

Recently published research on health and environment

Children's health and environment: a review of evidence. A joint report from the European Environment Agency and the World Health Organization Regional Office for Europe Copenhagen/Rome: EEA/WHO 2002
http://org.eea.eu.int/documents/newsreleases/eip_29.pdf

"Up to 40% of the global burden of disease attributable to environmental factors is estimated to fall on children under the age of five years."

Part 1 gives an overview of children's special vulnerability to environmental health hazards and those hazards in specific settings; part 2 details specific health effects and their associated environmental factors; part 3 looks at specific environmental exposures associated with multiple health effects; part 4 looks at environmental justice, risk management and policy development.

Chapter 3: Asthma, allergies and respiratory health, by Ondine S von Ehrenstein shows the prevalence of wheezing in children aged 13-14 years in the UK to be 32.2%, the highest of the 21 countries included in the ISAAC study, 1995-96 (Figure 3.1, p46). It says that the most consistent relationships between outdoor air pollution and respiratory health have been found for PM and ozone (p50). Table 3.1 estimates the number of children affected per year at PM_{2.5} concentrations above backgrounds of 10 µg/m³ and 20 µg/m³ (for bronchitis symptoms and reduced lung function). Studies have also reported an effect of NO₂ on respiratory symptoms (p51). Three studies (Bobak and Leon 1999, Loomis et al 1999, and Saldiva et al 1994) found that air pollution was related to increased mortality from respiratory diseases in children, in the Czech Republic, Mexico City and Sao Paolo.

Several studies in various countries have linked exposure to high levels of road traffic to increased prevalence of respiratory symptoms and impaired lung function (bronchitis and asthma). "Epidemiological evidence suggests that lorry (diesel) traffic might be particularly harmful, which may be due to high particulate emissions" (p52).

Amongst the measures suggested to reduce risks are measures to control (avoid) outdoor air pollution (p56), and "Respiratory health in children would benefit in a long-term of a substantial reduction of air pollution exposure from traffic" (p56).

Asthma in exercising children exposed to ozone: a cohort study, by R McConnell, K Berhane, F Gilliland, SJ London, T Islam, WJ Gauderman, E Avol, HG Margolis, JM Peters, in *The Lancet* vol 359, 386-391, Feb 2, 2002

3535 children with no history of asthma were recruited from schools in 12 communities in southern California and were followed for up to 5 years. In communities with high ozone concentrations, the relative risk of developing asthma in children playing 3 or more sports was 3.3 compared with children playing no sports. Sports had no effect in areas

of low ozone concentration. The study concludes that air pollution (ozone) and outdoor exercise could not only exacerbate previously undiagnosed asthma, but also be an increased risk for new-onset asthma in children with no previous history of wheezing.

Living near a main road and the risk of wheezing illness in children, by AJ Venn, SA Lewis, M Cooper, R Hubbard, J Britton, in *Am J Respir Crit Care Med*, Vol.164, 2177-2180, 2001

The effect of road traffic pollution on asthma is likely to be most marked among those who live within 150 m of a main road. 6147 primary school children aged 4-11 and 3709 secondary school children aged 11-16 in Nottingham were tested in 1995-96. They found the risk of wheeze increased with proximity to the main road, particularly living within 90 m of a main road. Among primary school children, effects were stronger in girls than boys.

Health impact assessment of air pollution in the eight major Italian cities
Rome: World Health Organization 2001?

In 1998, WHO carried out a health impact assessment study for the 8 largest cities in Italy (Turin, Milan, Bologna, Genoa, Florence, Rome, Naples and Palermo) using PM₁₀ as a surrogate measure for other pollutants. The population in 1991 was 8.3 million. Yearly average PM₁₀ concentrations ranged between 44.4 and 53.8 µg/m³. Dose response co-efficients for exposure to PM₁₀ were derived from published literature and applied to population data in respect of mortality, hospital admissions (for CVD and respiratory disease), acute bronchitis, asthma exacerbation, restricted activity days, and occurrence of respiratory symptoms. The analysis was based on conservative assumptions of cases attributable to overall air pollution. They found that 4.7% of mortality was attributable to PM₁₀ concentrations higher than 30 µg/m³, with the same proportion for combined hospital admissions. Tens of thousands of attributable cases of childhood bronchitis and asthma exacerbation cases were estimated, as well as millions of days of restricted activity and episodes of respiratory symptoms.

They conclude that the burden to society, as well as the economic costs, are very high. In view of the facts only one pollutant was considered, analysis was limited to only known health outcomes, and conservative dose-response co-efficients were used, the true impact of air pollution is likely to be larger. As the main source of PM₁₀ in Italian cities is motor vehicle traffic (particularly diesels and two-stroke motorcycles), they suggest that curbing the volume of traffic in urban areas is warranted, especially as this would have other beneficial health effects (reducing road accidents, noise and community severance) and make walking and cycling (which are beneficial to health) more attractive alternatives.

Asthma children 'get raw deal' *BBC News* 7 May 2002

A survey for the National Asthma Campaign found that 1 in 8 children are being treated for asthma symptoms in the UK, and 1 in 5 had been diagnosed with asthma at some point. The UK has the highest rate of severe wheeze in the world for children aged 13-14. It estimated the annual NHS bill for asthma at £254m.

Particulate suspended matters and cases of respiratory diseases in Rio de Janeiro city (Brazil), by OM Brilhante, AMT Tambellini, in *International Journal of Environmental Health Research* Vol.12, 169-174, June 2002

This study compared emergency hospital admissions in 1991 with data of suspended particulate matter collected at Rio de Janeiro's Environmental Agency. The results showed that emergency admissions were more frequent in winter, and atmospheric pollution was higher in winter.

Noise levels in London schools exceed recommended guidelines by B Shield and J Dockrell London: Department of Health (executive summary available on www.doh.gov.uk/hef/airpol/cognitiveperf.htm)

Over 2000 children aged 7 and 10 in London were surveyed to find out how disruptive noise was. Internal and external noise surveys in schools, and experimental testing of children in different noise conditions was combined with a comparison of the results of Standard Assessment Tests (SATs). Teachers were also questioned about their perception of noise.

The study found that most external noise came from road traffic; both external and internal noise levels were associated with lower SATs results; children were aware of and annoyed by external noise; children's judgements of noise levels were borne out by the researchers' measurements; classroom noise levels were often dominated by the noise the children made themselves; acute exposure to noise affected performance on academic tasks, particularly language-based tasks; children with special educational needs were particularly vulnerable to the effects of background noise. The researchers conclude that attention be paid to appropriate acoustic design in schools to reduce noise levels.

The Top 12 Noisiest Roads in the UK: a report by the United Kingdom Noise Association April 2002

The UK Noise Association launched a competition to find the noisiest road in the UK in February 2002. They were not looking for an objective level of measured noise, but for roads where the noise annoyed people and intruded on their lives. Bawtry Road, Tinsley, was judged the ninth noisiest road from those nominated. The report recommends the government introduce quieter road surfaces more quickly, enforce a

maximum speed limit of 30 mph on all residential roads, set traffic reduction targets, implement noise audits for new developments, update planning laws and take account of noise issues in policies to tackle social exclusion.

The integration of public opinion and perception into the design of noise barriers: a case study in Sheffield JLR Joynt and J Kang.

The recently constructed M1 noise barrier in Tinsley was studied in relation to local people's perceptions of the design process and the effectiveness of the noise barrier. The researchers found that, despite the local community having a well organised public forum, those involved in the design and management of the project failed to engage with local people. Feelings were mixed about whether the barrier had been successful in reducing noise; some felt the tree planting (by the local Tinsley Tree Project) had been more effective.

Noise and Liveability The UK Noise Association, 2001

In the European Union, 20% of people are badly affected by noise. The UK's towns have got 10 times noisier in the last decade (based on acoustic noise measurements in Sheffield since 1991). 66% of outdoor noise comes from motor traffic. Socially excluded communities are hardest hit by traffic and aircraft noise, and poorer people cannot afford to move away. The report recommends ways to cut traffic noise: quieter road surfaces, lower speeds, traffic calming, traffic reduction, main road traffic calming, and quieter vehicles.

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