

Health and air quality standards in the European Union

What you need to know to accelerate disease prevention



Why is air pollution a health problem?

Air pollution - especially persistent and long term one - is the second leading cause of death from noncommunicable (non-infectious) diseases (NCDs), according to WHO¹. It increases the risk of ischemic heart disease, stroke, chronic obstructive pulmonary disease and lung cancer.

What are the main air pollutants and their health impacts?

The key pollutants include particulate matter (PM), nitrogen dioxide (NO₂), ozone (O₃) and sulphur dioxide (SO₂). Short and long-term exposure to these pollutants is linked to cardiovascular disease, stroke, COPD (chronic obstructive pulmonary disease), lung cancer, asthma, reduced lung function, impacts on the developing brain and central nervous system, increased risk of preterm birth and reduced birth weight. Of the various pollutants, PM_{2.5} leads to the greatest health burden, as these tiny particles can enter the bloodstream.

How does air pollution affect health in the EU?

Air pollution is the biggest environmental risk factor for health in the EU, causing 400,000 premature deaths annually. The health costs from air pollution are estimated at up to 940 billion EUR a year². Overall, the health burden from air pollution is higher in Eastern Europe than in Western Europe.

Who is most affected?

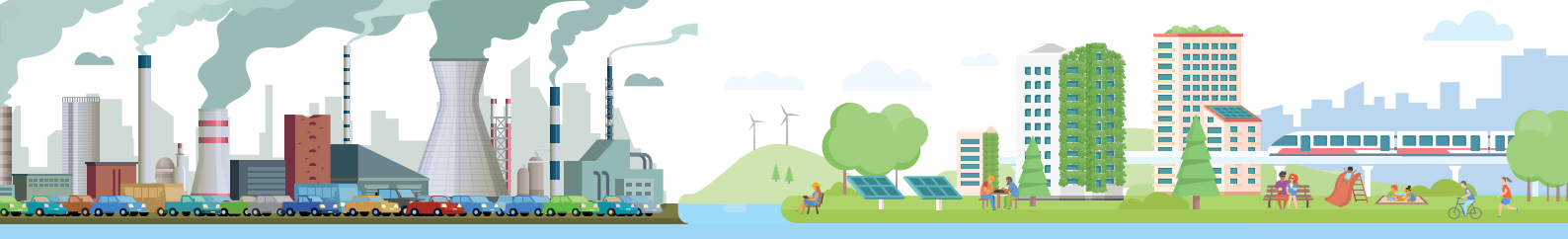
Air pollution impacts everybody, but it has a particularly harmful effect on vulnerable groups, such as the elderly and people with pre-existing conditions, children and people living in socio-economically challenging environments.

How does air pollution affect children?

Exposure to air pollutants can increase the risk of a child developing asthma and the number and severity of asthma attacks, affect their learning abilities, as well as a child's heart, brain and nervous system development. Even children in utero can be affected: pregnant women breathing unhealthy air can lead to children being born earlier, or with a lower birth weight, which increases the risk of disease decades later.

¹Noncommunicable diseases and air pollution, WHO European High-Level Conference on Noncommunicable Diseases, 2019. https://www.euro.who.int/_data/assets/pdf_file/0005/397787/Air-Pollution-and-NCDs.pdf

²Air Quality - revision of EU Rules, 2021, <https://ec.europa.eu/environment/air/quality/documents/Air%20Quality%20Revision%20of%20EU%20Rules%20-%20Status%2010%20May%202021.pdf>



How does air pollution link to health inequalities?

Numerous European studies have shown that air quality tends to be worse in the areas where the most deprived populations live. This is also reflected by disparities of PM_{2.5} levels across Europe: the most polluted regions have mean concentration levels more than twice as high as the least polluted regions, with significantly higher exposure levels in socially disadvantaged areas³. In the Ostrava Declaration on Environment and Health, Member States in the WHO European Region committed to “consider equity, social inclusion and gender equality in our policies on the environment and health”⁴.

How does air pollution link to climate change?

The main driver of climate change is fossil fuel combustion, which is also a major contributor to air pollution; efforts to reduce one can improve the other. According to a recent estimate, fossil fuel burning was responsible for about 8.7 million deaths in 2018⁵.

What are the main sources of air pollution that impact health in the EU?

The main sources are fossil fueled road traffic, burning of fossil fuels for energy production and heating, biomass burning and agriculture.

Why is air pollution a particular problem in cities?

The majority of people in the EU live in urban settings, and their number is expected to increase. According to the European Environment Agency⁶, in 2020, only 127 of 323 cities had acceptable levels of PM_{2.5} (when judged against World Health Organization guidelines); the air pollutant with the highest impact on health in terms of disease and premature death.

Air pollutant concentrations have improved over the last decade, so is this really still a public health problem?

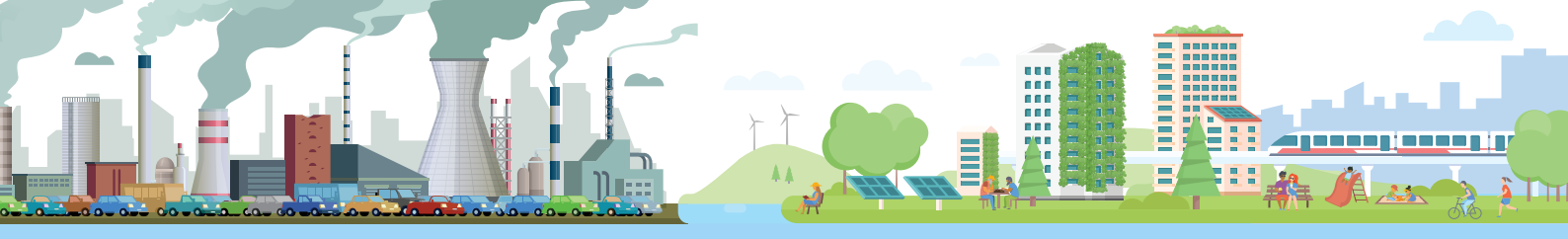
Whereas emissions of pollutants have gone down, and levels for some pollutants such as particulate matter (PM) have decreased in the EU, they are still above the WHO recommended levels needed to protect health. Additionally, the health burden has remained very high and proves that even lower levels of pollution are harmful to health.

³ Environmental health inequalities resource package. A tool for understanding and reducing inequalities in environmental risk. Copenhagen: WHO Regional Office for Europe; 2019.

⁴ Declaration of the Sixth Ministerial Conference on Environment and Health, https://www.euro.who.int/_data/assets/pdf_file/0007/341944/OstravaDeclaration_SIGNED.pdf

⁵ K. Vohra et al., Global mortality from outdoor fine particle pollution generated by fossil fuel combustion, Environmental Research, Volume 195, 2021, <https://doi.org/10.1016/j.envres.2021.110754>

⁶ European city air quality viewer, European Environment Agency, <https://www.eea.europa.eu/themes/air/urban-air-quality/european-city-air-quality-viewer>



How is air quality monitored in the EU?

Most EU countries have a network of official air quality monitoring stations in place, based on the requirements defined in the relevant EU laws, and also provide this information to the public. But often, there are gaps in what the official monitoring stations cover; for example when they are not located in the most polluted places in a city. Lately, so-called “citizen science projects” have enabled people to monitor air quality with professional equipment themselves, and use that information to determine their level of exposure, or choose another way to travel to work, school etc.

How is the World Health Organization active for healthy air quality?

The WHO regularly reviews all available research on air pollutants` impact on people`s health. Based on this extensive, in-depth review of the scientific literature, it just published its new guidelines for concentrations for selected air pollutants.

What is the significance of these WHO air quality guidelines?

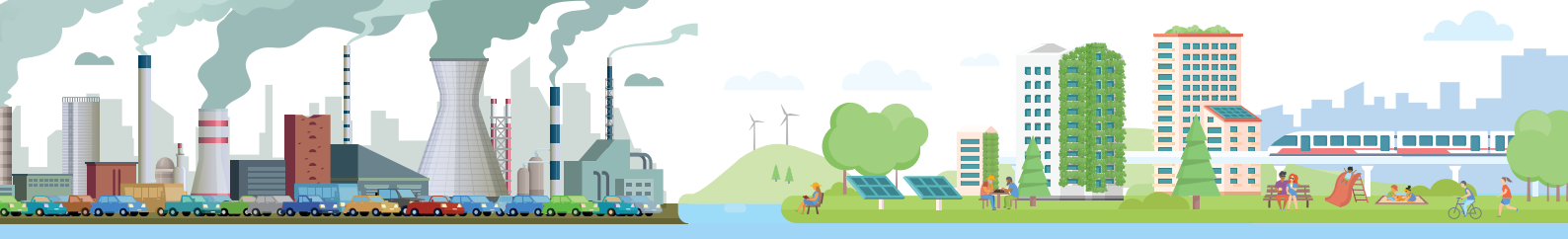
They are of a high methodological quality and are developed through a transparent, evidence-based review process. WHO guidelines can be considered the gold standard for evidence-based decision-making on air quality, as they are focused on what is best for people`s health, based on the latest science.

Are these science-based guidelines reflected in EU legislation?

Only partly. The current EU air quality standards are the results of a political compromise, and differ for key pollutants, especially for PM_{2.5}.

By how much do EU limits differ from the evidence-based guidelines by WHO?

As an example, the current EU Directive sets the maximum tolerated concentration of fine particulate matter in the air as 25 µg/m³ for the year, while the World Health Organisation (WHO) has a much stricter guideline of 5 µg/m³.



What is the EU doing to better protect health?

The EU is going to revise the bloc's air quality standards next year (the legislative proposal is expected in autumn 2022). The European Green Deal and the recently adopted EU Zero Pollution Action Plan include the commitment to align the current EU Air Quality Standards closer with WHO recommendations. Disease and premature death can be optimally prevented only by fully aligning EU standards with the evidence-based WHO values.

How can health ministries be involved in this process, and on disease prevention around air pollution?

Expressing support for full alignment with WHO guidelines is the best and only way to assure utmost health protection. This could encompass a public statement by health ministers, input into the public consultation (expected to open 3rd quarter of 2021) or by adopting European Council Conclusions.

Health ministries can also seek to be formally involved in the setting of a country's position for the new EU air quality guidelines, with regular exchanges with environment ministers.

Health ministries can further include air quality preventative measures in the national health programmes, or support more ambitious Nationally Determined Contributions for reducing CO₂, helping both with cleaning up the air and climate action.

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