

## **Pulmonary function of Paint Industry workers from West Bengal, India**

Mandal (Majee) A. \*, Majumdar R.

Department of Physiology, Raja Peary Mohan College, Uttarpara, Calcutta University, Hooghly, West Bengal, India

### **ABSTRACT**

---

**Objectives:** Paint industry workers are usually exposed to many solvents (toluene, acetone, butanol, xylene, benzene, trichloro ethylene). We investigated whether chronic exposure to solvents had any adverse effect on respiratory system.

**Materials and Methods:** This cross-sectional study involving 149 paint industry workers selected from paint industries of West Bengal, India and 141 control group individuals was undertaken. The study parameters include FVC, FEV<sub>1</sub>, FEV<sub>1%</sub>, FEF<sub>200-1200</sub>, FEF<sub>25-75%</sub>, FEF<sub>75-85%</sub> and PEFR. Besides the same, the individuals' age, smoking habit, duration of smoking, type of work, duration of work and other respiratory illness symptoms were recorded.

**Results:** 77.68% higher age group workers and 83.78% in lower age group workers of paint industry have restrictive ventilatory impairment. Again, prevalence of restrictive ventilatory impairment is recorded as 76.9% in smoker and 78.4% in nonsmoker workers, but 94% restrictive impairments are observed in workers of the hazardous zone of high volatile organic compounds (VOC) concentration and 69.75% in workers of the non hazardous zone of low VOC concentration indicating

the effects of dust and VOC in respiratory impairment than smoking. Significant correlation has been found between Pulmonary functions and duration of exposure to solvents and dust in older workers. Prevalence of respiratory symptoms was low but significantly associated with VOC concentration (OR=1.15-1.43) and duration of VOC exposure (OR=1.15-1.71) Thus restrictive lung impairment mainly depends on high VOC concentration as well as duration of exposure. In addition 50% of high VOC exposed, and 47.6% of low VOC exposed paint workers suffered from liver dysfunction.

**Conclusion:** This study helped in achieving baseline information regarding respiratory status of Paint workers of West Bengal. Most paint workers have restrictive pulmonary function impairment, which can be checked by using high-quality protective equipments as also by reduction of VOC concentration in work environment and workers' health education.

**Key words:** Pulmonary function, paint workers, India, restrictive lung function impairment, odds ratio

---