

Ambient air pollution-related burden of disease in Germany resulting from coal combustion in power plants

Coal combustion is a significant contributor of ambient air pollution, e.g., particulate matter, nitrogen oxides, sulfur dioxide, and mercury. Coal combustion-related particulate matter emissions are estimated to contribute about 10 percent to overall particle emissions in Germany. The impact of nitrogen oxides and mercury emitted by power stations in Germany is estimated to be even higher. There is well documented evidence on health effects of these emissions, including increased mortality, cardiovascular and pulmonary disease, metabolic disease, fetal growth retardation, and cancer. However, a quantification of coal combustion-related health effects on a national basis is lacking. Specifically, the contribution of current emissions from power plants on burden of disease in Germany is unknown.

The aims of the study are to identify the air pollutants emitted by coal-burning power plants and to evaluate the current evidence base on health effects of these air pollutants by systematic literature search. We further aim to evaluate and select an appropriate chemical transport model to assess different exposure scenarios for changes in the amount of coal combustion. Four different exposure scenarios will be calculated, including three scenarios with decreasing coal emissions and a reference scenario based on current emissions and trends. Exposure data will be searched, provided and prepared for the analyses by our external collaborators. After building exposure models for the previously identified air pollutants, the burden of disease in Germany will be calculated as disability-adjusted life years (DALYs) for the identified pollutants and health endpoints.

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Publications	