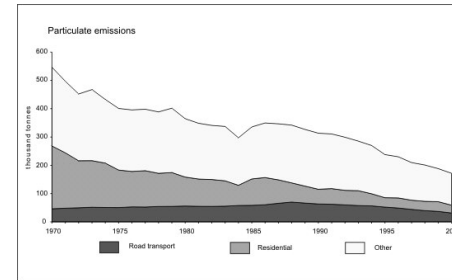


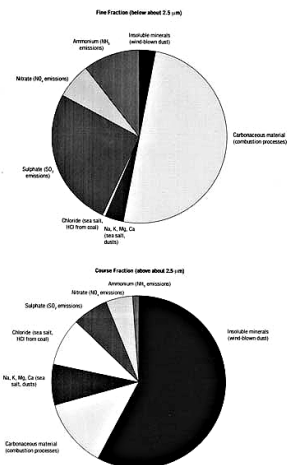
Persistent Organic Pollutants

- Polycyclic aromatic hydrocarbons
- Pesticides
- PCBs
- Dioxins and Furans

Particulates



Source: DEFRA Digest of Environmental Statistics Atmospheric Emissions Estimates: 1970-2000
<http://www.defra.gov.uk/environment/statistics/des/airqual/bulletin/index.htm>



<http://www.defra.gov.uk/environment/airquality/aqs/particle/>

Particulate Matter

- Effects depend on
 - chemical constituents
 - particle size

Particulate Matter

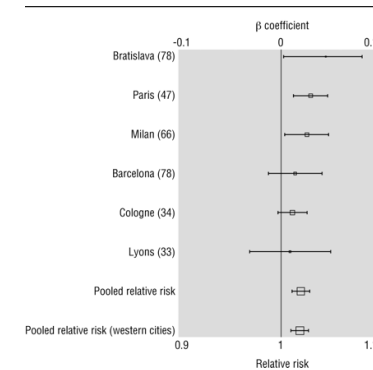
■ Coarse particles

- aggravation of pre-existing respiratory disease

■ Fine particles

- can reach deep lung
- increased hospital admissions for heart and lung disease
- increased respiratory symptoms and disease
- decreased lung function
- premature death

Estimated individual city and pooled relative risks of mortality associated with an increase of 50 $\mu\text{g}/\text{m}^3$ in particulate matter (PM10) levels



Katsouyanni et al Short term effects of ambient sulphur dioxide and particulate matter on mortality in 12 European cities: results from time series data from the APHEA project
BMJ 1997;314:1658

Metals and their compounds

■ Lead

- anemia
- kidney damage
- peripheral neuropathy
- encephalopathy
- neurobehavioural effects

■ Mercury

- kidney damage
- gastrointestinal damage
- psychosis

Metals and their compounds (continued)

■ Beryllium

- skin lesions
- acute pneumonitis
- Berylliosis
- carcinogen ?

■ Cadmium

- acute pneumonitis
- kidney damage
- emphysema
- carcinogen ?

Metals and their compounds (continued)

- Chromium
 - Cr VI most hazardous
 - corrosive
 - sensitiser
 - lung cancer
- Nickel
 - sensitiser
 - nasal cancer

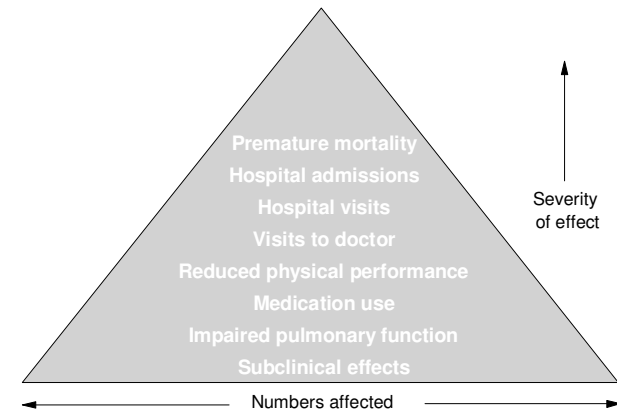
Mineral dusts

- Crystalline silica
 - ▀ quartz, cristobalite, tridymite
 - lung fibrosis
 - carcinogen ?
- Asbestos
 - ▀ chrysotile, crocidolite, amosite
 - lung fibrosis
 - lung cancer
 - mesothelioma

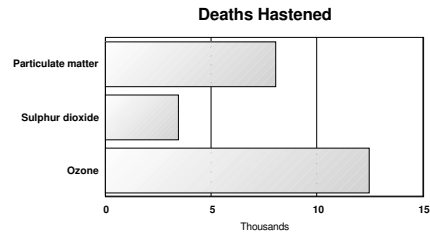
Environmental Carcinogens

- Benzene
- 1,3 butadiene
- Polycyclic aromatic hydrocarbons (PAHs)
- Dioxins

Air Pollution Effects

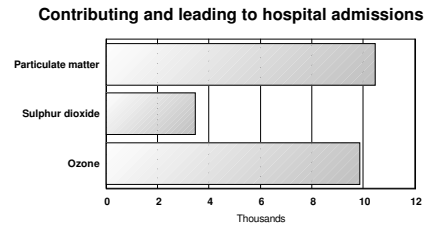


COMEAP Estimates

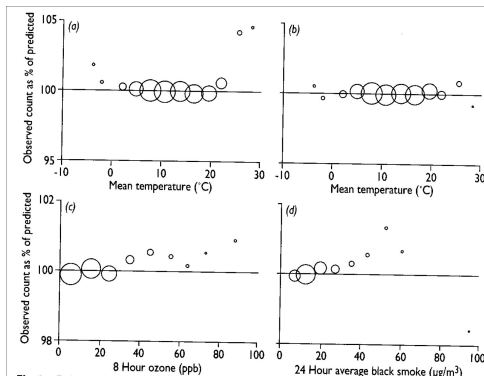


Source : Committee on the medical effects of air pollution (COMEAP)
The Quantification of the Effects of Air Pollution on Health in the United Kingdom (HMSO 1998)
<http://www.doh.gov.uk/comeap/statementsreports/airpoi7.htm>

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Anderson H J et al (1996) Air pollution and daily mortality in London: 1987-92
British Journal of Industrial Medicine 312:665-669

Water and Land Pollution



Water and Land Pollution

■ Industrial effluent

- metals
- organic chemicals

■ Agricultural effluent

- pesticides
- fertilisers
- slurry

■ Wastes

■ Atmospheric pollution

- settlement
- washout

Water and Land Pollution

■ Pesticides

- organochlorides
- organophosphates
- others

■ Toxic metals

■ Persistent organic compounds

■ Endocrine disruptors