

Prevalence of the occupational respiratory symptoms and hematological changes age wise and sex wise in labourers of cement industries in Tadipatri Mandal of Anantapur, A.P.

V.V. BALA SUBRAMANYAM, B. MANJUNATH, K. PULLANNA, G.H. PHILIP AND PALA INDIRA

Asian Journal of Environmental Science (June to November, 2009) Vol. 4 No. 1 : 66-72

See end of the article for authors' affiliations

Correspondence to :
PALA INDIRA
Department of Zoology,
Respiratory Research
Unit, Sri
Krishnadevaraya
University,
ANANTPUR (A.P.)
INDIA

SUMMARY

Investigation has been made on the respiratory disorders in male and female labourers of age groups 20-35 (younger), 36-45 (middle) and 46-55 (older) years of cement industries in Tadipatri Mandal of Anantapur district. Clinical data were established with the case study on history and clinical symptoms. This clinical database was prepared based on the survey conducted among 18515 long-term exposed groups of labourers. Much attention was paid to bring the correlation between smoking habit and occupation exposure response of respiratory system among labourers of three age groups. The major respiratory symptoms prevalent were dyspnea (78.79%), asthma (22.77%) and cough (productive and non-productive cough) (23.50%). Dyspnea (23.50%) was identified as major symptom in males and asthma (28.04%) in females. Middle age group of male labourers (41.65%) and younger age group of female labourers (46%) were the major suffers due to repeated long term exposure; prevalence of developing asthma (69%) was more in younger and middle age group of male labourers. Chronic cough (13.53%) was the common symptom in both sexes exposed to dust and male labourers were at higher risk for developing productive cough and attacks of dyspnea. Incidences of respiratory symptoms were high in females than males, after adjusting for age and smoking habit. Comparative study of blood samples between the exposed and control revealed significant variation with reference to differential leukocyte count in particular eosinophils count in middle age group of male and female labourers, especially in older age group of female subjects, sharp rise of eosinophils was noticed. Eosinophilia in hyper responsive subjects significantly increased the risk to develop one or more respiratory symptoms.

Key words :

Dyspnea,
Wheezing,
Asthma,
Productive and
non productive
cough

The cement industry in Anantapur district comprises mainly two major plants in private sector with an installed capacity of 2000 tones per day (tdp). The major raw materials required for the industry are limestone, clay, coke and gypsum. The raw materials are procured within the industry mining belt, except the coke. The major environmental issues of the cement industry are gaseous emissions (from kiln containing particulate matter, CO₂, NO_x, SO₂, etc), dust emissions (raw mill, conveyor transfer points and packing unit) fugitive emissions (refuse burning of tires and blasting of mines) and occupational safety and health.

Composition of cement includes lime, alumina, silica and iron oxide as tetra calcium aluminoferrate (4CaO, Al₂O₃), tricalcium aluminate (3CaO, Al₂O₃), tricalcium silicate (3CaO, SiO₂) and dicalcium silicate (2CaO, SiO₂). Small amounts of magnesia (MgO), Na, K, and S are also present. The pH of the cement in wet solution was alkaline within the range of 12.5-13.5. Aerodynamic diameter of cement

particulate matter ranged from 0.05 to 5.0µm.

No studies were earlier made on the occupational health hazards of the labourers of this industry. Hence, the present study was carried out in labourers of males and females of three age groups such as 20-35, 36-45 and 46-55 attending Government Medical College Hospital in Anantapur who are working in cement factories. A hospital based survey was taken up to eliminate *healthy workers effect* (Helga and Levis, 1987). (Selection of workers with better health by pre-placement examination).

This study was aimed at investigating the relation between occupational cement dust exposure and acute as well as chronic respiratory health effect. The information will be valuable for the cement industry in order to promote the respiratory health of the workers.

MATERIALS AND METHODS

Study area:

The present studies were conducted in

Accepted :
March, 2009