HEALTH EFFECTS OF AIR POLLUTION IN A DEVELOPING COUNTRY CITIES

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"The air we receive at our birth and resign only when we die is the first necessity of our existence." The Times, London, 17 February 1881.

OVERVIEW

Although good progress has been made in controlling air pollution problems in many industrialized countries over the last two decades, air quality – particularly in the cities of developing countries – is worsening mainly due to population growth, industrialization, and increased vehicle use. The health impacts of urban air pollution seem likely to be greater in some of the rapidly developing countries where pollution levels are higher.

Severe air pollution episodes indicated that air pollution can affect human health. During the worst episodes of the 1930s, 40s, and 50s, which occurred throughout the industrialized world, many people died or became seriously ill. The World Bank has estimated that exposure to particulate levels exceeding the WHO health standard accounts for roughly 2 to 5 per cent of all deaths in urban areas in the developing world (World Bank, 1992).

It is now not uncommon to see people in the cities wearing face-masks or putting shawls or handkerchiefs over their mouths and noses (*insert picture).* In the poorest regions, one in five children do not live to see their fifth birthday, largely because of environmental related – and preventable – diseases such as diarrhea and acute respiratory infections (WRI, 1998). The WHO Commission on Health and Environment recently identified urban air pollution as a major environmental health problem deserving high priority for action.

The purpose of this paper is to summarize the current state of air pollution and its health impact in a developing country city: the case of Kathmandu Valley, Nepal.

State of the Air Pollution and its Health Impact in Kathmandu Valley

Kathmandu Valley is the largest urbanized area and the capital city of Nepal with a population of 1.1 million (1991). It is situated at an average altitude of 1330 m ASL and covers an area of about 351 km^2. The city is known as the City of Temples and is the treasure house of Nepalese culture, arts, and architecture. In recent years, air pollution has been emerging as a major environmental problem. The valley is especially vulnerable to air pollution due to its bowl-like topography, which restricts wind movements and retains air pollutants in the atmosphere during thermal inversions.

The ambient concentrations of total suspended particulates (TSPs) in major urban locations have regularly exceeded WHO guidelines (Shrestha et. al 1996 and Karmacharya et. al 1993). The number of days with a visibility of more than 8,000 m (at 11:45 hr local time) during the period from November to February, the months with lowest visibility, has decreased from

115 days in 1970 to only about 20 days in 1993 (Shrestha, 1994). With rapidly growing fuel use due to increasing urbanization and industrialization, air quality is likely to deteriorate further if no effort is made to improve the situation.

There exist a few studies on air-quality measurements (ref……), which are mainly focussed on ambient air-quality issues while others focus on estimation of air pollutants related to fuel use from a few sectors (ref…….). However, to our knowledge, there is no comprehensive studies of health effects of air pollution. It is of interest to assess