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Health effects of air pollution in Iceland

Respiratory health in volcanic environments

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Akademisk avhandling

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Abstract
Air pollution due to traffic and natural sources such as natural dust storms and volcanic ash are bad for human health.

In paper I time series regression was used to investigate the association between sales of prescription anti-asthma medication and air pollutants. Particle matter (PM_{10}) and hydrogen sulfide (H_2S) were associated with sales of anti-asthma medication 3 to 5 days later.

In paper II time series regression was used to investigate the association between emergency hospital visits to Landspitali University Hospital for cardiopulmonary disease or stroke, 2003-9. Ozone (O_3) levels were significantly associated with increases in emergency hospital visits, and nitrogen dioxide (NO_2) was associated with emergency hospital visits in the elderly.

In paper III the aim was to investigate if the volcanic ash from the 2010 eruption of Eyjafjallajökull and 2011 eruption of Grímsvötn had effects on health in the capital area. Using an indicator for days with high levels of PM_{10} from volcanic ash showed an association with increased emergency hospital visits.

In paper IV, the health of the population exposed to the ongoing eruption of Eyjafjallajökull in 2010 was investigated to assess public health threats from the eruption. Many reported irritation symptoms and symptoms of stress and mental unhealth, lung function was not worse than in a reference population.

Paper V report the results from a questionnaire study carried out six months after the Eyjafjallajökull eruption in a cohort of South Icelanders and a reference population from north Iceland. Respiratory and eye symptoms were much more common in south Icelanders.

In the studies we found that urban air pollution and natural particles have short-term effects on health indicators. Exposure to volcanic ash was associated with increased respiratory symptoms in a very exposed population.

Keywords
Respiratory health, asthma hospital admissions, air pollution, volcanic ash, volcanic environments, hydrogen sulfide, epidemiology, pharmacoepidemiology, Iceland

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