EVERY BREATH A THREAT

The impacts of NO_2 on human health

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THE IMPACTS OF NO_2 ON HUMAN HEALTH

Imagine a world where the basic human act of breathing could lead to serious illnesses affecting your lungs or your heart or even result in premature death. Imagine that simply by living in a big European city - say, London, Paris or Rome - the health of your unborn child could be put at risk. Your child could be born prematurely, underweight or with possible defects to their neural system.

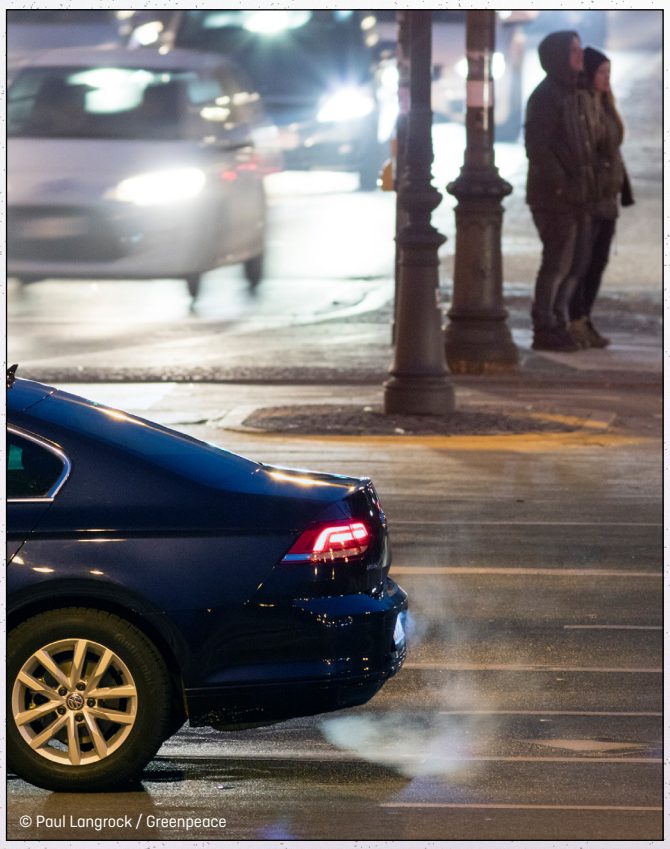
This dystopian nightmare is the reality for the health of ordinary people living in big cities across Europe today, where fossil fuel powered traffic is the main cause for pollution levels that exceed the limits recommended by the World Health Organisation (WHO).

Recent research has provided sufficient evidence to show that exposure to one particular fossil fuel related pollutant, Nitrogen Dioxide (NO_2), has a direct impact on our health and mortality.[1] **In fact, an estimated 72,000 premature deaths are caused by NO_2 each year in Europe alone.[2]**

Every increase in exposure to this pollutant correlates with an increased risk to our health: there is no 'safe' level of exposure. Even in areas where NO_2 is below the prescribed European limit, the major health risks outlined below are apparent. Whilst this document focuses on NO_2, there are many other pollutants, including particulate matter, that pose significant risks to human health. **Each breath we take in of these pollutants is a threat.**

[1] Gesundheitsrisiken der NO_2 - Belastung für den Menschen. Kurzexpertise anhand neuerer Übersichtsarbeiten und Studien.
This report comprises the summation of research and studies into the impact of NO_2 from recent years. In cross referencing these with guidelines from leading bodies such as the World Health Organisation (WHO), the review draws conclusive evidence about the impact of NO_2
→ https://www.greenpeace.org.uk/reports/no2-exposure

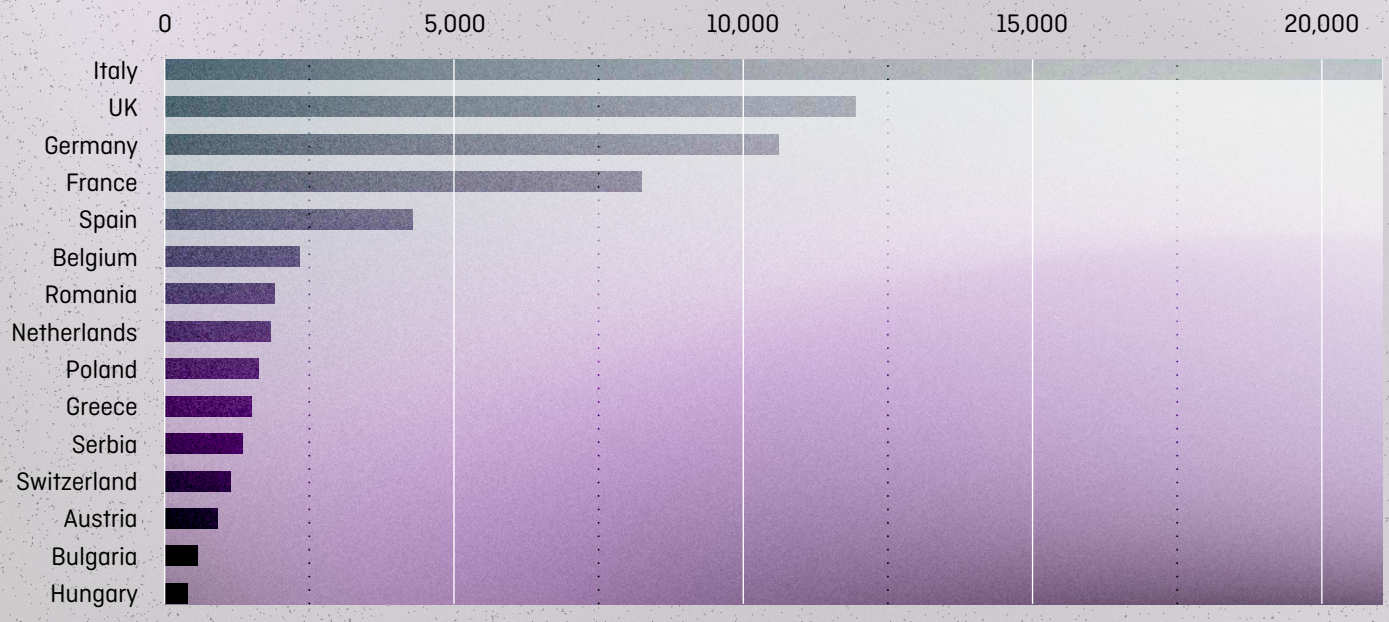
[2] European Environment Agency 2016, Air quality in Europe - 2016 report.
Copenhagen: European Environment Agency



IMPACTS ON OUR HEALTH - THE MAJOR FINDINGS

Studies have shown there are both short and long term health problems associated with exposure to NO_2. Short term increases in concentration levels of NO_2 can be expected to result in increased hospital admissions related to respiratory diseases, more emergency interventions for cardiovascular and respiratory problems and more disease-related death. In the long term, mortality is higher in areas with higher NO_2 exposure.

PREMATURE DEATHS ATTRIBUTABLE TO NO_2 EXPOSURE in 15 European countries and the EU-28 in 2013



Source: Air Quality in Europe (2016 report) - European Environmental Agency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PREGNANCY, BIRTH WEIGHT AND DEVELOPMENT DEFECTS

In areas where there is high exposure to NO_2, children are born weighing less - there is evidence too of premature births. With expectant mothers inhaling pollutants such as NO_2, there is a higher risk of complications. The wide reaching impact of NO_2 also stretches to education and public services, as research showed a delay in the development of neural systems and the mental performance of children. Any early cognitive defects will have an impact on health later on in life.

ASTHMA AND RESPIRATORY FUNCTION IN CHILDREN AND ADULTS

For each 10 µg/m³ (24-hour average) increase in NO_2 exposure, WHO expects an increase of 1.8% in hospital admissions due to respiratory health problems for all age groups, putting our health and public services under increasing pressure.

NO_2 exposure, compounded with an increased risk of respiratory infections and pneumonia (this is also applicable to children). The impact of NO_2 on children is one of the most worrying aspects of the research data. Children are more vulnerable than adults, and develop asthma more frequently if they live near traffic, with the risk of asthma rising by 15% when NO_2 exposure increases by 10 µg/m³. Children with asthma are admitted to emergency services or to hospital up to three times more frequently than adults, for respiratory distress. If NO_2 levels continue to rise across cities globally, respiratory problems could become the norm for children all over the world.

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CARDIOVASCULAR FUNCTION

According to the United States Environmental Protection Agency (US EPA), increased NO_2 exposure could trigger heart attacks and lead to a potential increase in emergency interventions required for cardiovascular problems. There is also evidence to suggest that increased exposure to pollutants such as NO_2 can lead to strokes, blood clots and raised blood pressure.

DIABETES

There is emerging evidence of a link between diabetes and NO_2, which has been highlighted by bodies such as the UK's Royal Collaege of Physicians and the Royal College of Paediatrics and Child Health.

CANCER

Air pollution is classified as a group 1 carcinogen, and considered a leading environmental cause of cancer, by WHO.
In particular, exposure to traffic emissions, measured as NO_2, is likely to be associated with a higher risk of lung cancer.

→ **NOTE:** The findings outlined above are the most glaring, though it's worth noting some studies conclude that some health impacts cannot be attributed solely to NO_2 and may be attributed to other air pollutants. Further investigations are need to assess the full impact of NO_2 on health.

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DIESEL: THE MAIN CULPRIT

The major cause of NO_2 in urban settings is fossil fuel powered transport in general, and diesel cars in particular. In 2015, the stricter Euro 6 emissions standard became mandatory for all new cars. However, diesel cars in reality still emit several times more than this new legislative limit, and car companies have been caught cheating emissions tests. Unsurprisingly, air quality limits in cities across Europe have been exceeded in recent years. The only solution to these problems is to act fast to eradicate diesel use and move away from fossil fuels in order to reduce emissions and protect our health.

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GREENPEACE RECOMMENDATIONS

Merely tightening emission limits for new cars or air quality standards that are subsequently ignored is no longer an acceptable solution. In addition to stricter limits and better enforcement, we propose:

→ National governments must **ban the sale of new diesel cars** and initiate the transition from the private internal combustion engine to shared electric mobility.

→ National governments must **hold car companies to account** and ensure they cover the costs of their breach of regulations.

→ City governments must **ban diesel cars from cities** and create or expand low to zero-emission zones where no or only the least polluting vehicles are allowed.

→ City governments must **render private cars unnecessary** by investing in public transport, cycling and walking infrastructure, and promoting shared mobility.

Every breath we take is a threat. This is why we are campaigning for **#CleanAirNow**

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It needs solutions. It needs change. It needs action!