**Development of Procedures and the Assessment of EBD of Local Levels due to Major Environmental Risk Factors**

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**Background**

There is direct relationship between environment and health. The magnitude of health problems is increasing day by day due to the exposure of various types of environmental risk factors. Among them, two of the major environmental risk factors under investigation are ambient air pollution and bacterial contamination of water supplies in Kathmandu Valley. The study has been conducted to assess how much serious is the impact of the two risk factors on environmental burden of disease in the valley.

**Methods**

Available data has been compiled from different secondary sources needed for Environmental Burden of Disease (EBD) calculations. The reference period for data compilation has been 2003 and 2004. The sources for demographic data compilation are Central Bureau of Statistics (CBS), Ministry of Health (MOH), Ministry of Population and Environment (MOPE). The assessment of exposure to the given environmental risk factors has been accomplished by compilation different exposure data relating ambient air pollution, bacterial contamination of water supplies and temperature for the study population Daily time series data has been collected for exposure-response modeling in the case of ambient air pollution. For bacterial contamination of water supplies, monthly data has been compiled. In order to build exposure – response models, data on health effects which are assumed to be linked to the given environmental risk factors, namely ambient air pollution and bacterial contamination in water supplies in this particular Environmental Burden of Disease study was collected from the leading hospitals in Kathmandu Valley. Data from daily hospital records was used to develop models to compute Environmental Burden of Disease due to ambient air pollution except for Lung cancer morbidity where monthly data was used. In order to develop models to calculate Environmental Burden of Disease due to bacterial contamination of water supplies, monthly health data on health outcomes based upon morbidity and exposure was utilized. Meanwhile for mortality due to bacterial contamination of water supplies, census household survey data, 2001 was used. The household data provided information on access to water supply and sanitation facility and deaths related to bacterial contamination one year prior to the census survey.

**Results**

Positive associations were detected between the health effects and environmental exposures regarding the given risk factors. More than 20% of the health effects can be attributed to ambient air pollution regarding PM10 as the air pollution parameter for all the health effects considered except in the case of all cause mortality for which 7.9% can be attributed. More than 70% of the health effects can be attributed to bacterial contamination of water supplies regarding water borne morbidities. About 85% of the diahrreoal deaths and about 48% of the enteric fever deaths can be attributed to unsafe water supply and sanitation.

**Conclusions**

The extent of health effects from exposure to ambient particulate air pollution and water pollution are found to be substantial in Kathmandu Valley. The results therefore obviously raise health concerns to all valley inhabitants from these risk factors. The attributable disease burdens are found to be high for all the health effects taken into consideration in the present Environmental Burden of Disease study. Even though efforts have been made in the direction of reducing the particulate level and bacteriological contamination of water supplies in Kathmandu Valley, the valley’s urban air and drinking water are still polluted. Therefore, this is a matter of serious concern to all of us and further steps will be required to reduce these contaminations in the valley.

**Keywords:** ambient air pollution; environment; environmental burden of disease; exposure-response model; health; risk factors.