**Assessment of Ambient Air Quality in Selected Urban Areas of Nepal**

Ambient Air Quality Study Team

Date: 2004

**Background**

Air pollution is growing problem in the world. In urban areas, air pollution is caused due to the increasing use of fossil fuels. Studies have shown that air pollution has a proven linkage with the human health damage. According to recent estimate on increase on daily mortality, on a global scale 4 to 8 percent of premature deaths around the globe are due to exposure to particulate matters. It is estimated that air pollution in South Asian cities causes nearly 100,000 premature deaths per year and over a billion work days of lost or reduced productivity.

**Methods**

In case of air quality data, monitoring in two cities outside Kathmandu valley was conducted for two different seasons. In case of Kathmandu there was presence of air quality monitoring system so data was used for analysis. World Health Organization's recent guideline to assess burden of disease due to outdoor air pollution was used to assess the health impacts due to air pollution.

**Results**

The Total Suspended particulate (TSP) and Particulate matter of size less than 10 micron (PM10) levels in the ambient air at Birgunj exceeded several times of the national standard. Average PM10 level in Bhanuchok, Ranighat and Addarchnagar were found 380µg/m3, 358µg/m3 and 220µg/m3 respectively. However Birgunj was found to be least polluted with all kinds of gaseous pollutants. Observed levels of NOx, SOx and CO in all locations of this city were found very low than the recommended safe level. In case of Pokhara, the observed average level of Total Suspended particulate and PM10 except station Hallchok, Lakeside was also found higher than the National Ambient Air Quality Standards (NAAQS) level. Like Birgunj, gaseous pollutants were found very low than the set National Ambient Air Quality Standards limit. Annual average of PM10 in Kathmandu's air from March 2003 to February 2004 was calculated to be 132.88µg.m3. The most polluted monitoring site was found to be Putalisadak with annual average of PM10 to be 209.01µg/m3. The yearly trend of Chronic Obstructive Pulmonary Diseases (COPD) in the public hospitals of Kathmandu showed increment in the number of patients. In case of Kathmandu valley, the attributable burden due to current PM10 concentration against the baseline concentration of 10µg/m3 was found to be 1926 cases of premature mortality per year. Similarly the number of cases of premature mortality for short term exposure to current PM10 concentration in Kathmandu valley which could be avoided if the government could reduce the ambient PM10 concentration to national standard was calculated to be 212 cases of premature mortality per year.

**Conclusions**

There is an urgent need to extend the regular air quality monitoring programme in other cities of Nepal and assess the impact due to it. Air pollution in Kathmandu valley, especially the particulate matter has been a serious threat to human health. Therefore while addressing the problem of air pollution, the cost of human health should also be kept in mind by the policymakers.

**Keywords:** ambient air; monitoring; particulate matter; quality; urban areas.