed, two of which were treated at the Company's hospital and six by the government malaria department.

45. Coinciding with WHO Day on 7th April, Tata Chemicals continued with its practice of holding a week long celebration programme based on the theme selected by WHO. Main features of the programme were a Baby Show, Clean House Competition, Elocution Competition for ladies and gents, inter-school playlet/skit competition, screening of documentary films on health education, public meeting and a prize distribution function. The Baby show was organised in 4 age groups viz. upto 6 months, 6 to 12 months, 1 to 2 years and 2 to 3 years and consisted of babies from the town area as well as the workers' areas. Prizes were given in each group and Dr. P. V. Thacker's Champion Baby Shield was awarded to a baby in the age group of 2 to 3 years. A Clean House competition was organised for a period of 3 days. The elocution competition for men attracted 17 entries whereas the one for ladies 14 entries. Three teams from kindergarten primary school enacted attractive skits on health subjects. Ten documentary films obtained from the British and Canadian High Commissions were screened at various places in the township. The public meeting was presided over by Shri P.V.S. Manyam, Director and General Manager, who also gave away the prizes to winners of various competitions. Mr. Manyam in his speech appealed to the residents of the township for maintaining a high standard of cleanliness.

46. The activities at the Tata Electric Divisions consisted of anti-malaria and anti-mosquito campaign, infection of tanks, chlorination of water, disposal of refuse, cleaning of roads and compounds and maintaining records of births and deaths etc. At Bhira 114 malaria cases mainly from the neighbouring villages were reported. Intensive anti-malaria work was undertaken in these villages with

the help of nearby Primary Health Centre. Bhivpuri Division reported 54 malaria cases. At all the Camps the Medical Officers availed of every opportunity to carry out health education work. In this they were assisted by the midwives posted at Bhira and Bhivpuri Divisions. Recruitment of the 2500 temporary workers for the approach channel work at Bhira posed Health and Sanitation problems which were adequately tackled.

#### **Training in First Aid and Artificial Respiration:**

47. Refresher classes were continued to be held for those already trained in First Aid and Artificial Respiration techniques. This programme received special attention and was undertaken on an extensive scale at all Tata Electric Divisions for those engaged on transmission lines. Artificial Respiration classes were conducted at all the power houses on a regular basis and the importance of this training was emphasised during safety courses in Hindi organised for the workers from time to time. At Bhivpuri, one shift engineer who volunteered to be a safety steward organised weekly classes in Artificial Respiration. Four candidates from Khopoli Division appeared for St. John's Ambulance Association's first aid certificate examination and were declared successful.

#### **Sickness Absenteeism:**

48. "It seems paradoxical that although the last two decades have brought a higher level of prosperity in many countries and commendable advance in curative and preventive medicine, sickness absence has increased considerably". This is a sickness of the society which is not confined only to the industrial workers. One is also inclined to feel that the tolerance threshold of people for symptoms and pain is going down for which the increased tempo of life under the modern industry could perhaps be blamed.

49. Table VI gives sickness absenteeism statistics in respect of 8 units for past 3 years and 2 units for one year. Owing to a large number of workers being out of E.S.I. Scheme during the year as mentioned earlier, there have been fluctuations in various sickness absenteeism indices. Frequency Rate (spells per 1000 workers) showed an increase in 4 units out of 8 viz. Tata Oil Mills, Sewri and 3 Divisions of Tata Electric Companies viz. Bhira, Kalyan and Khopoli. It showed decrease at Empress Mills, Tata Oil Mills, Cochin, Bhivpuri and Trombay. Severity Rate (average days lost per spell) showed an increase at three units viz. Tata Oil Mills, Sewri, Bhira and Khopoli. This also affected the Disability Rate (days lost per worker) at these units. The Severity Rate showed decrease at Empress Mills, Bhivpuri and Kalyan. In respect of Disability Rate also there was a downward trend at other units. Kalyan Division of Tata Electric showed the maximum decline.

## **CHAPTER III.**

### **ENVIRONMENTAL HYGIENE**

50. Protection of MEN behind the MACHINES from Health and Safety hazards needs a constant vigil. Following is a brief resume of the Environmental Hygiene Programme undertaken at the factories consisting of Industrial Hygiene Surveys, Housekeeping, Fire Prevention and Accident Prevention.

#### **Industrial Hygiene Surveys:**

51. These are undertaken jointly by the Safety Officer and the Industrial Physician with a view to studying Health and Safety hazards inherent in the machines, processes or environments. The Department has devised a proforma for carrying out such surveys under which particulars in respect of the number of persons employed, raw materials used, bi-products obtained, ventilation and exhaust arrangements, illumination, provision and use of safety appliances etc. are gathered. The co-operation of the supervisors is also sought at every stage of the survey. Medical examinations of the exposed workers, if necessary, are carried out and the data recorded. Suggestions for improvements in the working environments are also made during the deliberations of the Safety Committee and are followed up by the Safety Officer.

52. At EMPRESS MILLS a Metallic Carding machine was surveyed in Mill No. 1. Recommendations made pertained to efficient interlocking arrangements for the stripping doors and guarding of moving belts and doffer rollers. A complaint of HCL fume nuisance at Mill No. 4 was traced to some unstoppered acid jars lying in the Department. This was attended to. At SVADESHI MILLS 8 exhaust fans were provided in the Spinning Department to reduce the heat and a special underground ducting arrangement with a big fan was provided to minimise heat created by the motors on the Spinning frames. In the Processing Department protective appliances were provided to workers.

53. The Safety Officer of TATA OIL MILLS, SEWRI, carried out a survey of the Protein Isolate Plant. Recommendations pertained to provision of new drum drier with accessories, guards, platforms with railings and efficient exhaust arrangements to minimise heat nuisance. Limit switches were provided for the operation of the hoist cage in the sales godown. Heavy duty canvas gloves with asbestos palms were issued to the operatives for safe handling of CMA and melting of wax in the Bonus Syndet Plant. A Bleacher and an Air Compressor unit were installed in the Hydrogenation Plant and all the exposed drives were guarded. In the process of shifting of Milpro Section to a new site, suggestions were made for guarding of equipment, provision of platforms etc.

54. At TATA CHEMICALS a bag filter unit was commissioned for the dust elimination system in the kiln area. Lagging the M. S. piping with glasswool covered by asbestos helped to reduce the noise level. It has also been decided to try out wet method of dust elimination in the Coal Handling Plant. Various suggestions for reducing acid fume nuisance in the BHC Plant and also for disposal/utilisation of waste chlorine are being explored. An emergency escape ladder was also provided in this Plant. A strict vigilance was exercised to see that gas cylinders without valve caps were not transported inside the works area.

55. At TATA ELECTRIC noise level estimations were carried out at the Bhira Generating Station. It was gathered that the noise level at certain locations in the turbine room was rather high though the same in the control room was within the permissible limit. Employees concerned were provided with ear muffs. Although initially there was some resistance to their use on various grounds the operatives have now got adjusted to working with the muffs on. The ear muffs were also provided to turbine attendants, trolley drivers and cleaners at Bhivpuri Generating Station. At Trombay Thermal Station ventilation in the boiler rooms was improved through installation of louvers. New platforms and ladders were provided for reaching electrostatic precipitator hoppers. Plant machinery was painted as per the colour scheme.

56. At VOLTAS, Thana, 2 environmental surveys, one for estimation of Trichlorethylene and the other in respect of graphite dust were carried out during the year. Air samples in respect of Trichlorethylene, an organic solvent, used in different processes were collected at different times of the day over a period. Maximum concentration detected was 37.27 ppm which was well within the permissible limit of 100 per ppm. Air samples were also drawn during the cleaning operation of the degreasing tank when the levels are likely to be higher. In the other survey, air samples were drawn from the mould manufacturing section of the DDB Plant for estimation of graphite dust. Here also the concentration of graphite dust was found to be well within the permissible limit of 15 mpp cf. All the exposed workers are kept under medical supervision and x-rayed periodically. Attention is also paid to exhaust arrangements.

#### **Housekeeping:**

57. Housekeeping is a major factor to be reckoned with for bringing down the accident rate. Only an efficient

supervision and vigilance on the part of all concerned can help in achieving this objective. The Safety Officers at all the units paid special attention to Housekeeping and arranged to remove unwanted material. They also impressed on the supervisors and workers to store things properly. Attention was paid to keep the alleys and floors in a clean and serviceable condition. Spillages of water and oil were attended to promptly.

58. At ADVANCE, mastic flooring was provided near the door between the Mixing and Blow Room, Ring Frame, Winding, Dyeing, Bleaching and Printing Departments. As a result there was a substantial improvement in Housekeeping accidents in the last two Departments. The road on southern side of the Weaving Department was asphalted. In Screen Printing Department, funnels were provided at the end of the tables to collect waste water and additional drainage arrangements were made for its disposal. At EMPRESS, tilting dust bins were provided in the Dyeing Department. Folding machines in Central Folding Department were realigned so as to keep the alleys clear of obstruction. To prevent damage to flooring, smooth round wheels were provided on trolleys instead of gear wheels. At TATA OIL MILLS, SEWRI, activities in this direction consisted of efficient handling and pumping of oil and prompt removal of spilled oil, other materials and washing of the roads to keep these clean. At TATA OIL MILLS, COCHIN, washing facilities were provided for workers near Solvent Extraction Plant. Flooring in Laundry Soap Section was renovated with stilan tiles. Wire netting was fixed on windows in Printing and Packaging Sections of the Soap Plant to discourage the practice of throwing scrap papers outside the plant. In a Housekeeping contest organised at TATA MILLS, Weaving Department was adjudged the winner. Table below gives percentage incidence of Housekeeping accidents at various units:—

	1973	1974
ADVANCE	29.6	26.93
EMPRESS	26.9	27.49
SVADESHI	47.6	54.35
TATA	35.0	29.52
TATA OIL MILLS, SEWRI	36.6	48.89
TATA OIL MILLS, COCHIN	53.4	50.69
TATA CHEMICALS	20.6	18.93
TELCO, POONA	—	12.84
VOLTAS, THANA	—	22.48

#### Fire Prevention:

59. Routine activities like training of staff of Watch and Ward Department and of selected batches of workers,

holding of mock demonstrations and fire drills, periodic inspection and replenishment of equipment and consultation with specialist firms for advice on latest equipment etc. were continued at all the units. The ADVANCE Mills trained 20 new recruits of Watch and Ward Department in fire fighting technique. The SVADESHI Mills maintained a special fire fighting room for preventing fires in the Blow Room Department. At TATA Mills, a Refresher Course in use of various types of fire extinguishers was held for the benefit of supervisors and workers. At TATA CHEMICALS, 3 new sea water hydrant connections were provided near the fire station and in the Process House, and a hose reel connection was given for new J. T. Boilers. At Bhivpuri, steps were taken to isolate the transformers by constructing brick walls around for prevention of possible oil fires. Cable trenches were periodically inspected. A Seminar was organised when lectures on the subject of electric fires and first aid after burns were delivered by the Maintenance Foreman and the Senior Medical Officer. A live fire fighting drill was also arranged. Khopoli Division observed a Fire Prevention Fortnight. Talks and fire fighting demonstrations were also held during the safety training courses organised by the Central Safety Cell.

#### Safety Performance:

60. Table No. VII gives statistics of accidents in 4 Textile Mills, 2 Oil Mills, Tata Chemicals, Tata Electric, TELCO, Poona, TELCO, Jamshedpur, Tata Yodogawa, Voltas, Thana and Tata-Robins-Fraser. There were fifteen cases of permanent partial disability besides 13 such injuries at TELCO, Jamshedpur, one at Tata Yodogawa, 3 at Voltas, Thana, and one at Tata-Robins-Fraser. There were 4 fatalities in all—one in Tata Chemicals, 2 in TELCO, Jamshedpur, and one in Tata Yodogawa. The frequency rate of accidents at all the units mentioned in the table showed an improvement during the year except for Tata Chemicals which showed a marginal deterioration. The Empress Mills showed the maximum improvement. The frequency rate at this unit came down to 24.17 from 54.27 during the previous year showing an improvement of 55.46%. The concerted efforts put in by Management at this Mill, coupled with an appointment of an additional Safety Officer who undertook an extensive educative propaganda, helped to bring about this improvement. The number of total injuries has also gone down at all the units except at Tata Chemicals. The improvement was significant in respect of Advance Mills, Tata Mills and Tata Oil Mills, Sewri.

61. NORM: A year to year comparison however does not convey a true picture of Safety Performance. There has to be a sustained improvement over a period of years.

For such an evaluation, we have since 1968 adopted a practice of devising a NORM for each unit. This norm is an arithmetical average of Frequency Rate of accidents

	Employee Population	F.R. 1967	Norm	F.R. 1974	Imp./Det.	Total days lost	Days lost per injury
ADVANCE	3595	19.40	9.37	4.27	+ 54.42	3737	113.24
EMPRESS	7338	37.55	37.55	24.17	+ 35.63	6621	15.73
SVADESHI	4367	21.45	21.45	26.50	- 23.54	4182	14.47
TATA	5460	20.61	15.76	14.31	+ 9.20	3131	17.20
TATA OIL, SEWRI	1308	12.99	10.82	3.23	+ 70.14	182	18.2
TATA OIL, COCHIN	1087	16.03	15.43	10.97	+ 28.90	407	16.96
TATA CHEMICALS	2800	15.92	13.18	7.26	+ 41.12	7400	142.3
TATA ELECTRIC	3330	12.49	9.74 <sup>3</sup>	7.57	+ 22.28	709	10.5
VOLTAS, THANA	2687	22.25	20.42 <sup>3</sup>	16.75	+ 17.97	1447	15.07
TELCO, POONA	4918	80.18	64.72 <sup>4</sup>	49.29	+ 23.85	3473	7.09

N.B.: (1) F.R. 1972; (2) F.R. 1973; (3) Based on 1972; (4) Based on 1973

62. ACCIDENT-FREE PERIOD: Accident-free period worked by some of the units was as under:—

AHMEDABAD	12,27,124	58 days
EMPRESS	3,45,171	7 days
SVADESHI	1,05,335	4 days
TATA	4,00,523	10 days
TATA OIL, SEWRI	7,97,781	100 days
TATA OIL, COCHIN	3,67,721	60 days
TATA CHEMICALS	5,21,108	28 days

63. ACCIDENT ANALYSIS: Table VIII gives comparative statistics of accidents for a period of 2 years analysed according to causes in respect of seven units and for one year in respect of Tata Yodogawa. Incidence of Housekeeping accidents in these units has been discussed earlier. The position in respect of other important causes viz. material handling, machine injuries, hand tool injuries and eye injuries is shown under items 9, 11, 12, 20 and 21 of the above table. Accidents due to material handling reduced considerably at Advance, Empress and Svadeshi Mills as also at Tata Chemicals and Tata Oil Mills, Sewri, whereas at Tata Mills and Tata Oil Mills, Cochin, these went up slightly. Machine injuries showed reduction in only 2 units viz. Advance and Tata Mills. Hand tool injuries showed reduction in all the 4 Textile Mills and Tata Oil Mills, Sewri. Eye injuries increased in all the units except at Svadeshi Mills. Incidence of exposure to gassing due to chlorine at Tata Chemicals remained more or less the same. At Advance Mills more efforts were put in to reduce accidents due to burns and scalds by periodic inspection of steam pipes running at floor level which was covered with wooden planks as well as those overhead. As a result, these accidents reduced from 64 in 1972 to 27 in 1974. There was also an appreciable reduction in accidents under this heading at Tata Mills whereas Empress Mills and Tata Chemicals showed deterioration.

in each unit from 1967 onwards (base year). The following table gives a comprehensive picture of safety performance based on the above system.

	Spindles and Bobbins	Loom-lever	Packing Stick	Shuttle	
AHMEDABAD:	1973	2.3	16.7	17.8	13.6
	1974	1.3	10.6	18.9	24.8
EMPRESS:	1973	3.7	33.1	115.0	162.6
	1974	3.9	42.2	80.8	159.1
SVADESHI:	1973	3.5	49.8	27.0	75.6
	1974	2.9	37.1	26.5	57.49
TATA	1973	3.4	15.4	27.7	129.4
	1974	2.6	10.4	19.6	122.9

#### Safety Committees:

65. Safety Committees with representatives from the Management and employees functioned at all the units. Some of the units had departmental safety sub-committees also. Tata Electric Company has a Central Safety Cell located at Trombay and a sub-Cell at each Division. The members of the committee were changed from time to time with a view to inviting broader participation. While the Safety Officer acted as a Secretary the Industrial Physician was an ex-officio member. Meetings of these Committees were also attended by the Officers of the Department from time to time. Besides discussing the accidents, the committee also took rounds in the factory

to spot hazards and investigate accidents and suggest remedial measures. Special meetings of the Committees were held on the National Safety Day. Recommendations made by the Safety Committee were followed up and a resume of the same is given below.

66. At ADVANCE MILLS a special meeting of the Committee was held to draw the attention of the supervisors to a deteriorating safety situation in the first quarter of 1974. Another such meeting was convened during the year to discuss the increasing number of accidents in Card Comber, Speed Frame, Loom Shed and Printing Departments at which the Safety Officer drew the attention of the supervisors to 3 near fatal accidents from electric shock. The General Manager impressed on the supervisors to immediately inform the Chief Engineer of any electrical fault in the Departments. Instances of some workers deliberately getting injured with a view to getting handsome compensation from E.S.I. Scheme were discussed and disciplinary action against the offenders recommended. Other improvements effected in the Mills were installation of guards on Crank and Tappet wheels, pulleys and V-belts of looms, providing railings on steam pit near the drying range, a platform near the ramp of the new Dyeing shed, and lengthening of ramp in Cheese Dyeing and also between the Loom Shed Nos. 2 and 3.

67. At EMPRESS MILLS improvements effected were providing (i) Guards on the Motor pulley of the axial flow condenser and hopper feeder of blow room in Mill No. 5, (ii) Rubber mattings on all the electrical panels in Mill No. 5, (iii) Guards on the intake nip of the fluted roller of the Opener Scutcher, V-belt drive of Hopper bale breaker in the Spinning Department in Mill No. 1 and on the crank and tappet wheels in Mill No. 5, (iv) Shortening of weft hammers in Loom Shed of Mill No. 5, (v) Guards on old compressor machine of Famatex in Mill No. 4.

68. At TATA OIL MILLS, SEWRI, steps were taken in various sections of the Detergent Plants to minimise the dust nuisance through modifications in the Processing Equipment and by improving ventilation. Push button switches of the wrapping machine were shifted away from the moving parts of the machinery. Safety shoes were provided to the operatives of the gas plant and safety belts in the Magic Plant, Hydrogenation Plant and Solvent Extraction Plant. At the recommendation of the Medical Inspector of Factories, 2 sets of "Kabacet" open circuit self-contained breathing apparatus along with oxygen cylinders were provided in the Hydrogenation and Solvent Extraction Plants, an additional staircase in the Hydrogenation Plant and modifications to the existing platform in Sulphonating Unit.

69. At TATA OIL MILLS, COCHIN (i) Exhaust fans were installed on the crutcher platform in the Laundry Soap section and in the Bagging Section of Solvent Extraction Plant, (ii) Erecting a Platform on the top of the pipelines on which RMSS operators used to stand for operating oil pump switches and (iii) installing a ventilator in the Soda Ash Godown. Plastic aprons were supplied to operators in the Toiletry Section to prevent injuries from breakage of bottles while seaming.

70. At TATA CHEMICALS a sea water scrubber for absorbing exhaust vapours in HCL Plant was installed in one unit. The chimneys in the H<sub>2</sub>S Plant furnaces were raised to a safe height of about 100'. Some push button switches in the Boiler House area were relocated for safe operation. Safe working platforms were provided for newly erected machineries in the Process House area. Toeboard rails were provided around distiller still flash cooler unit. A gravity conveyor for safe handling of bottles from bromine bottling tables to storage area was installed. Hostallon pipes were used in place of MS pipes to carry waste chlorine to avoid leakages due to corrosion. A new platform was provided with railings and a safe approach ladder for SSD tank of Cell Brine Refinery.

71. At TATA ELECTRIC the Central Safety Cell met regularly to discuss day to day safety problems. A brief resume of the activities undertaken is given under Industrial Hygiene Survey and Safety Training. The Cell also published a marathi edition of the Company's Safety Manual, standardised safety equipment and prepared background for introducing a Safety Contest. At Voltas, Thana, a Central Safety Committee comprising of five members from Management and 5 from Employees' Union with a Senior Manager as a Chairman, met 7 times during the year. Besides this, 9 shop level Committees with representatives from the Employees' Union met from time to time to discuss safety matters and to investigate accidents. 35 such meetings were held during the year. Important recommendations were (i) Provision of Crane ladders with side rails and wider steps, (ii) To carry out noise level estimations and illumination and ventilation studies in the new painting booth, (iii) To devise a procedure for testing and inspection of chains and lifting tackles and for testing of shells of condensers and chillers by hydrostatic method, (iv) To study environmental hazards in DD Bits section, (v) Education in safe methods of loading of refrigerators in trucks. At TELCO, Poona, the Safety Officer took steps to standardise accident reporting procedures and proforma, standardisation of protective appliances used at the factory and compilation of accident statistics in a systematic manner with a view to introducing a safety

contest. Separate notice boards for publishing safety activities, posters etc. were installed in every division.

#### Safety Competitions:

72. The Inter-Departmental Safety Contest introduced since 1969 at the first 7 units (Ref. Table VII) has proved to be popular. Under this Scheme each Department in a factory is given a target of working for a specified number of accident free days which are determined on the basis of the previous accident experience of the Department concerned. On completion of the first target the Department moves on to the 2nd and subsequent targets with varying percentage increase in the number of days. It is a

Units	No. of Depts.	Targets Completed during the Year								Total Targets
		1st	2nd	3rd	4th	5th	6th	7th	8th	
ADVANCE	14	—	—	—	3	2	—	2	1	8
EMPRESS	31	3	3	7	5	5	1	—	—	24
SVADESHI	22	—	—	—	—	—	—	—	—	NIL
TATA	19	—	—	—	1	—	—	—	—	1
TATA OIL, SEWRI	7	—	1	3	—	—	—	—	—	4
TATA OIL, COCHIN	29 Groups	—	14	9	8	—	—	—	—	31
TATA CHEMICALS	33 Sections	1	2	4	3	—	—	—	—	10

73. In the INTER-MILL TEXTILE SAFETY CONTEST organised since 1968 for the 4 Textile Units, Advance Mills was once again the winner of the Safety Shield for showing maximum percentage improvement (54.42%) in its frequency rate over its norm. This is the 6th year in succession that the Mill is the recipient of the Shield. Further, both the cash awards—Rs. 750/- for Spinning and Weaving Departments and Rs. 500/- for the rest of the Departments also went to the Advance Mills.

#### Safety Awards:

74. Once again Advance Mills maintained its unbeaten record of being the recipient of National Safety Awards organised by the Government of India for the 5th year in succession. For 1974 the Mills were declared runners up under Scheme II and III i.e. for the lowest accident Frequency Rate and for working longest accident-free period. This is indeed a unique achievement for any factory in the country. Two Divisions of Tata Electric Companies viz. Dharavi and Carnac were awarded certificates of merit for having achieved improvement in their Safety Performance under Scheme II—lowest frequency rate in a competition organised by the Council of Industrial Safety, Bombay. The certificates were received by Shri P. M. Wagh, Senior Superintendent at the hands of Mr. S. P. Mandelia, President of the Council

happy augury that at Advance Mills the Blow Room Department completed 4 targets of 508 days each and the Folding Press Department 5 targets of 383 days each consecutively, thus having no lost-time accident for a period of 2032 and 1915 days respectively aggregating to more than 6 and 5 years. Similarly at Tata Chemicals, Instrument Department, B.H.C. Plant and Drum House worked for 1400, 1103 and 1350 days respectively without an accident. Total numbers of targets completed at different units are given in table below. Special efforts put in by Empress Mills during the year for completing the targets and thus improving its performance can be readily seen.

during its 15th Annual General Meeting. This is the second year in succession that the Carnac Division has received this certificate.

#### Safety Slogan and Poster Contest:

75. In a Safety Slogan Competition organised by the Safety First Association of India Mr. M. R. Marathe, Safety Officer, Empress Mills was awarded a merit certificate. Mr. C. K. Thakar, an artist from the Safety Department of Tata Chemicals, Mithapur, bagged the 2nd prize of Rs. 200/- and a consolation prize of Rs. 50/- for his 2 entries submitted in a Poster Contest organised by Gujarat Chapter of National Safety Council. A Safety Poster Competition was organised at TELCO, Poona during the National Safety Day Programme when Mr. S. G. Sahasrabudhe, Assistant Engineer (Central Planning), Mr. S. M. Kelkar a trainee in the Training Division and Mr. B. V. Bopardikar, librarian received the 1st, 2nd and 3rd Prizes of Rs. 100/-, Rs. 50/- and Rs. 25/- respectively. The prizes were distributed by the Senior Deputy General Manager at a specially arranged function. At Voltas, Thana a Safety Slogan Contest was organised on the occasion of the National Safety Day. Ninety-one employees participated with a total of 379 entries in English, Hindi and Marathi. Besides merit prizes, consolation prizes were also given to 8 participants.

### Safety Training:

76. Workers' Education classes are the ideal media for training employees in Job Safety. The Industrial Physicians and Safety Officers actively associated themselves in these activities by giving talks on subjects of Health, Safety, Family Planning etc. Induction in Job Safety for new entrants to the supervisory cadre was continued. The Training Officers wherever they existed organised safety training courses periodically. Educative propaganda through House Bulletins, special bulletins on Safety and group talks to employees were the other educational activities.

77. At Empress Mills, 4 supervisors and the Junior Industrial Physician and Safety Officer were deputed for an Industrial Safety Engineering Course conducted jointly by the Vidarbha Productivity Council and the National Safety Council of India. The Safety Officer of this Mill conducted 70 classes for 'on the spot' job safety training to 625 workers of Loom Shed of Mill No. 5. The Siders and Doffers were also taught the safe method of stopping a running bobbin so as to avoid injuries from broken shields. At Tata Oil Mills, Sewri, some of the Senior Operatives were deputed to Safety Training Courses in Hindi organised by the Central Labour Institute, Bombay. At Tata Oil Mills, Cochin, Mr. V. Benjers, Training Officer of the Company organised Training Courses during which 76 employees in 6 batches were trained. These included the management staff, supervisors and workers. The Safety Committee members visited the Cochin factory of FACT to study the safety activities carried out by them. Tata Chemicals, Mithapur, have so far trained 1200 workers in job safety under the Workers' Education Programme. Two worker teachers were deputed to a Safety Course conducted by Gujarat Chapter of the National Safety Council. The Company also prepared a Safety Manual during the year.

78. The Central Safety Cell of Tata Electric, under the dynamic leadership of its Chairman, organised 4 Safety Courses for the supervisors and operatives at their Dharavi, Bhivpuri, Parel and Khopoli Divisions. Eighty-eight employees from various Divisions participated in these Courses. Special efforts were made to involve Senior Executives of the Company who addressed the participants during the sessions, signifying management's interest and keenness in promoting Safety. An exhibition on protective appliances was organised during one of the Courses which proved very instructive. A novel safety demonstration dealing with themes of Material Handling and Good Housekeeping was held at Bhira when 12 actual cases of unsafe working methods adopted by employees were presented and correct procedures demonstrated. TELCO, Poona, organised a Training Programme on Industrial Safety for the Shop Superintendents. Inaugurating the programme, Mr. S. Y. Jakatdar, Director and General Manager reiterated Management's policy to look after safety of the employees and added that senior executives should take as much interest in Safety as in Production. The subjects dealt with consisted of (i) Safety and Factories' Act, (ii) Maintaining Safety Interest, (iii) Housekeeping, (iv) Material Handling, (v) Accident causes and dangerous operations, (vi) Safety Programme of the Complex and (vii) Screening of Safety films.

79. At Voltas, Safety Training was imparted to a new batch of Engineer trainees. A need-based training session was conducted for welders and spray painters. A permit system was introduced for the Contractor's men to work in permitted areas with protective equipment. Cyclostyled safety bulletins on different topics were circulated among the employees. Some of the line Managers, supervisors and workers were deputed to Training Courses organised by the Central Labour Institute.

## CHAPTER IV

### MENTAL HYGIENE

80. "Modern mental health considers man in his interplay with his contemporary milieu (from Family and working milieu to economic and ecological milieu) at any given moment. An important task of mental health is therefore to organise the environment in such a way that man can thrive." No amount of monetary gain can help an individual to put in his best for the job unless there is job satisfaction. His performance and productivity depend on his abilities to withstand the stresses and

strains of modern environment, his regular attendance at work and his chances of meeting with an accident on training and development opportunities offered to him. A Mental Health Programme helps to build up a positive state of mind and enables an individual to discharge his day to day duties with satisfaction and prepares him to accept higher responsibilities. Activities narrated below were undertaken to help our clientele to the extent possible.

### Selection and Placement:

81. Pre-employment medical examinations were carried out at all the units to assess the suitability of an individual not merely from the physical health point of view but also to ascertain his abilities and attributes. It is not merely a question of fitting a person in one pigeon hole or the other. Care was exercised in finding out the abilities of a person rather than his disabilities. This, by no means is always an easy task. At times, a person found unsuitable for one job may still be suitable for the other. The Industrial Physicians at the units have always borne this fact in mind while making their recommendations with a view to selecting the right man for the right job.

### Mental First Aid:

82. Periodic Medical Examinations, besides helping in early detection of physical defects, help in locating individuals and groups having mental health problems. Social and personal problems either at work or at home, have a far reaching influence on the behaviour of employees at work. Left to themselves, many such individuals may go into a stage of functional neurosis, which drives them from doctor to doctor. Only a timely mental first aid can help to prevent the situation. Drugs, sweet or bitter, and even injections, may aggravate the situation rather than ameliorating the same. Patient hearing and sympathetic understanding helps, where drugs fail. Success in this direction is not always easy to come by. Nevertheless, Industrial Physicians and Safety Officers in their own humble way availed of every opportunity to give such an aid to workers as and when required.

83. In the above context a reference must be made to the additional medical treatment facilities provided during the year at some of the units. Such facilities at Empress Mills and Tata Chemicals have helped towards a better follow-up of TB Cases and to build up their morale. The Industrial Physicians and Safety Officers at all the units visited the sick and the injured either in Hospitals or in homes whenever required. Such visits helped to boost the morale of the afflicted and to hasten their recovery. As in last year Management of Tata Electric Companies continued their programme of providing Mental Health guidance to the staff and families at the Camps through the help of Indian Council of Mental Hygiene. The social workers from this Institute visited the Camps periodically to screen films on different aspects of Mental Health and to give talks. The Medical Officers and the Welfare Officers of the Camp concerned helped in making the programme popular among employees and their families.

### Induction:

84. For any education or training it is said "Catch them Young". On these lines TAS Probationers who constitute the core for future executive posts are deputed to the Department for induction in Industrial Health Programme. Eleven such probationers were inducted during the year. Besides induction in the Central Department they were also deputed to the factories to see the field work carried out by Industrial Physicians and Safety Officers at the units. The new incumbents for the post of Junior Industrial Physician and Safety Officer at Empress Mills and Safety Officer of TELCO, Poona, were also similarly inducted. At unit level also new entrants to supervisory cadre were similarly inducted.

### Health and Safety Education:

85. As mentioned earlier Industrial Physicians played an active role in imparting Health Education and Safety Officers in the safety aspect of the Job during workers' visit to the dispensary and during their rounds in the factory. The subjects covered were personal hygiene, nutrition, preventive inoculations, family planning, accident prevention, compliance of safety rules, use of protective appliances, safe methods of work etc. Use of workers' education classes, House Bulletins and special functions like WHO Week Celebrations Programme at Tata Chemicals have been referred to under Chapter II. Such functions were also organised at all the Camps of Tata Electric Companies.

### National Safety Day:

86. Celebration of National Safety Day, an important activity in safety education, was organised on 4th March 1974 in a befitting manner by several Tata Units. Safety Banners and Posters were exhibited on the main gate and other conspicuous places. Employees wore safety badges. Holders of badges with lucky numbers were given prizes. Mini Safety Posters were distributed among the workers.

87. At ADVANCE MILLS a special meeting of the supervisory and technical staff was addressed by Mr. P. T. Shah, Chief Inspector of Factories, Gujarat State. The General Manager of the Mill emphasised and reiterated management's policy to treat safety as an integral part of production. Mr. Mody, the Safety-cum-Training Officer, narrated the safety activities undertaken at the Mills and also about winning National Safety Awards for several years in succession. Mr. Shah expressed happiness at the progress made by the Mills and hoped that other Mills in the city will emulate its example. At SVADESHI the programme consisted of a No lost-time accident Campaign for a period of one week. Addressing a special

meeting of the Safety Committee Mr. J. S. Kanga, the then Deputy General Manager, exhorted the supervisors to develop an attitude of mind for better Safety and Housekeeping and for control of waste and damages. A fire fighting demonstration was held on the occasion. At TATA MILLS Mr. F. J. Shroff, Deputy Manager, addressed a gathering of the supervisors and workers. He mentioned that both the Government and the community at large were expecting employers to play an active role for ensuring safety of workers and appealed to the rank and file to help the Mills in fulfilling this objective. The programme at TATA OIL MILLS, SEWRI, and TATA OIL MILLS, COCHIN, consisted of a talk by the Manager concerned to the Departmental Heads. At TATA CHEMICALS, besides a film show the following slogan contributed by an employee of the Costing Department was displayed at prominent places in the factory:—

“Sure you want your dreams come true  
And want to live hundred and happy too  
Fail not to observe Safety First in life  
Either in factory, home or flying kite.  
Teach your children that “Safety is a Must”  
Yes, live by the rules of “Safety First”.

88. At TATA ELECTRIC COMPANIES a fitting programme under the direction of the Central Safety Cell was organised at all the Camps. Camp Superintendents in their address to the staff stressed the importance of safety and dwelt on the need to avoid injuries and consequent human suffering. Film shows were arranged at Bhivpuri, Kalyan and Andhra workshops. Prizes were awarded to winners of a “Safety Quiz” published in the Company’s Safety Bulletin as also for submitting safety suggestions, cartoons etc. At Khopoli, a meeting of ladies in the Camp was arranged when safe methods of using household electrical appliances were demonstrated. A “Spot the Hazard” competition was organised at Andhra workshop. Mr. S. B. Paul of the Workshop was awarded a prize for rendering timely artificial respiration to a victim of an electrical arcing accident. An exhibition of Safety appliances was organised at Trombay and Bhira Divisions. At the latter, prizes were awarded to 6 employees who participated in the safety suggestion scheme.

89. At TELCO, Poona, the Director and General Manager addressed the members of the Safety Committee along with the executive body of the Kamgar Union at a joint meeting, impressing on them the Management’s keenness about Safety at the plant level. Each Divisional Head administered a Safety Pledge to the workers. Voltas organised a Slogan Competition in which 91 employees participated with a total number of 379 entries in English, Hindi and Marathi.

#### Conferences:

90. During the year the Chief Industrial Health Officer attended (i) The XXIV Annual Conference of the Indian Association of Occupational Health (I.A.O.H.) at Bangalore, (ii) A symposium on “Safety As I see it,” organised jointly by the Council of Industrial Safety and National Safety Council at Bombay, (iii) Seminar on “India’s Population Future” organised by the International Institute for Population Studies, Bombay, (iv) Regional Seminar on “Family Planning Services in Industry” at Dandeli, (v) A Seminar on Safety in Textile Industry, (vi) “Seminar on Safety in Chemical Industry” organised by Gujarat Chapter of National Safety Council at Baroda, (vii) National Symposium on Labour and Population Policies, (viii) A meeting of the Central Council of Health and Family Planning and (ix) VOSFP Conference at Bombay. The last three were attended on behalf of the Employers’ Federation of India. The Assistant Industrial Health Officer attended Annual Conference of the I.A.O.H. and Annual Convention of its Bombay Branch, a week-long “In-Depth Course in Family Planning for Medical Officers in Industry”, VOSFP Conference, a Seminar on Safety in Textile Industry and the Seminar on India’s Population Future, referred to earlier.

91. Conferences attended by other members were (i) Annual Conference of I.A.O.H. by the Industrial Physicians of Tata Mills, Tata Oil Mills, Sewri and Tata Chemicals, (ii) Annual Convention of Bombay Branch of I.A.O.H. by the Industrial Physicians of Tata Mills and Tata Oil Mills, Sewri, (iii) In-Depth Course on Family Planning referred to above by Industrial Physicians of Tata Mills and Empress Mills and Medical officer, Bhira Camp, (iv) Bombay Medical Congress by Industrial Physicians of Tata Mills and Tata Oil Mills, Sewri, (v) VOSFP Conference by Industrial Physician of Tata Mills, Family Planning Social Worker of Svadeshi Mill and several Medical Officers from Tata Electric Companies, (vi) Greater Bombay District Family Planning Conference and Conference of the Maharashtra State Anti-TB Association by the Industrial Physician of Tata Mills, (vii) I.M.A. Conference by the Industrial Physician of Tata Oil Mills, Sewri. The Training and Safety Officer of Advance Mills attended Tata Training Officers’ Conference at Tata Management Training Centre, Poona and Seminars on Safety in Chemical Industry and Safety in Textile Industry both organised by Gujarat Chapter of National Safety Council. At the latter, he gave a talk on “Safety Consciousness” and the Spinning Master of the Mills who also attended, spoke on the subject of Safety in Spinning. The Safety Officer of Tata Mills attended the 4th National Safety Conference at Madras where he

presented a paper on “Organisation in Management of Safety”. He along with the Assistant Safety Officer, Assistant Carding Master and the Weaving Master also attended a Seminar on Safety in Textile Industry organised by Council of Industrial Safety, Bombay. The Safety Officer of Tata Oil Mills, Sewri, attended a Course on Industrial Noise. The Safety Officer of Tata Chemicals attended a Seminar on Safety in Chemical Industries referred to above and read a paper on “Entry in Confined Spaces.” The Lady Medical Officer, Bhivpuri, F. P. Clinic attended the All India Gynaecology Conference.

#### Other Activities:

92. MEETINGS: The Industrial Physicians and Safety Officers of the local units met periodically in the Office of the Department for discussing day to day problems and reviewing the progress of their activities. Five such meetings were held during the year. Subjects discussed related to physical fitness standards, programmes for National Safety Day, Revision of Safety Proforma, Textile Safety Awards and National Safety Awards, follow-up on the factory inspectors’ remarks, undertaking studies and surveys etc. At one of the meetings the Industrial Physician of Tata Oil Mills, Sewri, gave a talk on the annual conference of the I.A.O.H. Minutes of the meetings were circulated among the upcountry members and comments invited.

93. NEWSLETTER: The Department’s Newsletter which is a monthly publication is yet another link between the Department and Supervisors at factories. It acts as a medium for disseminating information on Health and Safety activities carried out at different units, their successes and failures, details of serious accidents along with measures for their prevention, excerpts from various journals, both local and foreign. Many factories extracted items published in the Newsletter for their own House Bulletins. A novel feature introduced during the year viz.

a Column on “Any Questions” has generated great interest among the members as well as supervisory personnel at factories.

94. LIBRARY: The Department maintains a library for use of staff members and others interested in the field. The library has 760 books and 2100 pamphlets. Sixteen Journals of national and five of international repute are subscribed and are available to members. Besides the members, the library facilities were availed of by students of academic institutions like Tata Institute of Social Sciences, Bombay Labour Institute, T.A.S. Probationers and professional colleagues.

95. LIAISON: The Officers of the Department and the Industrial Physicians and Safety Officers at the factories maintained an active liaison with various institutions, individuals and scientific bodies in the field of Occupational Health. Accordingly, a close liaison was maintained with the Central Labour Institute, Bombay, to avail of their help for undertaking Industrial Hygiene studies in factories and for induction of new incumbents. Help of the municipal agencies was availed of to undertake preventive inoculations, anti-mosquito campaigns, malaria and filaria surveys, testing of water for its potability etc. Help of the Factory Inspectorate and E.S.I. Authorities was availed of to tackle problems pertaining to guarding of machines, health hazards and rehabilitation of the sick and injured. Active liaison was also maintained with Family Planning Association of India, Employers’ Federation of India, National Safety Council, Indian Association of Occupational Health and last but not the least with the Permanent Commission and International Association of Occupational Health. The Chief Industrial Health Officer is actively connected with most of the above bodies in one or the other capacity. The Industrial Physicians and Safety Officers also represent on some of these bodies.

## CHAPTER V WELFARE

#### Rehabilitation:

96. “Many welfare activities have become a part of the employers’ statutory obligations”.<sup>3</sup> More and more demands are being made and the line which demarcates the responsibilities of the Employers from those of the State under a socialistic pattern is gradually thinning out. Many employers feel overburdened at this. In the ultimate analysis however, what counts is not the quantity but quality of welfare activities undertaken. Members of the Industrial Health Team at the factories helped the Welfare Department of the Units in fulfilling their obligations in respect of Rehabilitation of the ill and the injured, Canteen services, Creche and Family Planning.

97. “Properly trained handicapped persons make very good employees. All that is needed is to develop suitable educational and training programme and a wind of change in the public opinion that would recognise the disabled as part of the community”.<sup>4</sup> With the above objective in mind, employees disabled due to injuries or chronic ailments such as TB, Cardiovascular conditions, Leprosy etc. were rehabilitated on previous jobs or alternate jobs preferably in their own Department. TB cases were assigned work during day shift for a period ranging from 3 to 6 months. Post operative cases were

given alternate jobs whenever necessary. Blind and handicapped persons referred for employment by outside agencies were offered suitable employment. A brief resume of the work carried out is given below:—

98. It is a matter of great satisfaction to note that during the year NELCO added one more feather to its cap, when one of their employees Mrs. Alice Hucan received 2nd prize on the occasion of the World Day of the Disabled held at Bombay on 17th March, 1974. The Award was given by Special Employment Exchange for the Best Physically Handicapped Employee. Mrs. Hucan, one of the 6 children of her parents lost her eyesight at the age of 3. After undergoing training in crafts and arts at Dehradun and later at Dadar Industrial Home for Blind Women, she joined NELCO in 1960. She successfully handles jobs like tag bending, tag stripping, bracket eyeletting, fixing and assembling of chassis for radios etc. Although handicapped, Mrs. Hucan takes active interest in sports and is versatile with instruments like violin and harmonica. This is for the third time in four years that NELCO has received this recognition in respect of employment of Blind persons.

99. At ADVANCE Mills two weavers who had undergone a cataract operation in right eye were rehabilitated on the same job. Two injury cases from Frame Department, one with an amputation of distal phalanx of left thumb and the other with an amputation of the tip of right thumb were rehabilitated on their old jobs after a brief period of training. At EMPRESS Mills a loom shed employee who underwent a colostomy operation—an artificial opening for defaecation—for cancer rectum was given a sedentary job in the store room. Three cases of coronary insufficiency were encouraged to resume duties after proper counselling. An old case of Poliomyelitis with affection of left lower limb was employed as a helper in the Engineering Department. A case of allergic dermatitis from Printing Department was given an alternate job. A beam carrier from Drawers and Reachers Department who injured his left collar bone while putting a beam on the rack was given an alternate job of a Reacher in the same Department. At TATA MILLS, a case of an extensive contused wound in the left palm necessitating absence from work for 164 days was rehabilitated on his own job. Three other injury cases were also rehabilitated on their old jobs.

100. At TATA OIL MILLS, SEWRI, 7 post operative cases were rehabilitated on their old jobs after an initial period of light work. Of these 4 were inguinal hernia cases, one fistula in ano, one hydrocele and one perianal abscess. A case of high blood pressure was recommended day shift for a period of 2 months. At TATA OIL

MILLS, COCHIN, two workers from the Soap Plant who developed dermatitis from lubricant oil were rehabilitated on alternate jobs (refer Chapter II). At TATA CHEMICALS, 13 employees were rehabilitated during the year. Out of 8 TB cases, 6 were rehabilitated in their own department. Since the original job in the case of remaining two was found unsuitable, they were transferred to Works Sanitation pool. Two post operative hernia cases and one heart case were rehabilitated in their own Department. One heart case was transferred to Work Sanitation pool. A case of Hodgkin's Lymphoma, stage III from Workshop was transferred to the pool after undergoing radiation therapy at Bombay.

#### Canteen:

101. The Industrial Physicians at all the units kept a watch over the cleanliness and sanitation of the canteen, examined the food handlers to check their personal hygiene and advised the management with regard to menu. Most of the units had arrangements for providing mid-day meals and snacks at subsidised rates. Food handlers found to be suffering from any communicable diseases were isolated to avoid spread of infection. The Industrial Physicians served as members on the Canteen Managing Committee. At Empress Mills, one of the canteens was renovated by putting false ceiling, replating the service platform, repairs to floors and door frames, replacement of service trolleys and tea urns. Two employees needing medical treatment were referred to panel doctors. The Industrial Physician of Tata Oil Mills, Sewri, examined 27 employees of the Protein Isolate Plant besides 18 food handlers. None of them showed any abnormality. At Trombay, the Labour Canteen (used for temporary employees and contract labour) was renovated with new furniture, false ceilings, water coolers etc. The service in the canteen was organised under the supervision of a committee consisting of elected members from the employees. The improvements in the menu item were decided upon as per the suggestion of this committee.

102. BALANCED MEAL Scheme introduced at Tata Chemicals last year under which a 1100 calorie meal with 30 gms. of protein is supplied to workers at a nominal cost of 60 paise per meal, continued to be popular. This meal is prepared under homely conditions in Seva Sadan, an organisation run primarily to provide employment to destitute widows and is served hot in the Company's canteen.

#### Creche:

103. The Industrial Physicians at all the units assisted by the Sisters-in-charge of the Creche continued to look after health and nutrition of the children in the Creche.

Records of heights and weights of the inmates were maintained. Milk and mid-day meal or nutritious snacks were supplied to all children. Grown-ups were taught self help and mothers were periodically advised on the subject of personal hygiene and nutrition of the children through personal counselling and group talks. Sick children were treated by the Industrial Physicians or referred to panel practitioners or Hospitals for further treatment.

104. SPROUTED PULSES SCHEME: At Bhira and Bhivpuri Camps of Tata Electric, school children upto 8 years of age, attending the Company's Schools were given a dish of sprouted pulses supplemented with groundnuts, coconuts, salt and vitamins. Fifty children from primary school and 30 from Montessori School took benefit of the scheme at Bhira and 37 at Bhivpuri. Records of heights and weights of these children were maintained every month.

105. Bhira Camp organised a Baby Show with a view to educating parents to give adequate attention to health of their children. Babies were examined by the Medical Officer of the Camp and Lady Medical Officer in charge of Family Planning. Two best babies from 3 age-groups viz. upto 6 months, 7 months to one year and 1 to 11 years were selected for awarding prizes. Occasion was also utilised to impress on the parents importance of cleanliness, personal hygiene, preventive immunisations, nutritious diet and most important of all for practice of Family Planning. Other educative functions such as drama competitions, garden competitions, social get-togethers etc. were organised at other Camps during which the Medical Officers and midwives gave talks on personal hygiene and common ailments.

106. BLOOD DONATION: A team from Tata Blood Bank visited Bhivpuri Division of Tata Electric when 105 persons donated their blood. 11 persons were rejected on medical grounds. A lady with Rh negative blood belonging to O group (Universal donor) volunteered herself to be in readiness to donate blood in emergency. Fifty-three employees at Trombay Division also donated their blood to the above team. At Empress Mills, 25 members of the staff donated blood in a blood donation drive programme organised by Mrs. Madan, wife of the General Manager under the auspices of the Inner Wheel of Rotary Club. Seven belonged to A Group, 7 Group B, 2 Group AB and 9 Group O. All were Rh positive. At all other units employees responded to this call whenever Blood Donation drives were organised.

#### Family Planning:

107. In spite of all efforts put in by the government and various voluntary agencies, population growth in India

has continued at an alarming rate of 2.4% per annum. Against a figure of 547 millions in 1971, the estimated population now is in the region of 600 million. The target of reducing the birth rate to 25 per 1000 originally laid down in the Fourth Five-Year Plan is nowhere near sight and the government has revised the same to 32 per 1000. "The Campaign to bring down the birthrate to the desired level is being fought on many fronts and one of the important sectors among them is that relating to an organised sector"<sup>5</sup>.

108. As in other fields we in the Tata Organisation have long before taken a lead in this direction and the programme has been accepted as a policy. All big Units have set up their own Family Planning services for motivation, supply of contraceptives and sterilisation. Smaller companies avail of the help from voluntary agencies like the Family Planning Association of India, Municipal Corporation and Government. Oral contraceptives are supplied at subsidised rates. Our emphasis has mainly been on sterilisations and since a sizable number of employee population or spouses have already opted for this method. Motivational activities are now confined to personal counselling of those with large families rather than use of mass media. Monetary incentives offered are Rs. 200/- for a sterilisation of employee-spouse, Rs. 25/- for a loop insertion and 4 days leave with full pay for a vasectomy and 10 days for a tubectomy operation.

109. Total number of sterilisations among the 28 units mentioned in the table at the end of this chapter since 1961 was 29,027. These comprised of 20,970 Vasectomies and 8,057 Tubectomies. Overall percentage of sterilised employees/spouses on total population works out to 25.29. Earlier figures have been excluded as it is assumed that these may no longer be in service. The upward trend in tubectomy noticed all over the country is also reflected in our figures as shown below. It is a happy sign that the hard core among males who still harbour misgivings about after-effects of Vasectomy, now at least permit their wives to undergo sterilisations and who in turn have always been found to be responsive. This supplemented with a concerted drive undertaken by all Maternity Hospitals to carry out post partum sterilisations is responsible for the above trend. M.T.P. introduced since April 1972 is also becoming popular. At present it is largely confined to urban areas. If the procedural formalities required under the scheme are liberalised and arrangements made to take this measure to rural areas, it is bound to have a sizable impact on the population growth in due course.

	Vasectomy	Tubectomy	Total
1967	3192	349	3541
1968	4321	354	4675
1969	2119	445	2564
1970	1796	755	2551
1971	1154	1023	2177
1972	1105	1070	2175
1973	1310	1191	2501
1974	918	1669	2587

#### Worker Motivator Scheme:

110. A novel experiment was conducted at Empress Mills, Nagpur, under which active involvement of the workers was sought to be brought in to play. Under this Scheme which was launched from 2nd October, 1974 (Gandhi Jayanti Day) 20 workers with leadership qualities who had themselves accepted sterilisation and who were willing to spread the message of Family Planning among their colleagues were selected to work as Worker Motivators. These persons were given an orientation course of lectures before they were put on the job. They were also offered token incentives, Rs. 5/- per sterilisation case upto 20 cases and Rs. 10/- thereafter. 25 paise per oral tablet case for first 4 months and 50 paise thereafter, and 10 paise per condom case for first 4 months and 20 paise thereafter. Each Worker Motivator is given a duplicate book in which he enters the name of the motivated person and hands over a copy to the motivated employee for presentation to the Mill Dispensary. The duplicate enables the motivator to follow his cases and to claim his incentive amount which is paid only if the case reports at the dispensary and thus results into action. A meeting of these Worker Motivators is held every month over a cup of tea to review the progress achieved by each one of them and to solve their problems. This helps them to know each other's progress and to create a competitive spirit among them. Each Worker Motivator is given an identity card which gives him a status and importance. The Scheme has had a good start. In a short span of 3 months, one Motivator has had 20 Vasectomies and 7 Tubectomies to his credit.

#### Awards:

111. During the year, TATA ELECTRIC COMPANIES received the F.I.C.C.I. Award for Family Planning for 1974. The citation on the Award reads "The success of the Companies in covering 90% of its employees, 40% of them by terminal methods, requires emulation by others". A plaque and a scroll were presented at New

Delhi to a representative of the Company at the hands of the Prime Minister Mrs. Indira Gandhi.

112. SVADESHI and TATA MILLS were also once again winners of Family Planning Awards distributed by the Family Planning unit of Bombay Municipal Corporation which assesses the performance amongst the industrial units every 2 years. The assessment was based on sterilisations, I.U.D. insertions and use of other contraceptives. The Awards were distributed during a Family Planning Conference organised by the above unit and were received by Mrs. S. Kamat, Family Planning Social Worker, Svadeshi Mills and Dr. V. P. Pathak, Industrial Physician, Tata Mills.

113. At ADVANCE MILLS the Family Planning work was carried out by the Industrial Physician and his staff, assisted by the Welfare Department and two outside agencies viz. Red Cross Family Planning Centre and the urban Family Planning Centre attached to Civil Hospital. A social worker from the former visited the Mills once a week and from the latter twice a week for motivational work and distribution of condoms. A total of 2250 pieces of condoms were distributed by the former and 5658 by the latter. The former organisation also offered an additional incentive of Rs. 50/- for sterilisation during a Camp organised by them. Social workers from the Indian Institute of Management carried out Family Planning interviews of 100 workers selected at random. This was a part of a survey carried out by them in the Ahmedabad Textile Industry covering 20 mills. Total number of operations performed during the year were 15 vasectomies and 61 tubectomies. Number of active oral pill cases were 17.

114. At EMPRESS MILLS the programme was looked after by the Industrial Physicians with help from Personnel Department. A social worker from a voluntary agency visited the Bezon Baug Colony for motivational work from time to time, but the bulk of the activity was carried out through the Mill dispensary. With a view to stimulating the programme, a fresh survey was undertaken and the Worker Motivator scheme mentioned earlier was introduced and the bulk of the operations were performed thereafter. Contraceptives—condoms and oral pills—are supplied from the Mill dispensary. Total operations performed during the year were 39 vasectomies and 30 tubectomies. At Tata Mills the programme was attended to by the Industrial Physician assisted by the sister-in-charge of the Creche and the dispensary staff. A social worker from a Pharmaceutical Company visited the Mill from time to time for motivational work. Condoms and oral pills were supplied from the Mill dispensary. Total operations performed during the year were 20 vasectomies and 105 tubectomies.

115. The SVADESHI MILLS have a separate Family Planning Centre with a full-time social worker and a part-time lady doctor. Both of them with assistance from Medical and Welfare Department undertook motivation of the employees as well as their wives during ante-natal and post-natal work and also during home visits in the colony. Since the introduction of M.T.P. Act from April 1972, abortions are becoming popular among the clientele at this Mill. There were 17 such cases during the year. These were referred to the Municipal Family Planning Hospital. Most of these were motivated to accept a simultaneous sterilisation. Sterility cases were encouraged to avail of the services of Family Planning Centre. Details of the work carried out at the Centre are given below:

Persons contacted for Family Planning Education	313
Given Family Planning advice	65
Attendance at the Clinic	539
Vasectomy Operations	14
Tubectomy Operations	100
Sterility cases (3 conceived)	12
Active oral tablet cases	29
Active condom cases	160

116. Family Planning activities at SEWRI and COCHIN UNITS of TATA OIL MILLS were carried out by the Industrial Physicians with assistance from the Personnel Department. At the former a lady social worker from German Remedies, a Pharmaceutical Firm, paid visits for advice on oral contraceptives. The work at other units of Tata Oil Mills located at Calcutta, Madras and Ghaziabad were carried out by the Personnel Department.

117. Family Planning activities at TATA CHEMICALS are provided through a Family Planning Welfare clinic established at the Company's hospital. The clinic is in charge of a Lady Medical Officer and has one male and one female social worker attached to it. Social workers visit the residential areas in the township from time to time for motivational work and maintain upto date records of family size of the residents. This clinic also provides free service to nearby villages of the taluka through a mobile clinic run by the Company for providing medical aid in the villages. The Company also offers a monetary incentive of Rs. 100/- to non-employees undergoing sterilisation at the Company's hospital. During the year there were 77 vasectomy and 71 tubectomy operations and 5 loop insertion cases among non-employees. In one month alone as many as 52 non-employees underwent vasectomy operations. The number of sterilisations carried out among the employees during the year were 3 Vasectomy and 38 Tubectomy and 24 loop insertion cases.

118. The TATA ELECTRIC COMPANIES continued to do laudable work in respect of Family Planning. The Medical Officers at the divisions which are residential camps, because of their intimate contact with residents in the Camp and villagers in the neighbouring areas, are able to do an effective and a positive work. The Company also has a Lady Medical Officer who attends only to Family Planning work. She visits all the Camps from time to time to contact and motivate women and to attend to gynaecological cases. At Bhira and Bhivpuri midwives help in the programme. Opportunity is taken to educate the residents through antenatal and postnatal clinics, maternity and child health service, film shows and display of posters and group meetings organised during social events. The percentage of sterilisations at various camps is in the region of 26 to 50%. The Company has thus been able to achieve remarkable success in tackling the eligible couples at all the Divisions. In recognition of this good work, the Company, as mentioned earlier, has received the FICCI Award for Family Planning for 1974.

119. A Family Planning Camp was held at Bhira at which 16 persons including 6 temporary employees underwent Vasectomy operations. The operations were performed by Medical Officer of the Camp and Medical Officer from the nearby Primary Health Centre. There were 13 cases of oral tablet who were medically checked up every month. As per a yearly survey carried out, only 13 out of 148 employees in the Camp remained unmotivated. The Lady Medical Officer for Family Planning visited this Camp every 2 months. She also visited Kalyan and Ambarnath Camps once a month. The total number of operations carried out at Kalyan upto the end of 1974 were 33 Vasectomies and 51 Tubectomies. Similar figures in respect of Khopoli were 51 Vasectomies and 24 Tubectomies. At Trombay a Family Planning survey was carried out by the Lady Medical Officer and the findings are given below:—

Single/Widowed/Divorced	60
Non-eligible couples (wife's age above 45 years)	106
Couples having no children	26

#### ELIGIBLE COUPLES:

Having 1 and 2 children	195
3 and more children (target couples)	109
Total surveyed	496
Employee population	625
Percentage surveyed	84.2%
Vasectomy cases	122
Tubectomy cases	67

120. BHIVPURI RURAL FAMILY PLANNING CENTRE run by the Company for the benefit of employees as well as the rural population in 12 nearby villages provided a comprehensive health care and Family Planning Programme free of charge. As mentioned in our earlier reports, this clinic is a continuation of the Oral Contraceptive Project initiated 3 years ago with financial assistance from US Pathfinders' Fund. Since June 1972 the Project is run entirely by the Company. Details of the work carried out during 1974 are given below:—

Total attendance at the Clinic	2366
Oral contraceptive cases	93
Nirodh cases	94
Vasectomy	4
Tubectomy	4
MTP Cases	6

121. Out of 4 tubectomies performed, 3 were oral pill users and one a new case. Of the 4 vasectomy cases, 3 were new and one a case where the wife was on oral pills. Thirty children were immunised against polio, 54 received triple antigen. Fourteen contraceptive women and their children received anthelmintics and 62 were treated for anaemia and general debility. Under the SUPPLEMENTARY NUTRITION SCHEME, undernourished children of contraceptive mothers attending the Centre upto 5 years of age were given Khir or gruel prepared from milk, rava and sugar thrice a week. Thirty children took benefit of this scheme on a regular basis.

122. In our earlier report we had mentioned that the management was contemplating to introduce services like (i) menstruation regulation programme, (ii) facilities for termination of pregnancy by evacuation method and (iii) use of electric cautery for gynaec complaints. Necessary equipments were purchased and during the year 6 menstrual regulation cases were undertaken successfully, three of them continued on pills thereafter but 3 conceived again. Four ladies received treatment with the cautery apparatus. Before undertaking the above programme, 3 group meetings were organised addressed by Dr. Mrs. Waigankar, in charge of the project explaining them about the simplicity of the procedure and clearing various doubts. Another meeting was also held during the District Seminar when 35 teachers from the District were addressed by Dr. and Dr. Mrs. Waigankar. It was felt that in villages, school teachers were the real ambassadors for propagation of family planning as they came in close contact with the masses.

123. Family Planning activities at VOLTAS were looked after by the Welfare Assistant under the guidance of the Medical Officers. Motivational activities were carried out through Family Planning Clinics at their Chinchpokli and Thana establishments as well as at the Head Office. At the Gynaecological Clinic established at their Thana factory, 87 wives of staff members attended the clinic. At the Paediatric clinic 249 children were examined and 160 cases of triple antigen and polio vaccine were administered. At the end of the year there were 518 active oral pill cases and 668 condom cases. The number of operations performed till December 1974 were 305 vasectomies and 293 tubectomies and 33 loop cases.

124. At TELCO, Poona, motivational activities were carried out in the factory as well as through the Well Baby Clinic at Chinchwad. Contraceptives both oral and conventional, were made available to the employees. The programme got a boost since the setting up of the Vasectomy centre at Chinchwad during October 1974 where vasectomy operations on the employees, contractor's employees and other non-employees are performed by the Medical Officers of the Company. A mention has been made earlier about the monetary incentive of Rs. 140/- paid to Contractor's employees undergoing operation at this Clinic. The total number of operations performed upto the end of the year were 80 vasectomies and 79 tubectomies.

125. At TISCO, Jamshedpur, the Medical Officer of Health and Family Planning assisted by the staff of the maternity and child welfare services and with active assistance from the Family Welfare Planning Advisory Committee was able to maintain a steady progress. It may be noted that TISCO, Jamshedpur has 6 urban and 3 rural Family Planning Centres located in different areas of the township. The total number of operations performed during the year on employees alone were 414 vasectomies and 565 tubectomies. Activities in respect of other companies viz. TELCO, Jamshedpur, INDIAN TUBE CO., BELPAHAR REFRACTORIES, TATA-MERLIN GERIN, NELCO, TATA PRESS, INDIAN HOTELS and INDUSTRIAL PERFUMES were continued as in previous years. At TELCO, Jamshedpur, the activities are pursued with the help of local women's organisations. Motivational activities are carried out at the Welfare Centres as also at the Company's hospital. 186 vasectomy and 473 Tubectomy operations were performed during the year. A total of 2280 packets of oral tablets and 3 gross condoms were also distributed.

	Vasectomy		Tubectomy		Total	Emp. Pop.	Percentage operated
	upto 1973	1974	upto 1973	1974			
<b>TEXTILES:</b>							
ADVANCE	209	15	338	61	623	3595	17.33
EMPRESS	996	39	162	30	1227	8718	14.07
SVADESHI	653	14	582	100	1349	4367	30.89
TATA	742	20	533	105	1400	5460	25.64
<b>TATA OIL MILLS:</b>							
SEWRI	126	1	66	10	203	1308	15.52
COCHIN	288	3	32	8	331	1087	30.45
CALCUTTA	49	NA	3	NA	52	299	17.4
MADRAS	39	NA	16	NA	55	420	13.1
<b>TATA CHEMICALS:</b>							
	377	3	250	38	668	2800	23.86
<b>TATA ELECTRIC COS:</b>							
BHIRA	43	2	26	3	74	148	50.00
BHIVPURI	47	1	20	1	69	155	44.52
KALYAN	31	2	45	6	84	274	30.66
KHOPOLI	47	4	22	2	75	220	34.09
TROMBAY	102	5	57	8	172	553	31.10
<b>TISCO WORKS</b>							
	9978	414	1986	565	12943	36000	35.94
<b>TISCO MINES:</b>							
NOAMANDI	430	19	141	24	614	5800	17.05
JODA	357	18	—	—	375	—	—
TISCO COLLIERIES	382	26	219	27	654	9400	6.95
<b>TELCO:</b>							
JAMSHEDPUR	4086	186	1377	473	6122	18358	33.3
POONA	95	80	113	79	367	4918	7.46
INDIAN TUBE	442	15	90	39	586	3300	16.94
BELPAHAR REFRACTORIES	149	30	25	15	219	1514	13.80
VOLTAS, THANA	286	20	225	68	599	2687	22.29
TATA-MERLIN GERIN	18	NA	5	NA	23	791	2.9
NELCO	26	—	21	3	49	723	6.77
TATA PRESS	17	NA	10	NA	27	560	4.8
INDIAN HOTELS	26	1	24	4	55	1189	4.67
INDUSTRIAL PERFUMES	11	NA	NA	NA	11	137	8.0
	20052	918	6388	1669	29027	114781	25.29

## CHAPTER VI

### CONSULTATIVE & EXTRA CURRICULAR ACTIVITIES

126. Besides the activities narrated in the foregoing chapters, Officers of the Department as well as the members of the Industrial Health Team at various factories were invited to give lectures and to serve on various committees. Requests for information on matters pertaining to Occupational Health and Family Planning from outside bodies and individuals were also complied with. Some of these are narrated below:—

127. The Employers' Federation of India requested the Chief Industrial Health Officer to represent them on the Central Council of Health and Family Planning of the Union Government and on the Steering Committee of the National Symposium on Labour and Population Policies organised by the Ministry of Labour in collaboration with ILO and also to participate in the same. As a Chairman of their Central Family Planning Committee

the Chief Industrial Health Officer also helped the above agency in organising an In-depth Course in Family Planning for Medical Officers in Industry. The expertise of the Department was also availed of by the Employers' Federation of India in respect of I.L.O. recommendation on "Benzene" and on the Report of the Special Committee appointed by the Central Government to frame "Model Rules for Occupational Diseases" under the Workmen's Compensation Act.

128. The St. John's Medical College, Bangalore, which is developing its Department of Occupational Health jointly with the Ross Institute of Tropical Hygiene, London, requested for information on Occupational Health in India. This was complied with. Information in respect of Health Hazards in Plastic Industry was furnished to the Industrial Toxicology Research Centre,



Lucknow. Requests for information on Family Planning received from Executives of different Tata Companies and others outside the group were complied with. An employee of Tata Sports Club with a psychiatric problem was referred to the Department for help and guidance. After interviewing, arrangements were made for his treatment at the Bombay Hospital. The Chief Industrial Health Officer contributed an article on "Industrial Hygiene and Employee Health" for a co-memorative volume on "Human Resources Management in India" brought out by the National Institute of Labour Management on the occasion of their Silver Jubilee.

#### REPRESENTATION ON COMMITTEES:

129. The Chief Industrial Health Officer represented on the following committees:

(i) Chairman, Sub-Committee on Occupational Health Services in Developing Countries of the Permanent Commission and International Association of Occupational Health, Milan, (ii) Chairman, Executive Committee of the Council of Industrial Safety, Bombay, (iii) Chairman, Central Family Planning Committee of the Employers' Federation of India, (iv) Member, Board of Governors of National Safety Council and a Member of their Chapter Advisory Committee, Finance Committee and Building Committee, (v) Member, Editorial Board of the "Industrial Safety Chronicle", a quarterly journal of National Safety Council, (vi) Vice-President, Indian Association of Occupational Health and Member of the Executive Committee of its Bombay Branch, (vii) Member, Hospital Advisory Committee, Mahatma Gandhi Memorial Hospital, Parel and Employees' State Insurance Hospital, Worli and (viii) Member of Workshop Committee of the Indian Cancer Society.

130. The Assistant Industrial Health Officer of the Department and the Industrial Physician of Tata Mills worked as Members on the Executive Committee of the Indian Association of Occupational Health, Bombay Branch. The former also worked as its Honorary Treasurer. The Safety Officer of Tata Mills continued to be a member on the Executive Committee, Council of Industrial Safety. The Safety Officer of Advance Mills was co-opted as a member on the Executive Committee of Gujarat Chapter of National Safety Council. He also worked as a member on the Executive Committee of the Mills' Cooperative Credit Society. The Industrial Physician at Tata Chemicals continued to act as Divisional Surgeon of the Local St. John's Ambulance Brigade and as Honorary Visiting Medical Officer to Sir Dorab Tata Trust, Rural Welfare Board Dispensary at a nearby Gadechi village. Dr. S. R. Patwardhan

served on a Committee appointed by his Company for translation of the Safety Manual in Marathi.

#### LECTURES:

131. The Chief Industrial Health Officer was invited to give the following lectures:

(i) A keynote address delivered at a Seminar on "Safety in Chemical Industry" organised by Gujarat Chapter of National Safety Council jointly with the State Factory Inspectorate. Dr. Thacker also acted as a Chairman at the Session on "Occupational Safety and Health." (ii) Participated as a panel member during a Seminar organised by the Management of M/s. Larsen & Toubro on "Alcoholism and the Worker". (iii) Talks on subjects of Industrial Hygiene and use of personal protective appliances during Safety Education Courses organised by Tata Electric Companies from time to time. (iv) Lectures during Refresher Courses in Occupational Health organised by the Central Labour Institute for the benefit of Medical Officers attached to Government and industry. (v) A talk on Family Planning in Industry at the Annual Conference of the Indian Institute of Personnel Management held at Bombay. (vi) A talk on "Role of Organised Sector in Family Planning" at Family Planning Conference at Dandeli organised by Family Planning Association of India. (vii) Participated in a panel discussion on "Family Planning Services in Industry" during an In-depth Course for Medical Officers in Industry organised by Employers' Federation of India. (viii) Participated as Moderator in a panel discussion organised during Voluntary Organisations Supporting Family Planning Conference.

132. The Industrial Physician of Tata Mills gave a talk on "Health Hazards in Textile Industry" during Refresher Courses organised by the Central Labour Institute for Industrial Medical Officers. He also gave lectures on First Aid in Marathi to the apprentices at the Mafatlal Gagalbhai Technical School. The Safety Officer of this Mill gave lectures to the trainees of Job Safety Training Course and Diploma Course for Safety Officers organised by the Council of Industrial Safety, a talk on "Appreciation of Industrial Safety Management in Textiles" at Madurai during a Training Course organised by National Safety Council, a talk on "Prevention of Accidents in Spinning Department" during a Seminar at SASMIRA and read a paper on "Organisation of Management of Safety" during the National Safety Conference at Madras. The Safety Officer of Tata Chemicals was invited to be a faculty member for conducting a workers' training programme at Porbandar organised by Gujarat Chapter of National Safety Council. He was also invited to give a talk on 'Fire Safety' at Indian Oil Corporation

at Okha. Dr. S. R. Patwardhan, Senior Medical Officer, Kalyan, gave a talk on "Industrial Safety" at Century Rayon, a talk with a demonstration on "Cardiopulmonary resuscitation" during a Safety Seminar at Bhivpuri and a talk on "Electrical accidents, their prevention and treatment" to the members of the Medico-Social Club of Kalyan.

#### VISITORS:

133. Among the visitors to the Advance Mills were 3 batches of workers for Tata Chemicals, Mithapur, 25 workers from a local Mill and 28 workers from Rourkela Steel Plant who visited the Mills under the Workers' Education Scheme. Other visitors to the Mills were: Students from Gujarat University and 13 health visitors from Rajkot, accompanied by an officer of the

Health Department of Ahmedabad Municipal Corporation. Tata Mill was visited by Safety Officers from Hindustan Aeronautics, participants of Diploma Course for Safety Officers, Safety Officers from Kohinoor Mills and National Rayon, students from Tata Institute of Social Sciences, Topiwala National Medical College, Lokmanya Tilak Memorial General Hospital, Sion, nurses from G.T. Hospital and post basic nursing students from J. J. Hospital. 18 trainees belonging to Fire Insurance Associations from different countries also visited the Mills. Other visitors were delegations from Japan and Soviet Union and participants of Job Safety Training Course organised by the Council of Industrial Safety. The Family Planning Clinic at Bhivpuri was visited by Dr. Mrs. Indumati Parekh from Stree Hita Karini, Bombay, along with 45 female field workers.

## REFERENCES

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4. President V. V. Giri, Inaugural Address delivered on World Disabled Day 1970.
5. Mr. Tata Naval H., President Employers' Federation of India—Family Planning in Industry in India—Family Planning in Industry in the Asian Region—part II, Some Action Studies, ILO Geneva, 1974.

## Morbidity Statistics of Attendance at Factories.

Medical causes requiring treatment	ADVANCE		EMPRESS SVADESHI		TATA		TATA OIL SEWRI		TATA OIL COCHIN		TATA OIL CALCUTTA		TATA CHEMICALS		INDIAN HOTELS		VOLTAS THANA			
	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.		
Diseases of teeth and gums ..	135	2.39	492	1.36	18	0.56	41	0.98	96	1.36	191	6.92	23	1.29	478	5.42	207	2.59	624	3.35
Diseases of ear, nose and throat ..	51	0.93	333	0.93	15	0.47	56	1.34	137	1.95	42	1.52	16	0.89	94	1.07	187	2.34	312	1.67
Respiratory diseases including common cold ..	1799	31.85	11122	30.80	124	3.87	585	14.00	2693	38.26	952	34.51	411	23.09	1655	18.75	3045	38.19	5928	31.84
Other fevers ..	132	2.34	1854	5.14	114	3.55	63	1.51	230	3.27	13	0.47	192	10.78	—	—	613	7.69	—	—
Tuberculosis, all systems ..	3	0.05	9	0.02	1	0.03	3	0.07	—	—	1	0.04	—	—	10	0.11	10	0.13	240	1.29
Diseases of gastro-intestinal tract ..	631	11.15	6998	19.38	316	9.85	451	10.79	654	9.29	513	18.60	509	28.60	856	9.70	973	12.20	5304	28.49
Communicable diseases (Infectious diseases) ..	13	0.23	36	0.09	4	0.12	10	0.24	2	0.03	53	1.92	—	—	32	0.36	393	4.93	87	0.47
Occupational diseases ..	—	—	14	0.04	—	—	2	0.05	1	0.01	—	—	—	—	—	—	—	—	—	—
Glycosuria (Diabetes Mellitus) ..	8	0.14	17	0.05	—	—	7	0.17	—	—	2	0.07	—	—	4	0.05	26	0.33	576	3.09
Deficiency diseases including anaemias ..	54	0.96	207	0.57	2	0.06	71	1.70	60	0.85	26	0.94	—	—	404	4.58	412	5.17	—	—
Malignant Neoplasms ..	—	—	1	0.00	—	—	—	—	—	—	—	—	—	—	5	0.06	—	—	—	—
Diseases of central nervous system ..	2	0.03	418	1.16	49	1.53	—	—	279	3.97	10	0.36	—	—	171	1.94	25	0.31	192	1.03
Diseases of the eyes ..	228	4.03	678	1.88	13	0.40	61	1.46	290	4.13	18	0.65	45	2.53	305	3.45	208	2.61	936	5.03
Diseases of cardio-vascular system ..	13	0.23	44	0.12	7	0.22	25	0.59	24	0.34	9	0.33	—	—	4	0.05	69	0.87	912	4.89
Diseases of genito-urinary system ..	3	0.05	1214	3.36	8	0.25	54	1.29	58	0.83	11	0.40	—	—	12	0.13	24	0.30	24	0.13
Hernia ..	—	—	—	—	1	0.03	—	—	3	0.04	—	—	—	—	—	—	6	0.08	2	0.01
Diseases of the skin ..	64	1.13	97	0.27	10	0.32	63	1.51	81	1.15	67	2.43	—	—	219	2.48	228	2.86	96	0.51
Allergic conditions ..	3	0.05	65	0.18	9	0.28	21	0.50	54	0.77	31	1.12	35	1.97	—	—	237	2.97	374	2.01
Diseases of Rheumatic group ..	208	3.68	2245	6.22	29	0.90	255	6.09	654	9.29	319	11.59	1	0.06	371	4.21	626	7.85	252	1.35
Accidents ..	854	15.12	5056	14.01	2365	73.75	2045	48.93	69	0.98	215	7.79	275	15.45	956	10.83	262	3.29	1540	8.27
Other ailments including common cold ..	1448	25.64	5209	14.42	122	3.81	367	8.78	1653	23.48	285	10.34	273	15.34	3248	36.81	422	5.29	1224	6.57
TOTAL of new cases ..	5649	100.00	36109	100.00	3207	100.00	4180	100.00	7038	100.00	2758	100.00	1780	100.00	8824	100.00	7973	100.00	18623	100.00
Repeat Treatment cases ..	14060	16057	2310	12835	8854	639	N.A.	N.A.	2800	1189	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Average employee population ..	3595	8718	4367	5460	1308	1087	299	2800	1189	2687	2687	2687	2687	2687	2687	2687	2687	2687	2687	2687

TABLE NO. I B

## Morbidity Statistics of Attendance at Tata Electric Divisions

Medical causes requiring treatment.	BHIRA		BHIVPURI		KALYAN		KHOPOLI		TROMBAY	
	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.	No.	Rate per 100 pts.
Diseases of teeth and gums ..	194	2.23	128	1.87	33	1.15	96	2.19	84	1.77
Diseases of ear, nose and throat ..	1777	20.30	266	3.89	115	4.01	88	2.01	125	2.63
Respiratory diseases including common cold ..	536	6.12	2000	29.22	656	22.84	1324	30.19	1514	31.85
Other fevers ..	1038	11.86	307	4.49	406	14.14	122	2.78	176	3.71
Tuberculosis all systems ..	10	0.11	97	1.42	4	0.14	66	1.51	8	0.17
Diseases of gastro-intestinal tract ..	1356	15.39	1099	16.06	486	16.92	703	16.03	979	20.60
Communicable Diseases (Infectious Diseases) ..	148	1.69	123	1.79	11	0.38	34	0.78	62	1.30
Helminthiasis ..	414	4.73	144	2.10	58	2.02	107	2.44	100	2.10
Occupational diseases ..	—	—	—	—	—	—	2	0.05	2	0.04
Glycosuria ..	3	0.03	3	0.04	3	0.10	16	0.36	13	0.27
Deficiency diseases including anaemias ..	140	1.60	391	5.71	5	0.17	301	6.87	199	4.19
Malignant Neoplasms ..	—	—	—	—	—	—	—	—	1	0.02
Diseases of Central Nervous System ..	—	—	332	4.85	2	0.07	174	3.97	26	0.55
Diseases of the eyes ..	403	4.60	211	3.08	91	3.17	100	2.28	131	2.76
Diseases of cardio-vascular system ..	28	0.32	71	1.03	36	1.25	56	1.28	41	0.86
Diseases of genito-urinary system ..	10	0.11	866	12.65	27	0.94	56	1.28	30	0.63
Hernia ..	1	0.01	2	0.03	—	—	4	0.09	—	—
Diseases of the skin ..	333	3.80	41	0.59	70	2.44	127	2.89	68	1.43
Allergic conditions ..	43	0.49	267	3.94	26	0.91	53	1.21	18	0.38
Diseases of the Rheumatic Group ..	753	8.60	74	1.08	367	12.79	269	6.13	295	6.21
Accidents ..	34	0.39	5	0.07	8	0.29	9	0.20	49	1.03
Other ailments including dressing cases ..	1533	17.52	417	6.09	467	16.27	678	15.46	832	17.50
TOTAL of new cases ..	8754	100.00	6844	100.00	2871	100.00	4385	100.00	4753	100.00
Repeat Treatment Cases ..	39615	—	39804	—	10463	—	16183	—	31712	—
Average Employee Population ..	148	—	155	—	274	—	220	—	553	—

TABLE II A.  
Pre-Employment Medical Examinations

Total Examined: 4337

Name of the factory	SUITABLE		UNSUITABLE (Rejected)	TOTAL
	Without defects	With permissible Defects		
ADVANCE .. .. .	309	52	226	587
EMPRESS .. .. .	356	188	3	547
SVADESHI .. .. .	—	26	—	26
TATA .. .. .	243	98	13	354
TATA OIL (SEWRI) .. .. .	51	10	—	61
TATA OIL (COCHIN) .. .. .	63	27	—	90
TATA CHEMICALS .. .. .	386	9	110	505
INDIAN HOTELS .. .. .	174	128	4	306
TATA YODOGAWA .. .. .	103	2	12	117
TELCO, JAMSHEDPUR .. .. .	1206	—	1	1217
VOLTAS, THANA .. .. .	306	103	4	413
TATA-ROBINS-FRASER .. .. .	112	—	2	114
<b>TOTAL .. .. .</b>	<b>3319</b>	<b>643</b>	<b>375</b>	<b>4337</b>
	(76.53%)	(14.82%)	8.65%	(100%)

TABLE NO. II B.

Analysis of Defects found in Pre-employment Medical Examinations

	ADVANCE	EMPRESS	SVADESHI	TATA	TATAOIL (SEWRI)	TATA OIL (COCHIN)	TATA CHEMICALS	INDIAN HOTELS	VOLTAS
Total Number Examined	587	547	26	354	61	90	505	306	413
	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees	Rate per 100 examinees
Underweight .. .. .	7.0	19.85	53.8	38.13	6.6	—	14.16	—	8.23
Dental .. .. .	0.16	0.74	42.3	7.06	3.3	27.7	—	—	0.06
Pterygium .. .. .	—	—	—	0.56	—	—	—	—	—
Visual defects .. .. .	0.80	4.04	34.6	18.64	3.3	—	4.95	6.53	0.07
Trachoma .. .. .	—	—	—	—	—	—	—	—	—
Skin diseases .. .. .	0.50	1.28	15.3	10.17	—	—	0.59	—	—
Nutritional diseases .. .. .	—	—	53.8	—	3.3	—	—	—	—
Anaemias .. .. .	—	2.20	—	0.28	—	—	—	—	—
Respiratory diseases .. .. .	—	—	11.5	0.85	—	—	—	5.22	—
E.N.T. diseases .. .. .	—	—	—	7.63	—	—	—	0.98	0.02
Hydroceles .. .. .	—	1.67	—	5.65	—	1.1	1.19	—	—
Hernia .. .. .	—	0.18	7.6	1.69	—	—	0.4	0.32	—
Varicose veins .. .. .	—	—	—	0.28	—	—	—	—	—
Haemorrhoids .. .. .	—	—	7.6	0.28	—	—	—	—	—
Other surgical .. .. .	—	—	—	0.28	—	—	0.2	0.32	—
Cardiovascular .. .. .	—	0.38	—	0.56	—	1.1	—	2.29	—
Low blood pressure .. .. .	—	—	3.8	3.11	—	—	—	—	—
High blood pressure .. .. .	—	0.18	15.3	2.26	—	—	1.39	0.32	—
T.B. Lungs .. .. .	—	0.74	23.0	1.41	—	—	0.59	0.65	—
T.B. Others .. .. .	—	—	7.6	0.28	—	—	—	—	—
Leprosy .. .. .	—	—	—	—	—	—	—	—	—
Glycosuria .. .. .	—	0.18	—	0.56	—	—	—	—	—
Skeletal deformities .. .. .	—	—	—	0.56	—	—	—	—	—
Malignancy .. .. .	—	—	—	—	—	—	—	—	—
Gastro-intestinal diseases .. .. .	—	—	—	0.85	—	—	—	24.83	—
Diseases of nervous system .. .. .	—	—	—	0.56	—	—	0.4	—	—
Venereal diseases .. .. .	—	—	—	0.28	—	—	—	—	—
Diseases of bones, joints and muscles .. .. .	—	0.55	11.5	—	—	—	0.4	—	—
Occupational diseases .. .. .	—	—	19.2	—	—	—	—	—	—
Avitaminosis .. .. .	—	1.10	—	—	—	—	—	—	—
Psychoneurosis .. .. .	—	—	—	—	—	—	—	—	—
Genito-urinary diseases .. .. .	—	—	—	0.56	—	—	—	—	—
Others .. .. .	—	1.47	26.9	0.85	—	—	0.99	—	—

TABLE NO. III A  
Other Medical Examinations  
TOTAL EXAMINED: 4736

Name of the Factory	PERIODIC		SPECIFIC		FOLLOW-UP		TOTAL
	Supervisors	Employees	Supervisors	Employees	Supervisors	Employees	
ADVANCE .. .. .	28	192	—	26	4	17	267
EMPRESS .. .. .	142	88	—	153	38	128	549
SVADESHI .. .. .	1	31	—	—	—	30	62
TATA .. .. .	196	135	8	543	12	319	1213
TATA OIL (SEWRI) .. .. .	5	149	3	101	—	21	279
TATA OIL (COCHIN) .. .. .	9	51	4	49	3	41	157
TATA CHEMICALS .. .. .	15	457	60	408	10	336	1286
INDIAN HOTELS .. .. .	—	—	—	131	—	342	473
<b>TATA ELECTRIC COMPANIES:</b>							
BHIRA .. .. .	—	7	—	—	1	5	13
BHIVPURI .. .. .	2	123	—	—	—	10	135
KALYAN .. .. .	4	46	12	1	6	1	70
KHOPOLI .. .. .	3	35	—	10	—	27	75
TROMBAY .. .. .	29	87	—	—	—	41	157
<b>TOTAL .. .. .</b>	<b>434</b>	<b>1401</b>	<b>87</b>	<b>1422</b>	<b>74</b>	<b>1318</b>	<b>4736</b>
	1835		1509		1392		
	(38.75%)		(31.86%)		(29.39%)		(100.00%)

TABLE NO. III B  
Analysis of Defects in Periodic Medical Examinations

	ADVANCE	EMPRESS	SVADESHI	TATA	TATA OIL (SEWRI)	TATA OIL (COCHIN)	TATA CHEMICALS
<b>Total Number Examined</b>	<b>220</b>	<b>88</b>	<b>32</b>	<b>331</b>	<b>154</b>	<b>60</b>	<b>472</b>
Underweight .. .. .	22	—	15	63	14	—	33
Dental .. .. .	—	—	12	42	2	10	—
Pterygium .. .. .	—	—	1	21	—	—	—
Visual defects .. .. .	101	2	24	27	11	—	56
Trachoma .. .. .	—	—	—	—	—	—	—
Skin diseases .. .. .	1	—	7	15	8	—	3
Nutritional diseases .. .. .	—	—	21	2	6	—	—
Anaemias .. .. .	—	—	1	8	—	1	—
Respiratory diseases .. .. .	5	2	1	19	—	—	5
E.N.T. Diseases .. .. .	3	1	2	8	—	—	—
Hydroceles .. .. .	—	2	4	5	—	—	—
Hernia .. .. .	—	—	3	2	—	—	3
Varicose veins .. .. .	—	—	2	6	—	—	—
Haemorrhoids .. .. .	—	2	1	7	—	—	—
Other surgical .. .. .	—	1	—	—	—	1	—
Cardio-Vascular .. .. .	—	4	—	3	—	—	—
Low Blood pressure .. .. .	—	—	—	5	3	—	—
High Blood pressure .. .. .	8	1	1	7	—	—	5
T.B. Lungs .. .. .	2	1	30	2	—	—	—
T.B. Others .. .. .	—	—	1	—	8	—	—
Leprosy .. .. .	—	—	4	—	—	—	—
Glycosuria .. .. .	2	8	1	14	2	—	1
Skeletal Deformities .. .. .	2	—	—	—	—	—	—
Malignancy .. .. .	—	—	3	—	—	—	—
Gastro-intestinal diseases .. .. .	—	1	1	8	—	2	1
Diseases of nervous system .. .. .	1	—	1	1	1	—	—
Veneral diseases .. .. .	—	—	—	1	—	—	—
Diseases of bones, joints and muscles .. .. .	2	1	5	2	—	—	—
Occupational diseases .. .. .	—	—	6	—	—	—	—
Avitaminosis .. .. .	—	—	—	—	2	—	—
Psychoneurosis .. .. .	—	—	—	—	—	—	—
Genito-urinary diseases .. .. .	—	1	—	2	—	—	—
Others .. .. .	8	1	9	—	1	1	—

TABLE NO. III C

## TATA ELECTRIC COMPANIES

Analysis of Defects Found in Periodic Medical Examinations.

TOTAL NUMBER EXAMINED	BHIRA 7	BHIVPURI 125	KALYAN 50	KHOPOLI 38	TROMBAY 116
Underweight .. .. .	—	—	—	—	1
Dental .. .. .	—	32	4	—	6
Pterygium .. .. .	—	—	—	—	3
Visual defects .. .. .	—	14	9	—	6
Trachoma .. .. .	—	—	—	—	—
Skin diseases .. .. .	—	5	—	—	6
Nutritional diseases .. .. .	—	—	—	—	—
Anaemias .. .. .	—	—	—	—	1
Respiratory diseases .. .. .	—	6	—	—	3
E.N.T. Diseases .. .. .	—	21	—	—	2
Hydroceles .. .. .	—	—	—	—	4
Hernia .. .. .	—	2	—	—	1
Varicose veins .. .. .	—	—	—	—	—
Haemorrhoids .. .. .	—	6	—	—	2
Other surgical .. .. .	1	—	—	—	—
Cardio-vascular .. .. .	—	—	—	1	4
Low Blood pressure .. .. .	—	—	—	—	—
High Blood pressure .. .. .	—	4	10	—	6
T.B. Lungs .. .. .	—	—	—	1	1
T.B. Others .. .. .	—	1	—	—	—
Leprosy .. .. .	—	—	1	—	—
Glycosuria .. .. .	—	—	—	—	7
Skeletal deformities .. .. .	—	—	—	—	—
Malignancy .. .. .	—	—	—	—	—
Gastro-intestinal diseases .. .. .	—	—	—	—	11
Diseases of nervous system .. .. .	—	8	—	—	1
Venereal diseases .. .. .	—	—	—	—	—
Diseases of bones, joints and muscles .. .. .	—	—	—	—	—
Occupational diseases .. .. .	—	—	—	—	—
Avitaminosis .. .. .	—	—	—	—	—
Psychoneurosis .. .. .	—	—	—	—	1
Genito-urinary diseases .. .. .	—	1	—	1	6
Others .. .. .	1	—	1	—	7

TABLE NO. IV

Comparative Statement of TB Cases

	Employee Population	Cases under treatment at the end of the previous year	New Cases	Relapses	Total Cases	Cases Arrested	Cases left Service	Cases Died	Cases under treatment at the end of the year
ADVANCE .. .. .	3595	2	3	1	6	1	—	1	4
EMPRESS .. .. .	8718	25	60	1	86	17	2	2	65
SVADESHI .. .. .	4367	23	16	2	41	27	2	—	12
TATA .. .. .	5460	86	68	41	195	100	3	2	90
TATA OIL, SEWRI .. .. .	1308	1	6	2	9	5	1	—	3
TATA OIL, COCHIN .. .. .	1087	—	4	—	4	2	—	—	2
TATA CHEMICALS .. .. .	2800	6	10	7	23	18	—	1	4
INDIAN HOTELS .. .. .	1189	3	4	—	7	—	—	1	6
VOLTAS .. .. .	2687	14	—	3	17	—	—	—	17
TATA YODOGAWA .. .. .	522	1	—	—	1	—	—	1	—
BHIRA .. .. .	148	1	1	—	2	—	—	—	2
BHIVPURI .. .. .	155	2	—	—	2	—	—	—	2
KALYAN .. .. .	274	2	—	—	2	1	—	—	1
KHOPOLI .. .. .	220	4	1	2	7	2	1	—	4
TROMBAY .. .. .	553	4	3	—	7	—	—	—	7
TATA-ROBINS-FRASER .. .. .	763	1	—	—	—	—	—	—	1

TABLE NO. V  
Preventive Inoculations

Name of the Factory	T.A.B.	CHOLERA	TRIPLE ANTIGEN	SMALL POX		TETANUS			
				Primary	Re-vaccinations	1st Dose	2nd Dose	3rd Dose	Booster
ADVANCE .. .. .	—	—	5	—	—	511	244	218	35
EMPRESS .. .. .	1	—	—	—	1	498	234	177	3
SVADESHI .. .. .	140	140	—	—	179	3	5	3	9
TATA .. .. .	—	195	—	—	—	160	21	—	50
TATA OIL, SEWRI .. .. .	45	45	—	—	459	677	483	392	45
TATA OIL, COCHIN .. .. .	8	192	7	—	127	109	88	73	113
TATA OIL, CALCUTTA .. .. .	—	—	—	—	133	—	—	—	—
TATA CHEMICALS .. .. .	—	—	5	378	11	237	239	226	212
TATA YODOGAWA .. .. .	—	31	—	—	126	67	23	—	—
INDIAN HOTELS .. .. .	306	—	—	—	1048	308	110	42	44
VOLTAS, THANA .. .. .	435	435	—	—	1119	212	189	—	167
TATA-ROBINS-FARSER .. .. .	—	—	—	—	552	40	26	22	—
TATA ELECTRIC DIVNS:									
BHIRA .. .. .	—	1430	74	7	1526	25	20	18	20
BHIVPURI .. .. .	314	314	55	6	545	11	7	52	17
KALYAN .. .. .	—	10	22	1	462	68	53	30	44
KHOPOLI .. .. .	652	652	71	5	984	33	18	8	28
TROMBAY .. .. .	446	446	30	2	1278	45	26	14	19
	2347	3890	269	399	8550	3004	1786	1275	806

TABLE NO. VI  
Certified Sickness Absenteeism

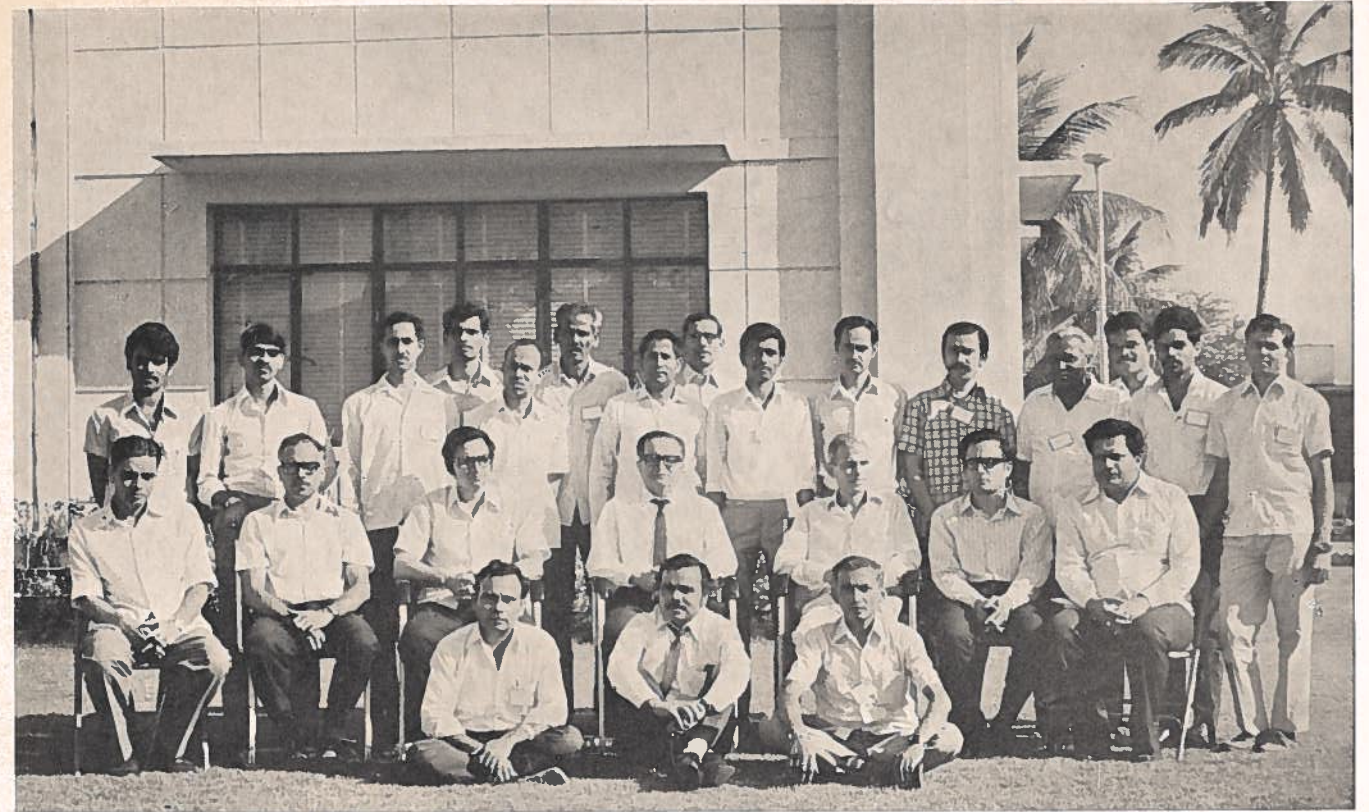
	Year	Employee Population	No. of spells of sickness	No. of days lost	Frequency Rate (Absence per 1000 workers)	Severity Rate (Days lost per absence)	Disability Rate (Days lost per worker)
EMPRESS MILLS .. .. .	1972	7426	13232	52166	1795	3.9	7.02
	1973	7168	12210	68163	1703	5.6	9.5
	1974	8718	8907	47560	1022	5.34	5.45
TATA OIL MILLS, SEWRI .. .. .	1972	1333	2386	16080	1789	6.7	12.06
	1973	1383	2728	17878	1972	6.6	13.0
	1974	1308	2992	20872	2287	7.00	15.93
TATA OIL MILLS, COCHIN .. .. .	1972	958	832	6961	868	8.37	7.27
	1973	1069	899	8799	841	9.78	8.2
	1974	1087	850	8211	782	9.66	7.55
TATA ELECTRIC DIVISIONS: BHIRA .. .. .	1972	141	341	1854	2418	5.4	13.14
	1973	149	290	1362	1946	4.69	9.1
	1974	150	355	1858	2366.6	5.23	12.39
BHIVPURI .. .. .	1972	154	160	824	1039	5.1	5.3
	1973	151	333	1603.5	2205	4.8	10.6
	1974	155	296	1262	1909.6	4.27	8.14
KALYAN .. .. .	1972	274	624	1925	2277	3.08	7.02
	1973	276	762	2431	2760	3.19	8.80
	1974	274	156	437	2801.3	2.80	1.59
KHOPOLI .. .. .	1972	193	682	2583	3490	3.79	13.36
	1973	199	890	3669.5	4472	4.13	18.5
	1974	220	963	4206	4803	4.6	19.1
TROMBAY .. .. .	1972	514	2799	5124	5445	1.83	9.9
	1973	542	3243	5718	5984	1.76	10.54
	1974	553	2810	4836	5081	1.72	8.74
TATA YODOGAWA .. .. .	1974	522	1014	16280	1942	16.05	31.18
TATA-ROBINS-FRASER .. .. .	1974	763	1189	713.5	1558	0.60	0.935

TABLE NO. VII  
Comparative Statistics of Accidents

Mill	Year	Employee Population	Disabling Injuries		First Aid Injuries	Total	Frequency Rate	Severity Rate	Total days lost (including time charges)	Days charged per injury
			Temporary	Permanent Partial/Total						
ADVANCE	1970	3507	26	3	1015	1044	3.74	170.34	1319	45.48
	1971	3672	33	2	1179	1214	4.27	206.06	1688	48.23
	1972	3732	35	3	1405	1443	4.71	156.96	1265	33.29
	1973	3751	44	4	1065	1113	5.94	296.73	2396	49.92
	1974	3595	27	6	821	854	4.27	483.91	3737	113.24
EMPRESS	1970	7596	685	—	3516	4201	38.01	602.84	10864	16.00
	1971	7831	758	—	3999	4757	41.68	598.61	10886	14.36
	1972	7426	900	3	3712	4615	50.38	690.95	12385	13.71
	1973	7168	915	1	4271	5187	54.27	754.44	12734	13.90
	1974	7338	421	—	4635	5056	24.17	385.96	6621	15.73
SVADESHI	1970	5381	308	2	1630	1940	23.66	398.83	3241	16.97
	1971	5189	377	7	1812	2196	30.75	469.72	5791	15.08
	1972	5184	322	4	2580	2906	25.65	357.00	4483	13.75
	1973	4976	331	5	2433	2769	28.32	406.36	4712	14.02
	1974	4367	287	2	2147	2436	26.50	515.31	4182	14.47
TATA	1970	5585	167	3	991	1161	12.27	289.29	3998	23.52
	1971	5987	191	—	1062	1253	13.44	263.80	3733	19.55
	1972	6044	180	3	1673	1856	12.73	447.59	6431	35.14
	1973	5955	222	—	2406	2628	16.06	291.10	4023	18.12
	1974	5460	182	—	1861	2043	14.31	246.22	3131	17.20
TATA OIL, SEWRI	1970	1270	26	2	92	120	11.45	284.0	696	24.8
	1971	1433	25	3	72	100	10.44	2450.0	6564	234.4
	1972	1333	27	—	63	90	10.08	256.0	685	25.4
	1973	1383	15	—	56	71	5.16	100.0	291	19.4
	1974	1308	10	—	35	45	3.23	59.0	182	18.2
TATA OIL, COCHIN	1970	940	21	2	112	135	11.93	267.7	516	22.4
	1971	1057	31	5	148	184	16.44	1007.0	2206	61.28
	1972	1020	34	2	173	209	17.35	1484.0	3079	85.52
	1973	1069	37	—	197	234	18.73	239.93	498	13.46
	1974	1087	22	2	191	215	10.97	185.98	407	16.96
TATA CHEMICALS	1970	2490	78	—	919	997	13.7	115.7	659	8.4
	1971	2582	71	1	906	978	11.9	406.5	2452	8.5
	1972	2724	70	4	943	1017	11.63	545.6	3466	46.8
	1973	2728	45	2	841	888	7.26	179.80	1160	24.70
	1974	2800	47	5	904	956	7.76	1212	7400	142.3
TATA ELECTRIC..	1972	2420	75	—	51	126	12.49	163.84	984	13.1
	1973	3330	73	—	120	193	9.15	128.69	1026	14.0
	1974	3330	67	—	115	182	7.57	80.12	709	10.5
TELCO, POONA	1973	3786	659	N.A.	9962	10621	80.18	302.4	2490	3.77
	1974	4918	490	N.A.	16853	17343	49.29	356.00	3473	7.09
TELCO, JAMSHEDPUR..	1974	18358	245	13	200	458	8.99	305.47	15691	60.81
TATA YODOGAWA	1974	522	78	1	64	143	61.24	5760.4	7431	94.06
VOLTAS, THANA	1974	2687	93	3	1335	1431	16.75	252.4	1447	15.07
TATA-ROBINS-FRASER	1974	763	159	1	45	205	280.00	2531.23	1851	9.03

TABLE NO. VIII  
Comparative Statement of Accidents by Causes

CAUSES	ADVANCE		EMPRESS		SVADESHI		TATA		TATA OIL, SEWRI		TATA OIL, COCHIN		TATA CHEMICALS		TATA-ROBINS-FRASER
	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1973	1974	1974
Glass injuries inside the Department	7	1	38	34	33	30	24	19	1	2	4	8	21	14	1
Glass injuries outside the Department	2	2	3	2	—	3	7	6	1	—	1	—	1	4	—
Sharp and pointed objects (inside Dept.)	40	27	185	179	543	597	145	123	2	5	50	32	25	23	6
Sharp and pointed objects (outside Dept.)	3	1	18	2	—	—	27	24	1	—	1	2	7	4	—
Slipping on floors	54	46	107	106	43	32	87	38	6	1	16	17	48	47	4
Uneven flooring	12	11	1	—	—	—	15	13	—	2	—	—	7	5	—
Drop of stationary objects	73	39	492	527	302	359	271	135	2	5	12	11	15	14	—
Knocking against stationary objects	138	103	547	540	399	303	345	245	13	7	41	39	59	70	9
Material handling	212	139	222	188	304	205	322	329	5	2	6	6	266	251	55
Knocked by moving objects	60	62	142	276	88	66	33	42	4	3	12	4	17	44	2
Machine injuries	86	63	743	871	127	174	302	282	5	3	21	26	26	27	9
Handtools and other appliances	88	82	527	476	103	82	121	89	6	3	16	24	138	169	40
Lifting tackles, Hoists, Lifts, cranes etc.	2	6	1	—	—	—	1	1	—	1	—	—	8	10	2
Picking sticks	16	16	229	161	38	35	45	32	—	—	—	—	—	—	—
Shuttle injuries	17	21	324	317	100	76	251	200	—	—	—	—	—	—	—
Loom lever weights	15	9	53	84	70	49	25	17	—	—	—	—	—	—	—
Spindles and bobbin cuts	143	82	414	430	315	261	291	220	—	—	—	—	—	—	—
Burns and scalds	31	27	129	181	26	21	47	28	4	2	11	9	35	49	10
Chemical burns	4	5	22	10	—	—	13	10	14	4	13	12	13	25	—
Eye injuries—Ordinary	27	29	299	421	59	42	50	49	—	1	5	6	59	65	7
Eye injuries—Chemical	9	9	38	31	5	3	16	24	3	4	20	11	35	41	—
Gassing	—	—	1	—	—	—	—	—	—	—	—	—	68	65	—
Electrical injuries	2	8	3	10	—	—	—	1	—	—	1	2	2	5	1
Falls	18	22	2	1	2	—	22	13	4	—	3	1	9	11	2
Assaults and horseplay	5	3	7	13	8	1	5	12	—	—	—	—	4	1	—
Animal bites	1	4	9	4	—	2	7	1	—	—	—	—	3	5	—
Miscellaneous	48	37	618	242	204	17	156	90	—	—	1	5	22	7	57
<b>TOTAL</b>	<b>1113</b>	<b>854</b>	<b>5187</b>	<b>5056</b>	<b>2769</b>	<b>2436</b>	<b>2628</b>	<b>2043</b>	<b>71</b>	<b>45</b>	<b>234</b>	<b>215</b>	<b>888</b>	<b>956</b>	<b>205</b>



*Participants at the Safety Education Course held at the Dharavi Receiving Station of Tata Electric Companies.*



*Dr. V. P. Pathak, Industrial Physician, Tata Mills, receiving the Family Planning Award at the hands of Mr. M. W. Desai, Municipal Commissioner at the Bombay Family Planning Conference.*