CHAPTER 1

INTRODUCTION

1.1 Cotton Industries in India.

1.2 Industrial population in India
   a) Employment by Industries.
   b) Employment by textile Industry.

1.3 Textile mills in India.
   a) Morbidity among textile Workers.
   b) Environment at working place.

1.4 Importance of lung function tests.
Cotton Industry in India:

Cotton Industry is as such one of the oldest industry in the world as well as in India. 'Cotton' is derived from the Arabic word 'Koton' and in Egypt, it was known since the times of Joseph (2500 B.C.). The cotton industry was introduced by Arabs in Africa.

From 1500 B.C. to 1500 A.D. for nearly 30 centuries India held the monopoly in the manufacture of the cotton goods. It is also mentioned in the 'Rigveda' as the Brahmins had to put on the sacred thread, which should be of cotton. There were many centres of importance along east coast from Nagapatanam to Dacca and also on the west coast where famous textile centres as Broach, Surat, Cambay etc. were established (Ministry of Information and Broadcasting, Government of India, 1974).

In India, the first organised industry to be started was the cotton mill (1818) at Bombay. Jute mills in Calcutta and coal mines in Bihar developed later. Since then, industrialization has been going on but at very slow pace, till the independence. After independence, one witnessed rapid industrialization. People from villages migrated to the cities and this led to congestion and decline in socioeconomic condition. Alongwith these, problems of health of the workers as well as of the community, rose.
1.2 **Industrial Population in India**:

In India according to 1971 census the total working population was 32.93% of total population. The working population included the cultivators (43.34%), agricultural labourers (26.33%) and other workers (30.33%) (Labour Bureau, 1974).

a) **Employment by Industries**:

Average daily number of workers employed in thousands.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>557</td>
<td>601</td>
<td>616</td>
<td>635</td>
<td>675</td>
</tr>
<tr>
<td>Tobacco</td>
<td>174</td>
<td>160</td>
<td>160</td>
<td>139</td>
<td>121</td>
</tr>
<tr>
<td>Chemical product</td>
<td>146</td>
<td>206</td>
<td>226</td>
<td>239</td>
<td>246</td>
</tr>
<tr>
<td>Basic Metal product</td>
<td>178</td>
<td>264</td>
<td>266</td>
<td>270</td>
<td>288</td>
</tr>
<tr>
<td>Metal product</td>
<td>185</td>
<td>201</td>
<td>204</td>
<td>206</td>
<td>211</td>
</tr>
<tr>
<td>Textiles</td>
<td>1206</td>
<td>1261</td>
<td>1229</td>
<td>1213</td>
<td>1249</td>
</tr>
</tbody>
</table>

Hence it is seen that out of total employments the textile industry has the highest average of workers employed daily.

Textile includes the cotton, silk and jute as well as manmade fibres.
b) Employment by Textile Industry:

Average daily number of workers employed in thousands.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton</td>
<td>862</td>
<td>940</td>
<td>926</td>
<td>925</td>
<td>936</td>
</tr>
<tr>
<td>Jute</td>
<td>270</td>
<td>249</td>
<td>235</td>
<td>220</td>
<td>244</td>
</tr>
<tr>
<td>Silk</td>
<td>74</td>
<td>72</td>
<td>68</td>
<td>68</td>
<td>69</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1206</strong></td>
<td><strong>1261</strong></td>
<td><strong>1229</strong></td>
<td><strong>1213</strong></td>
<td><strong>1249</strong></td>
</tr>
</tbody>
</table>

Out of the total textile industry the highest number of workers is from cotton textile mills (Labour Bureau, 1974).

1.3 Textile Mills in India:

At the end of 1972 there were 674 cotton mills (384 Spinning mills and 290 composite mills) employing about 9.47 lakhs workers in the cotton mills. Out of 290 composite mills there are about 73 in Gujarat State and about 10 in South Gujarat region (India a reference, 1974).

a) Morbidity among Textile Workers:

This 9.47 lakhs of working population in cotton mills are exposed to the cotton dust and risk of respiratory tract damage.
Cotton is the cellulose fibre covering the seeds of the cotton plants. When these cotton dusts are inhaled, they are deposited in bronchi causing bronchospasm leading to chronic cough. The main disease caused by cotton is 'Byssinosis'. For assessing its prevalence and severity in epidemiological surveys, byssinosis may be graded as follows: (Medical Research Council, 1960).

Grade-$\frac{1}{2}$ : Occasional chest tightness on the first day of the working week.
Grade-I : Chest tightness and/or difficulty in breathing on every first day of the working week (Monday in Europe, India and Saturday in Arab countries).
Grade-II : Chest tightness and/or difficulty in breathing on the first and other days of the working week.
Grade-III : Grade-II symptoms accompanied by evidence of permanent incapacity from diminished effort intolerance and/or reduced ventilatory capacity.

If the textile worker's condition is diagnosed at the grade-$\frac{1}{2}$, I or II, he can be totally prevented from being byssinotic by changing his occupation. But if he reaches upto the grade-III, it is irreversible by changing of occupation and may lead to emphysema of chest.
No. 1 - Worker opening cotton bales

No. 2 - Machine exhausting cotton dusts
No. 3 - Worker cleaning carding machine

No. 4 - Improper protection against inhalation of cotton dusts.
b) Environment at working place:

The environment at the working place is the most important factor in relation to the occupational diseases.

In the cotton mills the spinning department is supposed to be the place of highest dust concentration. Here the worker has to open the bales of raw cotton and put them into bale-breaker and scutcher machines (Photo 1). Thus the workers come directly in contact with cotton dust. Then the machines also exhaust the cotton dust and create the dusty atmosphere where the workers have to work (Photo 2). The sweepers have to sweep and clean the floors as well as the cotton dust deposited on the machineries (Photo 3). These are the few situations where the direct contact of worker with dusty atmosphere occurs.

Though this cotton dust produces irritation of nose and throat, the workers normally don't use any protective measures even though these are provided to them. Then they get used to the dust atmosphere and neglect their health. When the atmosphere becomes more dusty they may tie a handkerchief to prevent the inhalation of dust (Photo 4). Moreover, poor ventilation, inadequate exhaust fans, poor illumination and unprotected machines (old machines) also are some way responsible for the high dust concentration in the working places.
Along with the working environment, the environment where the workers stay is also an important factor. Industrialization has led to migration of workers from villages to the urban areas and so has led to increased number of slum dwellers and their economical status has declined. Industrialization has led to the poor socio-economic status, poor housing condition, under-nutrition, indifference to health and increased number of the smokers and alcoholics. Moreover, many of these workers are afraid of retrenchment from the services and so they conceal their illnesses and thus the diseases get entrenched in this population.

Due to industrialization, the needs for protecting the health of workers from hazards and to make working environments safe have become more acute to-day than ever before. 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 his very survival and to the Government, it is a social responsibility.

1.4 Importance of lung function tests:

Lung function tests help in diagnosing the disorders of lungs at early stage.

In the past two decades, a large number of physiologic tests have been developed for the qualitative and
quantitative evaluation of pulmonary functions in patients with suspected and proved abnormalities of cardiopulmonary system. These are now as important in the practice of medicine as are tests of hepatic, renal, cardiovascular and neuromuscular function. Tests of pulmonary function have proved to be of definite value both in diagnosis and follow up of patients with cardiopulmonary disorders. They have led to a better understanding of pulmonary physiology in healthy men and women of various age groups and to more precise knowledge of the patho-physiology and natural course of pulmonary dysfunction in some patients considered to be normal on the basis of clinical and radiological examination and have assisted in differential diagnosis in patients with known disease in whom a specific diagnosis could not be made with certainty by other methods. They have been used for the objective evaluation of therapeutic measures such as the use of oxygen, helium, pressure breathing, bronchodilators, cortisone, antibiotics, artificial respiration, and surgical procedures and so have contributed to the development of more rational measures of treatment. Finally they have been invaluable in securing physical, measurable data, in patients who may or may not have pulmonary disability and in determining during the lifetime of the patient, the specific function of the lung that has been impaired. Inorganic and organic matters present in the atmospheric air are likely to affect lung
parenchyma on long term continuous or intermittent exposure. Such slow and gradual change tells on the effective performance of the lungs which may be detected by appropriate and early assessment of them. Thus the effect of coal dust, asbestose etc. are too well known to cite a few examples.