

EXECUTIVE SUMMARY

Regional Occupational Health Centre (Southern) Bangalore

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EXECUTIVE SUMMARY

The annual report for the period April 2003 to March 2004 includes the account of research and developmental activities of Regional Occupational Health Centre (Southern) under National Institute Of Occupational Health, Ahmedabad.

1. WHO-NEHP STUDY : NATIONAL ENVIRONMENTAL HEALTH PROFILE AND HEALTH RISK ASSESSMENT

The Centre carried out the National Environmental Health Profile and Health Risk Assessment Study in Bangalore during the year 2003-04. The study had the objectives to obtain available environmental monitoring data for air and water, to undertake monitoring and analysis for routine air pollutants wherever the data was not available, to assess the status of solid waste disposal, to collect information on point prevalence rates for specific health end - points such as respiratory ailments, infectious diseases, cardio vascular diseases and cancer conditions and also to record information pertaining to community perception of environmental problem in the areas selected.

The Centre undertook the study in identified residential (J.P.Nagar), commercial (Anandrao circle) and industrial areas (Whitefield). The parameters included were SPM, RPM, SO₂, NO_x, TO and VOCs. The centre monitored the pollutants in these areas during May, June, November and December 2003. In addition to this, the data available from other agencies were also collected.

The reported annual trend average levels of SPM in the commercial areas were found to be decreased in the recent years. Though there were changes in the trends for the past 7 years the levels were within the prescribed national ambient air quality standards (NAAQs). The RPM level monitored during the year 1998 exceeded in industrial zone. SO₂ levels were in the declining trend where as the oxides of Nitrogen were marginally increased during 2000. The levels of CO in commercial and industrial areas were significantly higher ($p < 0.01$) compared to residential areas. The proportion of subjects whose COHb exceeded the limit of 2.5% for the smokers was more in industrial area. All the water quality parameters measured by the

governmental agencies were within the permissible limits. The indoor monitoring of SPM & RPM levels identified higher ($p < 0.05$) levels of oxidants among firewood and kerosene users compared to LPG users.

The morbidity conditions viz., cough in the morning was significantly higher ($p < 0.05$) among the smokers in all the areas. The other morbidity conditions identified in all these areas were not significant. Nearly 52.8% of the commercial, 44.6% industrial and 26.9% of residential area children identified to be missing the school because of the illness as per the information provided by the family members is one of the findings pertaining to the children ≤ 5 years in commercial and industrial areas. More number of individuals residing in slum and residential areas complaining of sputum and flum may be due to chronic allergy possibly due to exposure to pollen allergy which is very much prevalent in Bangalore as identified by other researchers.

As the study is still in progress only after the completion of the pending parameters, it will be possible to draw conclusions and to make recommendations.

2. EVALUATION OF RENAL TUBULAR - DYSFUNCTION AND OXIDATIVE STRESS AMONG ELECTROPLATING WORKERS

A study on "Evaluation of renal tubular dysfunction and oxidative stress among electroplating workers" describes the renal tubular dysfunction, functional integrity of liver and pancreas among workers specifically exposed to Cadmium, Chromium and Nickel from electroplating processes and also includes evaluation of the effect of metals namely; Nickel, Chromium and Cadmium on free radical generation measured through lipid peroxidation and enzymatic antioxidants. It was also envisaged to find out the relationship between exposure indices such as urinary and environmental metal and functional integrity of target organs of the workers specifically exposed to Cd, Ni and Cr from plating processes. The study covered both Ni and Cr plating workers (50 Nos.) during the reported year along with 25 control subjects from administration who are not exposed to Ni and Cd. The mean levels of Ni in urine of exposed subjects was significantly increased ($p < 0.01$) when compared to control subjects. 7% of the subjects exposed to Nickel had significantly higher levels of urinary N-acetyl- β -D-Glucosaminidase. The results also revealed that synthetic

functions were significantly decreased ($p < 0.01$) and altered in subjects exposed to Ni compared to controls, which highlights the significant alteration in the cellular integrity of liver. Though significant ($p < 0.01$) decrease in the levels of superoxide dismutase (SoD) was noted in study subjects, no significant difference was observed in plasma MDA and erythrocyte glutathione peroxidase levels.

3. EXPOSURE ASSESSMENT OF BENZENE AND ITS HEALTH EFFECTS

Study on “Exposure assessment of benzene and its health effects” was taken up from April 2002 to cover the objectives viz., (1) to assess exposure of benzene in gasoline handlers, (2) to assess the specific morbidity conditions through medical examination and (3) to quantify benzene concentration at work place through personal monitoring and to estimate the benzene in blood, trans-trans-muconic acid and phenol levels in urine as bio-markers of exposure. In this direction 890 subjects have been identified for inclusion in the study for medical examination. The standardization of benzene analysis has been completed and the bio-monitoring programme has been scheduled to be taken up.