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Assessment of premature mortality due to exposure to air pollution

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Abstract

Air pollution is the world's largest single environmental health risk (WHO, 2014), estimated to be responsible for 3.7 million premature deaths in 2012 due to exposure to outdoor air pollution. According to the Global Burden of Disease (GBD) study, exposure to ambient particulate matter pollution remains among the ten leading risk factors. The health effects of air pollution have mostly been associated with atmospheric particles with diameters below 2.5 μm (PM_{2.5}), nitrogen dioxide (NO₂) and ozone (O₃). Of these, effects of PM_{2.5} is the dominant compared to the other species. The impacts of air pollution on health can be estimated using models, where the level of complexity can vary depending on the geographical scale (global, continental, country or city), concentration input (observations, model calculations, emissions) and the pollutants of interest that can vary from only few (PM_{2.5} or O₃) to a whole set of all criteria pollutants. These tools may differ in the geographical coverage, input data (e.g. spatial resolutions of the air pollution model applied), linear/non-linear risk functions, the exposure-response functions, and population distributions. In this talk, results from a number of studies where the impact of air pollution on premature mortality has been assessed will be shown and discussed, addressing impacts in Europe, Africa, as well as the whole globe.