

outcome. For the year 2014, 5,966 (95% CI: 2,031-9,893) attributable deaths and 49,726 (95% CI: 16,929-82,456) YLL were estimated. Looking at time trends a decrease of disease burden was observed compared to the year 2007 where 7,832 (95% CI: 2,669-12,973) attributable deaths and 69,244 (95% CI: 23,601-114,690) YLL due to NO₂ were calculated.

Conclusions:

Our results show a considerable burden due to NO₂ in Germany. Compared to previous estimates for PM (ca. 41,100 attributable deaths in 2014) the burden due to NO₂ is much lower. However, due to methodological constraints we could not incorporate higher concentrations from traffic hotspots. This, and the fact that we only considered one health outcome in our main analysis, suggests that our results might be an underestimation.

Burden of disease due to nitrogen dioxide exposure in Germany

Dietrich Plass

D Plass¹, M Tobollik¹, D Wintermeyer¹

¹Exposure Assessment and Environmental Health Indicators, German Environment Agency, Berlin, Germany
Contact: dietrich.plass@uba.de

Background:

Numerous studies identified adverse effects of air pollution on health. According to the recent Global Burden of Disease Study about 2.9 million people died prematurely due to the effects of ambient particulate matter (PM) pollution in 2016, which resulted in about 70 million years of life lost (YLL). In addition to PM, a growing body of evidence shows convincing associations between nitrogen dioxide (NO₂) with several health outcomes. The case study provides a health risk assessment for NO₂ in Germany.

Methods:

A systematic review was performed to select health outcomes with strong evidence for an association with NO₂ and to derive an updated exposure-response function (ERF). The exposure assessment was performed on a 1x1 km² grid by combining measured and modelled data (annual means of NO₂ background concentration) with population density. Exposure data and the ERF were combined by the population attributable fraction formula. The main analysis was performed using a counterfactual of 10 µg/m³.

Results:

Only for cardiovascular mortality the evidence for the association with long-term NO₂-exposure was rated as “strong”. Thus, the main analysis merely included this