Two hundred normal healthy non smoker subjects were studied as control group. Three hundred and sixty two cotton workers and two hundred and sixty two wool workers were examined. FVC, FEV\textsubscript{1}%, RV, FRC, TLC, RV \over TLC ratio, total lung compliance, MBC and MEFR were studied in these subjects. Fall in FEV\textsubscript{1} after workshift on Monday was studied in cotton workers only. Prevalence of byssinosis in these subjects were surveyed by questionnaire method.

Effects of variation in age, in dust concentration and in period of exposure on prevalence of byssinosis and lung function tests were studied. Effect of cigarette smoking on lung function tests and on prevalence of byssinosis was also studied.

**Effect of variation in age:**

(a) In Control Subjects: FVC, FEV\textsubscript{1}%, Total Lung Compliance, MBC, MEFR and TLC were found to be decreased in control subjects, as age advanced from 21 years to 60 years.

RV, RV \over TLC ratio and FRC were found to be increased in control subjects, as age advanced from 21 years to 60 years.
(b) In textile Workers:

(i) On lung function tests: FVC, FEV₁, total lung compliance, MEFR and MBC were found to be decreased as age advanced from 21 years to 60 years. Fall in FEV₁ after workshift on Monday was increased with increase in age. Results were statistically significant in older age groups (i.e. 41-50 and 51-60 years). Workers belonging to blow and card room have shown age-related changes more prominent compared to comber and ring workers.

RV and RV/TLC ratio were increased with increase in age. FRC and TLC have shown inconsistent relationship to age. In younger age group FRC was found to be increased with increase in age, but in older age group it was decreased.

(ii) On prevalence of byssinosis: Prevalence of byssinosis was found to be increased in cotton and wool workers with increase in age. Highest incidence was recorded in 51-60 years age group (26.8 percent in cotton workers and 12.9 percent in wool workers).

Lung function tests in textile workers compared to those in control subjects:

FVC, FEV₁, total lung compliance, MEFR and MBC were found to be decreased in textile workers compared to those in control subjects of corresponding age groups. Statistically significant changes were obtained in blow, card and comber workers.
FRC, $\frac{RV}{TLC}$ ratio and RV were found to be increased in textile workers compared to those in control subjects of corresponding age groups.

TLC had shown inconsistent changes. It was decreased in 21-30 years and 41-50 years age groups while increased in 31-40 years and 51-60 years of age groups, when compared with that in control subjects.

**Effect of variation in dust concentration:**

(i) On lung function tests: FVC, FEV₁%, total lung compliance, MEFR and MBC were found to be higher in ring workers, compared to those in blow room workers. As dust concentration was increased values of above tests were found to be declined. RV and $\frac{RV}{TLC}$ ratio were lower in comber and ring workers compared to those in blow and card room workers.

FRC and TLC have shown inconsistent relationship to dust concentration. It seems FRC and TLC are not sensitive indexes to dust induced changes.

Fall in FEV₁ after workshift on Monday was found to be increased with increase in dust concentration. It was higher in blow and card room workers compared to that in comber and ring workers.

(ii) On prevalence of byssinosis: Prevalence of byssinosis was higher in blow and card room workers.
compared to that in comber and ring workers of cotton mills (21.28 percent in blow and 29 percent in card room). In wool mill also prevalence of byssinosis was highest in blow room (6.01 percent) compared to that in worsted department (4.44 percent).

**Effect of variation in period of exposure:**

(i) On lung function tests: Period of exposure was found to be most prominent factor which had affected lung function tests. FVC, FEV<sub>1</sub>, total lung compliance, MEF<sub>25</sub> and MBC were found to be decreased with increased period of exposure, to cotton dust.

RV and RV<sub>TLC</sub> ratio were increased with increased period of exposure.

FRC was found to be increased with increased period of exposure however, results were statistically not significant.

Inconsistent changes were recorded in TLC, with increased period of exposure. Results were statistically not significant.

Fall in FEV<sub>1</sub> after workshift on Monday was found to be increased with increased period of exposure. Statistically significant results were obtained in subjects who have been exposed to cotton dust for more than 18 years.
(ii) On prevalence of byssinosis: Incidence of byssinosis was found to be increased with increase in period of exposure to cotton and wool dust. Highest incidence of byssinosis was recorded in subjects having twenty years or more exposure (27 percent in cotton workers and 9.23 percent in wool workers).

Effect of cigarette smoking: (i) On lung function tests:

Many workers have reported regarding hazardous effect of smoking on lung function tests.

FVC, FEV₁%, total lung compliance, MEFR and MBC were found to be decreased in smokers compared to those in non-smoker cotton workers.

RV and RV/TLC ratio were found to be higher in smokers compared to those in non-smokers, however, results were inconsistent in ring room workers.

Changes in FRC and TLC were found to be inconsistent when comparison was made between smokers and non-smokers.

Younger age group was less affected compared to that of older age group. Age related changes were more consistent in smokers.

Fall in FEV₁ after workshift on Monday was found to be much more higher in smokers compared to that in non-smokers.
Relationship was found between deterioration of lung function tests and increased consumption of cigarettes.

FVC, FEV₁%, total lung compliance, MBFR and MBC were found to be decreased in grade-III smokers compared to those in grade-I smokers. RV and \( \frac{RV}{TLC} \) ratio were higher in grade-III smokers compared to those in grade-I smokers. Changes in FRC and TLC were inconsistent and statistically not significant.

The effect of smoking on lung function tests was found to be influenced by genetic and environmental factors.

(ii) On prevalence of byssinosis: Incidence of byssinosis was higher (32.41 percent and 8.46 percent) in smokers compared to that in non-smokers (4.02 percent and 1.63 percent) in cotton and woollen mills, respectively.

Prevalence of byssinosis was found to be increased with increased consumption of cigarettes. Highest incidence of byssinosis was (83.33 percent) in grade-III smokers, compared to that (13.39 percent) in grade-I smokers of cotton mills.
Lung function tests in byssinotics:

As disease advanced, lung function tests were found to be deteriorated.

FVC, FEV₁%, total lung compliance, MEFR and MBC were found to be lower in grade-II byssinotics compared to those in grade-½ byssinotics.

RV and \( \frac{RV}{TLC} \) ratio were found to be increased with increase in severity of disease. FRC was found to be increased with advancement of disease, however, results were statistically not significant.

Changes in TLC were inconsistent and statistically not significant.

Fall in FEV₁ after workshift on Monday was found to be higher in grade-II byssinotics compared to that in grade-½ byssinotics.

Comparison between cotton and wool workers:

Lung function tests in cotton workers were much more deteriorated, compared to those in wool workers.

Incidence of byssinosis was found to be higher in cotton workers (18.78 percent) compared to that in wool workers (4.96 percent).

Cotton dust was found to be much more hazardous to lungs compared to wool dust.