

## FUTURE PROJECTIONS OF THE DISEASE BURDEN OF URBAN AIR POLLUTION

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**Background Aims:** Human health effects from exposure to outdoor air pollution, particularly ground level ozone and airborne particulate matter (PM), cause globally, 8% of lung cancer deaths, 5% of cardiopulmonary deaths and around 3% of respiratory infection deaths (Prüss-Üstü, A and C. Corvalán, 2009). These impacts can be expected to increase even further given increasing emissions, an ongoing urbanization and an ageing population.

**Method:** The Global Urban Air quality Model (GUAM) has been developed to estimate PM<sub>10</sub> concentrations and their attributable effects on human health for the largest 3200 cities in the world. GUAM originates from the GMAPS model (World Bank, 2002) and links observed PM<sub>10</sub> concentrations to a set of variables of economic activity, population, urbanization and meteorological information. The resulting concentrations lead to increased health effects of acute respiratory diseases, lung cancer, and cardiopulmonary diseases. These health impacts are derived using the global burden of disease methodology (Mathers and Loncar, 2005).

**Results:** Air pollution has been projected over the period 2000-2050 using a baseline scenario for emissions, population and urbanization. The concentrations will increase in many regions. The associated annual number of deaths will increase from 1 million in 2004 till 3.5 million in 2050 with the vast majority occurring in Asia. Next, uncertainty analyses have been performed to test the robustness of the methodology. These outcomes have been decomposed by changes in population, ageing, urbanization and emissions.

**Conclusions:** To a large extend increases in the future disease burden of air pollution are determined by trends that can not be influenced and relatively small fraction is due to increased emissions.

