CHAPTER IX

PROBLEMS RELATED TO HEALTH CARE OF INDUSTRIAL WORKERS

9.1 INTRODUCTION

Medical geography is one of the oldest branches of geographical study and has incorporated in true environmentalist style, a consideration of both the physical and human factors which combine to influence man's bodily and mental health. This subject area also continues to be a fertile one in applied geography as developments in medical and social sciences have initiated new directions for research into the spatial incidence of disease and provision of caring facilities.

All over the world there exist issues of survival of people. In the areas of work environment there are movements against coal dust and asbestos popularly known as black lung movement (U.S.A.) and white lung movement (U.K.) respectively. These movements address the issues of work place pollution, worker's health and well being. Environment is looked upon more as an issue which is not related with lives of workers; but, in fact source of environmental pollution lies inside the factory which affects the workers' health. The industries are careless towards their worker's health exposing them to dangerous toxic substances, without worrying about their impact.

As workers are the main bread winners and the backbone of economic and social progress their health is an essential factor in development

9.2 KNOWLEDGE, AWARENESS AND PERCEPTION OF WORKERS

Mamoria observes that till recently Indian industrialists were not much concerned about the potential benefits flowing from modern health services which often looked just as palliatives or welfare measures. This attitude on the part of employers may be explained on the basis of:

1) Labourers as human beings are not subject to the laws of private ownership. It is therefore, their responsibility to protect themselves if they are adversely affected by the production process.
2) Since any provision for depreciation charges for labourers often raises the cost of production, employers generally did not care to provide health services.
3) In view of the availability of a large number of employees in the labour market, employers were in a position to replace weak or unhealthy workers. In these circumstances, they did not care to provide for protection against health hazards.
4) Workers were not well organised, their bargaining power was therefore weak; and they were not able to compel their employers to accept their claims for compensation in the event of accidents or occupational diseases. In

the circumstances they and their dependents had to bear the brunt of the social costs resulting from an impairment of their health.

An attempt was therefore made during the present study to assess the knowledge, awareness and perception of the workers regarding the health hazards that confront them in their work environment. The findings are summarised in Table 9.2. The variables used for the purpose included:

1. Occupational Health Hazard Awareness
2. Awareness about prevention of health hazards
3. Satisfaction about remedies of occupational health hazards
4. Managements' attitude towards health hazards

Awareness is least in heavy engineering, paints and textile industry. It is inadequate in all other industries except fertilisers. It may be noted that the fertiliser industry selected for study is one of the leading large scale industries in the region with adequate infrastructure and is noted for its effects at pollution control and safety measures implementation. Workers in the heavy engineering, paints and textile industries are those least satisfied with remedial measures adopted. In all industries except fertilizers, management's attitude is not favourable towards the health hazards. The awareness is governed by various factors like health and safety programmes, trade union activities, socio-economic condition of the worker,

TABLE 9.2

	Variables for assessing KAP		% of respondents in category of industry							
			Chemical	H.Engg.	Paints	Fertilizer	Textile	Glass	Pharmaceutical	Others
I	Awareness about occupational health hazards	Adequate	40 %	30 %	28 %	60 %	36 %	50 %	48%	40 %
		Inadequate	60 %	70 %	72 %	40 %	44 %	50 %	52 %	60 %
II	Awareness prevention of health hazards	Adequate	36 %	28 %	26 %	58 %	30 %	40 %	44%	36 %
		Inadequate	64 %	72 %	74 %	42 %	70 %	60 %	56 %	64 %
III	Satisfaction about remedies of health hazards	Yes	40 %	26 %	24 %	58 %	22 %	38 %	42 %	32 %
		No	60 %	74 %	76 %	42 %	78 %	62 %	58 %	68 %
IV	Managements attitude towards health hazards	Favourable	30 %	32%	38 %	70 %	30 %	40 %	32 %	N.A.
		Not Favourable	70 %	68 %	62 %	30 %	70 %	60 %	62 %	N.A.

rationalization of machinery and efficiency of research and development department.

9.3 HEALTH CARE AVAILABILITY AND ACCESS

Medical services are amongst the most important social facilities in terms of accessibility. They are mostly curative but also form part of under preventive and educative networks which help to maintain health and avoid ill-health (Knox 1982a)

The 1977 World Health Assembly had decided that the main social target of governments and the WHO should be the attainment by all people of the world of a level of health that will permit them to lead a socially and economically productive life. (WHO 1981).

In India the ESI Act passed in 1948 is an important measure of social security and health insurance in this country. It provides for certain cash and medical benefits to industrial employees in case of sickness, maternity and employment injury.

The act has made provisions for the following benefits to insured persons or as the case may be, to other dependents:

1. Medical benefit
2. Sickness benefit

3. Maternity benefits
4. Disablement benefits
5. Dependents benefit
6. Funeral benefits

The scope of occupational health services has widended to meet health care needs which are not directly related to the effects of work on health. In this way the organisation may derive economic benefits from reduction in unnecessary sickness and disability. In developing countries, through a combination of failure to recognise needs and inadequate resources to meet them services have often been either insufficient or non-existent. An important factor is the extent to which employees and workers want to have safer and healthier workplace.

9.3.1 Health Care Services in Vadodara

The health care services available for industrial workers in Vadodara consists of the hospital set up under the Employees' State Insurance Scheme (ESIS) at Gotri. Besides this, workers suffering from tuberculosis are treated at the T.B. Hospital located in the same area. There are a number of ESIS clinics scattered in different parts of the city (Fig.9.1). The medical care including hospitalisation and medicines are provided free of charge to the workers and their families who are registered under this scheme. The dispensaries do not have treatment facilities for any serious

ailments. Each clinic is manned by a medical practioner who merely provides medicines for common ailments like cold, cough or fever. All serious problems are referred to the hospital at Gotri. Apart from these, medical care for the industrial workers may be provided at the factory premises only in case of some of the very large industrial units. Most of the smaller industries have no provision of medical care at the factory sites.

The extent of utilisation of the ESIS facilities, the physical accessibility pattern, and the availability of at least minimum medical facilities at the factory site as visible in the course of this study, are summarised in Table 9.3.

It is apparent that on an average, only about 30 to 40 percent of the industrial workers avail of the ESIS facilities. The rest prefer to go to private practitioners. One of the main reasons for this is the physical distance separating the workplace from the ESIS hospital. About 80 percent of the workers in the chemical industry found the distance to be too far. Only in case of the paints and textile industries, 46 percent and 50 percent of the workers respectively found the ESIS hospital to be far. Thus, it is in these two industries that the maximum percentage of workers utilise the ESIS facilities (46% in case of paint workers and 42% in case of textile workers). The utilisation of the ESIS facilities is higher in the paint industry

9.3 Health Care availability, utilisation and access

	Chemical		Heavy Engg		Pharmaceutical		Glass		Paints		Textile	
	ESI	Pvt	ESI	Pvt	ESI	Pvt	ESI	Pvt	ESI	Pvt	ESI	Pvt
Utilization (% of workers)	30	70	36	64	26	74	40	60	48	52	42	58

	Chemical		Heavy Engg		Pharmaceutical		Glass		Paints		Textiles	
	Far	Near	Far	Near	Far	Near	Far	Near	Far	Near	Far	Near
Assess to ESIS hospital (% of workers)	80	20	64	26	40	60	52	48	46	54	50	50

	Chemical	Heavy Engg	Pharmaceutical	Glass	Paints	Textiles
Availability of medical facility at factory site	Yes	Yes	Yes	Yes	No	Yes
Yes						

probably also due to the fact that none of these units have any medical aid on the factory premises. In case of the textile industry, only part-time doctors are available at the site.

9.3.2 Diagnosis of ailment

In the first place, diseases are not readily certified as occupational. This can be done only by a medical board. For fear of having to pay compensation most employers prevail upon the E.S.I.S. doctors and specialists to refrain from certifying any disease as occupational. Thus, only very acute cases of respiratory diseases such as silicosis and byssinosis are certified, generally at a very advanced stage. Other diseases, such as dermatitis, are seldom, if ever related to occupation. So most patients prefer to consult private practitioners. The location of the E.S.I.S. Hospital at a far end of the city, is another deterrent for the workers to visit this hospital. No attempt is made to relate the ailments of workers with their working environmental conditions. The medical services offer only curative measures by performing the tasks of diagnosis and treatment without any attempt to prevent the disease by getting at the root cause through a study of their occupational history.

The problems faced by the workers, therefore, become very complex. Lack of compensation and absence of medical leave lead to financial strains that affect the health and

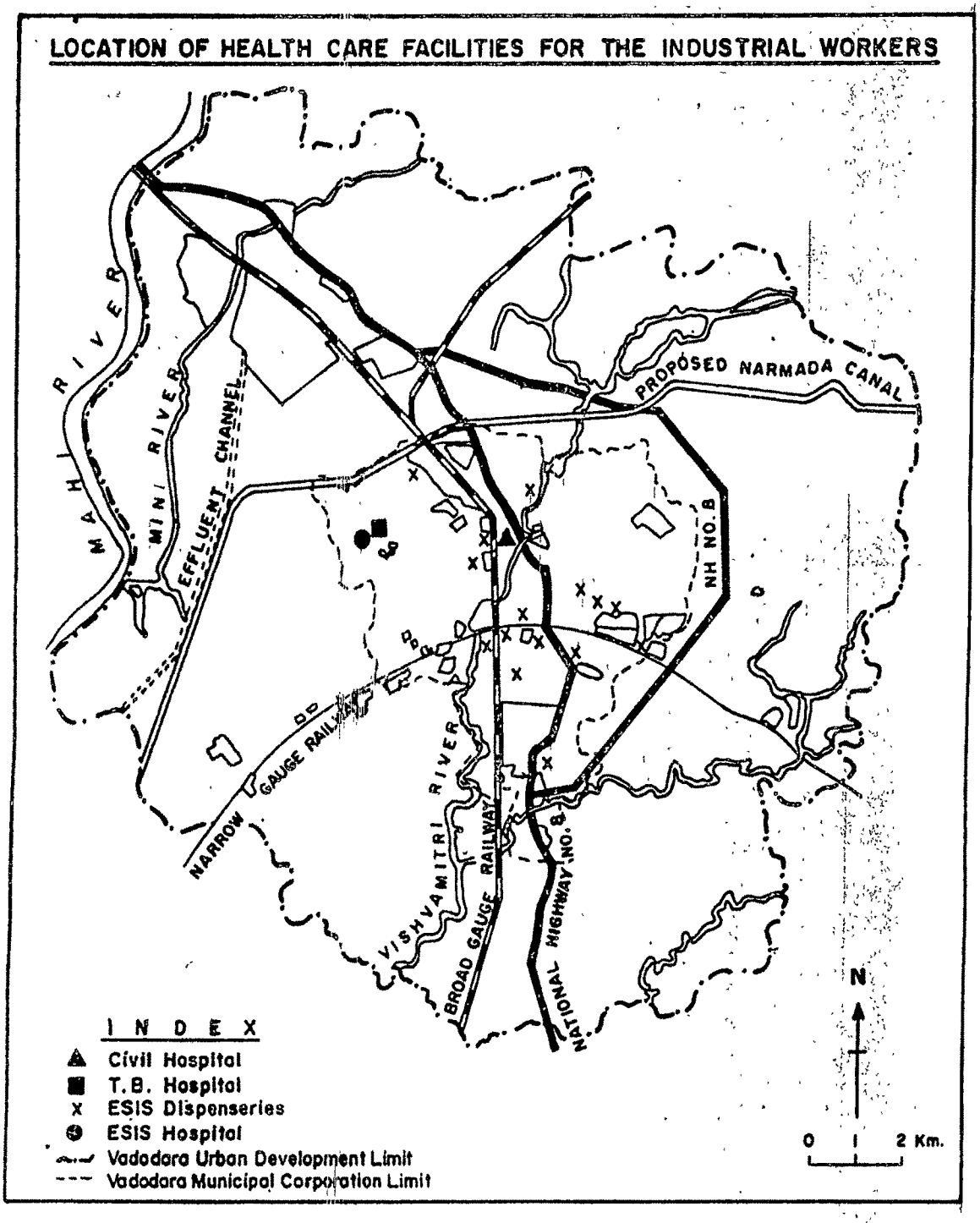
LOCATION OF HEALTH CARE FACILITIES FOR THE INDUSTRIAL WORKERS
MAHI RIVER
MINI RIVER
EFFLUENT CHANNEL
PROPOSED NARMADA CANAL
NH NO.8
NARROW GAUGE RAILWAY
VISHVAMITRI RIVER
BROAD GAUGE RAILWAY
NATIONAL HIGHWAY NO. 8
INDEX
Civil Hospital
T.B. Hospital
ESIS Dispenseries
ESIS Hospital
Vadodara Urban Development Limit
Vadodara Municipal Corporation Limit
N
0
1
2 Km.

Fig.9.1

well-being of both the worker and his family. Malnutrition, lowering of resistance and subsequent increase in susceptibility to infectious and debilitating diseases, are the inevitable outcome. The misery of the worker is compounded by the non-sympathetic attitude of the management of some of the factories who refuse to allow concession in the workplace through change of job or reduced working hours or by introducing safety measures and health care facilities.

Recently, according to report published in 'The Times of India by Shattam Minawall states that it is, for the first time in the 150 year old history of the textile industry in Bombay that a worker has received his due. It is estimated that about 10,000 workers both active and retired are suffering from byssinosis.

Although byssinosis is listed as a compensable disease in the Employee's State Insurance Act and ILO statistics indicate that it affects almost 40 percent of the workers in the dusty processes of textile mills, the disease has rarely been diagnosed in India.

This is mainly because awareness about byssinosis,both among workers and in the medical circles is low. Also doctors often donot want to take on the responsibilty and headache of diagnosing a compensable disease. So they usually take the easy way out and identify any lung problem as TB or asthma.

Little wonder then that for those stuck between a callous bureaucracy and an indifferent management, compensation - which under any other circumstances would be a minor matter of routine to the worker - has taken on the proportion of a major victory.

9.4 SOCIO-ECONOMIC CONDITION OF THE WORKERS

Most of the workers are attracted to industries with expectation of good pay packets. The vast majority of the workers in India belong to the unskilled or semi skilled categories. The following tables give a clear picture of their poor socio-economic condition which is also one of the factors related to their health and well being.

TABLE 9.4.1

TYPE OF FAMILY

Type of Family	Number	%
Nuclear	261	58
Joint	189	42
Total	450	100

It is evident that majority of the respondents belong to nuclear families. This situation is considered as the effect

of industrialization and migration.

TABLE 9.4.2

MARITAL STATUS

Status	M	%
Married	382	84.98
Unmarried	57	12.76
Widowers	11	2.45
Total	450	100

There are 84.9% respondents who are married, and are therefore expected to support a family.

TABLE 9.4.3

INCOME

	N	%
Below Rs. 500	29	6.4
501 - 1000	136	30.2
1001- 1500	95	21.1%
1501-2000	113	25.1
Above 2000	77	17.1
Total	450	100

It is clear that nearly 37% of the workers are below the poverty line, and another 46% also belong to the low income group. Only about 17% are in the lower middle income group.

TABLE 9.4.4

EDUCATION

Level	N	%
Illiterate	62	13,8
Primary	167	37.2
Secondary	188	41.8
I.T.I	7	1.5
Diploma	5	1.1
Degree	17	3.8
Others	4	0.8
Total	450	100

It is seen that the educational level is not very high among the respondents. More than 50% of the workers are either illiterate or have only primary education. The number of workers with anything more than secondary education is negligible.

TABLE 9.4.5

HOUSE TYPE

Type	N	%
Kuchha	197	43.8
Pucca	253	56.2
Total	450	100

Although the number of respondents with pucca houses is slightly higher, there is a very large number of workers living in kuccha houses.

TABLE 9.4.6

HOUSE OWNERSHIP

Ownership	N	%
Rented	188	41.8
Own	233	51.8
Quarters	229	64.
Total	450	100

Most of the respondents own house (51.8%). Owning a house is a matter of pride in society. Thus although it is observed

that their economic condition is not very good, they own a house. However, there is an equally large number of workers who stay in rented houses. The number of workers living in company quarters is very few indicating that the industries do not have sufficient housing and social welfare schemes for their workers.

TABLE 9.4.7

NUMBER OF ROOMS

Number of rooms	N	%
1 - 2	280	62.2
3 - 4	151	33.6
Above 4	19	4.2
Total	450	100

It is clear that majority of the respondents have 1-2 rooms in their houses which could indicate overcrowding.

TABLE 9.4.8

VENTILATION

Ventilation	N	%
Poor	121	26.9
Satisfactory	292	64.9
Good	37	8.2
Total	450	100

Ventilation is generally poor to satisfactory in over 90% of the houses indicating unhealthy living conditions.

TABLE 9.4.9

SOURCE OF WATER

Source	N	%
Own Tap	285	63.3
Public	153	34.00
Others	12	2.7
Total	450	100

It is observed that majority have their own tap for water. But nearly 37% of the workers were found to be depending on sources outside their houses.

TABLE 9.4.10

LATRINE

Type	N	%
Own	264	58.7
Public	112	24.9
Open	74	16.4
Total	450	100

This amenity is found in most of the houses. But here too, more than 40% of the respondents were either using public toilets or defecating on open ground. These are again indications of unhygienic living.

TABLE 9.4.11

ELECTRICITY

Electricity	N	%
Yes	403	89.6
No	47	10.4
Total	450	100

Most of the respondents possess electricity in their house

which is only to be expected in the urban area.

It can be concluded from above tables that majority of the respondents belong to poor socio-economic strata where low incomes and poor educational levels are significant in explaining the poor health conditions. Further, the indifferent attitude of the employers towards the welfare of the workers is probably being perpetuated only because of these characteristics of the workers. The lack of awareness of health hazards and ability to fight for their rights and for justice is hampered both by ignorance and lack of financial support. This highlights the need for imparting education to the industrial workers in order to equip them with the knowledge required to adopt adequate precaution to ward off the ill-effects of industrialisation.

9.5 POPULATION AFFECTED BY HEALTH PROBLEMS IN INDUSTRIAL ENVIRONMENT (EXPECTED)

TABLE 9.5

Health problems	Expected Number of Total workers affected							
	Chem. Ind	H.Engg Ind	Pharm Ind	Text Ind	Fert Ind	Paint Ind	Glass Ind	Total Ind
Back	4224	1600	768	1080	432	384	440	8928
Neck	2640	900	704	300	576	160	220	5500
Shoulder	2464	1700	768	360	432	288	308	6320
Hands	3168	1200	448	720	360	256	462	6614
Lower Limb	4400	1500	1664	1260	936	672	572	11004
Respiratory	3168	500	320	1200	144	544	440	6316
Cardiovascular	2464	1000	384	780	288	32	440	5388
Nervous Sys	2288	600	448	480	144	128	418	4506
Gastro-intestinal system	1760	200	320	300	432	192	264	3468
Eyes	8095	1500	896	1500	144	992	748	13875
Ears	880	1400	512	180	432	576	330	4310
Skin	5632	400	704	240	422	672	264	8344
Nose	5632	1100	640	1620	576	512	616	10696
Sleep	5984	2300	1792	2280	720	320	638	14034
Asthma	2288	300	448	840	144	288	396	4714
Stress	6512	2900	2112	1260	1512	1280	638	16214

It is expected that majority of workers in glass industry are likely to suffer from eye problem (748 people) followed by sleep and stress (638 people each) and nose problem (616 people).

As already noted (Table 3.1) the total population engaged in industries is 26,300. Out of these 33.46% are engaged in the chemical industry. It can therefore be expected that 8089 people working in chemical industry are likely to suffer from eye problem, 6512 people from stress, 6984 from sleep and 5632 each from nose and skin.

In the Heavy Engineering industry the major health problems expected are stress which will affect 2900 people followed by 2300 people with problem of sleep, 1700 people with shoulder, 1600 with back and 1500 each with problems of lower limb and eyes.

In the Pharmaceutical industry 2112 workers are expected to suffer from stress, 1792 from sleep and 1664 workers from lower limb infirmities. It is expected that 2280 people will have sleep problem followed by nose (1620 people), eyes (1500) stress, lower limb (1260 people each) and respiratory problems (1200) in the textile industry.

In Fertilizer Industry stress is expected to be a major problem among 1513 people. Rest are not significant.

In Paint Industry major expected problems are stress (1280 people) followed by eyes (992 people) and skin and lower limb (672 people each).

9.6 IMPACT OF INDUSTRIAL POLLUTION

Problems of air pollution arises from heavy industrialisation and the combustion of petroleum products. Chronic obstructive pulmonary diseases in the United States are less publicised than cardiovascular ailments, although the former pose a formidable problem. During the last five years death rates have risen abruptly and, as in Britain, middle aged men are the prime targets. It has been established in England that sickness and death from the complication of chronic bronchits are highest in congested cities where air pollution is at its worst. Such studies in India shows similar results. According to the scientists at the National Environmental Engineering and Research Institute, a staggering 70% of the available water in India is polluted. It is also estimated that 73 million work days are lost due to water related diseases (Chhatrapati Singh,1975).

A survey was carried out in areas of Hyderabad. The results shows that serious health problems of respiratory tract, skin and digestive system are felt by the residents surrounding the agglomeration of industrial estates and industrial areas. The respiratory system and skin problems were felt mainly in the East & West sides of industrial units towards which winds carry pollutants over a longer duration. Such effects were greater around areas where chemical units were present. Areas affected by water pollution showed digestive system disorder and skin related problems, mainly

around areas where chemical units existed (Dinesh Kumar, Mahendra and R.N. Chattopadhyay 1994).

A short term survey by the National Institute of Occupational Health Ahmedabad, indicated that lead concentration in blood and urine of policemen and roadside shopkeepers was significantly higher than that of the execposed community.

India's premier pollution research institute claims that 60% of Calcutta's residents suffer from respiratory diseases because of air pollution.

In many cases accidents or extreme exposure to noise toxic chemicals and gases result in acute, easily identified illness. But most workers are exposed to low levels of these hazards, which may be just as deadly in long run, though less apparent in the short run. Low level hazards cause chronic illness whose onset is often not noticed.The illness themselves such as lung cancer and heart diseases, are generally attributed to non-occupational causes by industry and medical profession. They therefore go unrecognised, uncounted and uncompensated.(The state of India's environment 1982, A citizen's Report edited by Anil Agarwal, Ravi Chopra and Kalpana Sharma.)

In order to assess the possible impact of industrial pollution on the health of people living in the vicinity of

TABLE 9.6

Health Problems	Male						Female					
	Yes		No		Total		Yes		No		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Back	20	40	30	60	50	100	22	44	28	56	50	100
Neck	18	36	32	64	50	100	17	34	33	66	50	100
Shoulder	15	30	35	70	50	100	5	10	45	90	50	100
Hands	11	22	39	78	50	100	13	26	37	74	50	100
Lower limb	26	52	24	48	50	100	24	48	26	52	50	100
Respiratory system	20	40	30	60	50	100	13	26	37	74	50	100
Cardiovascular system	1	2	49	98	50	100	1	2	49	98	50	100
Nervous system	3	6	47	94	50	100	-	-	50	100	50	100
Gastrointestinal system	31	62	19	38	50	100	21	42	29	58	50	100
Eyes	22	44	28	56	50	100	10	20	40	80	50	100
Ears	30	60	20	40	50	100	36	72	14	28	50	100
Skin	23	46	27	54	50	100	19	38	31	62	50	100
Nose	20	40	30	60	50	100	24	48	26	52	50	100
Asthma	5	10	45	90	50	100	8	16	42	84	50	100

factories a sample of 100 residents belonging to the lower socio-economic strata similar to those of the factory workers was randomly drawn from the slums near the factories. The relevant results are presented in table 9.6.

It is observed that the physical health problems like back, shoulder, neck and lowerlimbs are high in the population residing near the industrial areas. This problem may be the result of physical and manual work that they are forced to perform in order to earn their daily bread. Hence this may be ignored for the purpose of this study. However, the problems like those of the respiratory system, nose and skin, which affect a substantial number of people may be related to the obnoxious gases and fumes of the industries polluting the environment. The dangerous pollutants are discharged in almost all areas into the water nearby. Thus, problems of the gastrointestinal system are observed as being high among the population residing nearby and around industrial areas in Vadodara. Although the exact level of water pollution and its impact on health could not be measured during the course of this study, the conditions noted are very suggestive.

According to report published in Indian Express on 16th April 1995:

The Nandesari GIDC estate on the periphery of Baroda seems to be heading towards a major industrial disaster with

unchecked and unauthorised discharge of industrial effluents corroding inflammable gas and water pipelines.

Many industries in the estate have been using dubious means to dump waste into storm drainages instead of directing it into the effluent treatment plants. The untreated and highly hazardous waste is discharged into a small stream which flows into the river Mini. The waters are also destroying vegetation on its banks and wells in nearby villages have become useless also with the waste seeping into them.

Many industrial units have closed down their plants after water taps and metres submerged in chemical waste. Drinking water now comes out in reddish colour. Many workers who waded through the effluent have developed skin diseases and rashes.

The Nandesari estate has two effluent treatment plants - a primary treatment plant and the main treatment plant - owned by the Nandesari Industries Association. The primary plant was set up in 1991 while the main plant was set up in 1984. But the dilapidated pump and the machinery at one of the plants hampers the effective use of the waste treatment plants.

Another report published in the Times of India on May 13, 1995 has shown that although an effluent channel 56 Km

long has been built by the Gujarat State Fertilizer Corporation which could dispose of waste into the Gulf of Cambay, most factories do not treat their effluents sufficiently to be accepted by this effluent channel. "While the primary units were meant to bring the industrial waste to a neutral status by reducing its ph value so that it did not maintain either an acidic or basic nature, the secondary units were meant to treat this neutral product to make it acceptable to the effluent channel and this was where the units failed. So, in the opinion of a medical practitioner, "the long term effects of such industrial pollution could be lung cancer and kidney and liver ailments which would manifest themselves in the forthcoming generations. Most of the people living in and around Nandesari, who comprise the lower middle class and factory labourers run the risk of such ailments.

A recent report published in the Indian Express on 13th May 1995 has given the findings of a study. This report states that Nandesari produces some chemicals and acids such as the H acids and the J acids and even the naphthalene derivatives which are not adequately treated. This is because the plants came up much before the infrastructure for its treatment could be devised.

While the plants claim to have the primary and the secondary treatment plants most of the equipment does not work and the easier option of disposing the waste into rivers

is preferred and the most popular victims of these pollutants have been the Mini river and the Vishwamitri river which flows through the heart of the city. Especially in the night the plants create havoc in the surrounding area with their poisonous fumes and liquid pollutants.

It is apparent that the impact of the industrial environment is felt not only on the industrial workers, but even beyond the factory limits. The repercusions of industrial development are both direct and indirect. It is therefore reflected in the health of a large section of the population living in an industrial area, irrespective of whether they are working within the factory or outside it.