

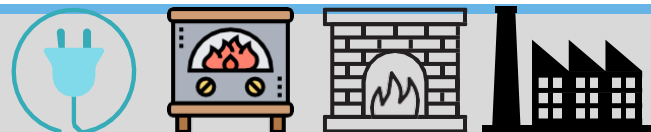
Emission



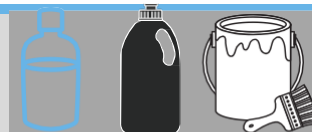
Wildfires, windblown dust,
Natural Sources



Exhaust, tyres, break systems
Vehicular traffic



Electricity generation, burning solid fuels, industry
Fossil fuel and biomass combustion



Solvent & product use



Global burden of disease

	PM _{0.1} PM _{2.5} PM ₁₀ Particulate Mater	O ₃ Ozone
Mortality Deaths	6.5 million (11%)	365,000
Morbidity DALYs	210 million	6 million
% COPD Deaths	21%	11%

For every 10µg m⁻³ increase in long-term PM_{2.5}

6-8% increase in mortality

9% increased incidence of lung cancer



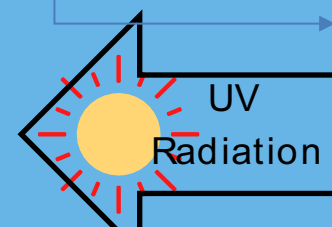
Air Pollution is the single largest environmental health risk in Europe

- 8.6 months of life expectancy lost
- 90 % of city dwellers are exposed to harmful levels of pollutants
- 400,000 premature deaths

Air Quality Limits

The WHO and EU have upper limits for commonly measured pollutants. Compliance with current EU targets does not offer protection for adverse public health effects

Very large cohort studies have demonstrated that **there is no safe limit for PM_{2.5}** at which population effects are not observed.



NO₂
Nitrogen dioxide

Volatile Organic Compounds

Exposure

Short Term

Lung function

Decrements with acute air pollution exposure:

- Healthy individuals
 - 10µg/m₃ ↑ PM₁₀ → FVC -18.9ml

- Travelers to cities with higher air pollution levels
- COPD/asthma patients

Asthma

- Trigger for asthma exacerbation

COPD

- Increased hospital admissions
- Increased exacerbations
- Premature Mortality

Long Term

- Impaired development of lungs in children leading to reduced lung function into adulthood.

38% of new childhood asthma cases in the UK are attributable to air pollution. (6-12% traffic related)

- Increased asthma in children

- Higher risk of COPD
- More rapid decline in lung function
- Increased risk of repeated exacerbation

Vulnerable Populations:

Children, elderly, those with cardiovascular or respiratory disease and socioeconomic deprived populations.

Climate Change and Air Pollution Global warming will continue to increase the effects of outdoor air pollution

- More frequent heat waves during which time air pollution concentrations are increased. Rising temperature and pollutants work in synergy causing more adverse health effects.
- Longer allergen seasons which may lead to higher rates of allergic rhinitis and asthma. Ragweed pollen concentration is predicted to be 4 times higher than current levels in 2050.
- Increased frequency and severity of storms increasing the likelihood of epidemic thunderstorm asthma.
- Increased frequency of wild fires as a result of more frequent droughts causes long periods of extremely high particulate mater.

Action on Air Pollution

Healthcare professionals



- Educate patients
- Ensure patients experiencing fuel poverty are aware of grants for home upgrades
- Advocate for policy change to improve air quality

Patients



- Choose active transport over driving
- Avoid burning solid fuels at home
- Reduce exposure to poor air quality e.g. avoiding high volume traffic roads at peak times

Commercial



- Switch to electric vehicles

Policy makers



Implement policies for the lowest levels of pollutants and exposure possible.

- City planning that reduces emissions and citizens exposure to air pollution