Original Article

ASSESSMENT OF LUNG FUNCTION IN PETRO CHEMICAL INDUSTRY

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ABSTRACT

Assessing of Pulmonary functions in petro chemical workers is important to assess the disease and management of disease after assessing. Occupational and environmental exposure to petroleum refinery products poses a great threat to human health. This study aimed to assess the lung function of people working in petrochemical industry for minimum of five years and above.

MATERIAL AND METHODS: Lung function tests were measured using ALPHA SPIROMETER. Exclusion criteria include known asthmatics, known smokers, known patients for allergic bronchitis, known hypertensive patients, and known diabetes mellitus patients. Inclusion criteria include minimum work period of 5 years in the industry.

RESULTS:
The findings in the study that ninety two percent of people were normal regarding their respiratory system functioning.

The study was conducted on people working in industry involved in production of 2-Eh Product Spec (%wt), N-Butanol Product Spec(%wt) & I-Butanol Product Spec(wt%) from crude oil. At no point of time any product is not exposed to the workers in any form.

Petrol is a complex combination of hydrocarbons. About 95% of the components in petrol vapour are aliphatic and acyclic compounds [12]. Health effects of occupational exposure to gasoline and air pollution from vehicular sources are relatively unexplored among petrol filling workers [13].

Various occupational solvents like benzene and atmospheric polluted air are absorbed into the human body either through the respiratory tract or via epidermal contact [14]. These may cause primary respiratory symptoms and impaired pulmonary function. At high ambient concentrations of solvents and air pollutants, well-defined and marked systemic pulmonary inflammatory response is also observed [15].

AIMS & OBJECTIVES:
1. Assess lung function of employees working in petrochemical industry.

2. MATERIAL AND METHODS:

Lung function tests were measured using calibrated ALPHA SPIROMETER and is calibrated with normal values and hence no controls were taken.

EXCLUSION CRITERIA:
1. Known asthmatics
2. Known smokers
3. Known patients for allergic bronchitis
4. Hypertensive
5. Diabetes mellitus
6. Patient with coronary artery disease

INCLUSION CRITERIA:
1. Minimum work in industry for 5 years

RESULTS

In the present study Ninety two percent of people were normal regarding their respiratory system functioning.

<table>
<thead>
<tr>
<th>Report</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>71</td>
<td>92.21</td>
</tr>
<tr>
<td>Possible Moderate Restriction</td>
<td>6</td>
<td>7.79</td>
</tr>
</tbody>
</table>
DISCUSSION:

In the current study it was found that the lung function test of most of workers was normal in contrary to various studies which demonstrate that similar industries workers show obstructive changes, restrictive changes, combined patterns and other systemic lesion or malignancy.

In study conducted by M.Jahangiri et al it was observed that even though the level of exposure to bio aerosols for outdoor workers (particularly, cleaning operators) were significantly higher than that for indoor workers, the prevalence of respiratory symptoms and the PFT parameters of the two groups were not significantly different.

In one study conducted by Richardson, et al, on workers involved in waste water exposure in petrochemical industries there was significant lung changes of obstructive changes.

In one study conducted by Madhuri BA et.al., on petrol pump workers there was significant decrease in lung function

In the above references people were exposed to products in one way or other. But in the present study exposure to raw materials or finished goods was nearly zero.

CONCLUSION:

From the above study the authors conclude that by taking proper precautionary measure like

1. Maintenance of thick greenery belt
2. Facilities for storage raw material and products in packed form with no exposure to atmosphere and concerned worker
3. Regular watering of trees and the green belt so as no dust particles are present in the nearby atmosphere
4. Regular medical checkup

Chronic obstructive respiratory disease can be avoided in people working in the industry premises

REFERENCES:

6. Respiratory Disorders Associated with Occupational Inhalational Exposure to Bioaerosols among Wastewater Treatment Workers of Petrochemical Complexes M Jahangiri 1 , M Neghab 1 , G Nasiri 2 , M Aghabeigi 2 , V Khademain 3 , RRostami 3 , V Kargar 3 , J Rasooli 3
9. Cross-sectional Study of Respiratory Symptoms and Pulmonary Functions in Rayon Textile Workers with Special Reference to H2S Exposure Toshiki HIGASHI*, Toshio TOYAMA*, Haruhiko SAKUHAI*, Masahiro NAKAZA*, Kazuyuki OMAE*, Toshio NAKADATE** and Naohito YAMAGICHI* 