European Lung Health Group

POLICY BRIEF

MARCH 2023

Improving lung health in the EU with renewed Air Quality Directives

Introduction

Air pollution is one of the most pressing environmental health challenges of our times, affecting us all. Pollution has been inherent to the development of European economies: industrial production, development of agriculture and food systems, transportation and mobility, urbanisation and linked technologies such as heating and cooling. All these sectors, produce both wealth and pollution in Europe. Together, they generate tons of emissions of dangerous and toxic gases and chemicals that are then released into the environment.

The current legislative framework on air quality (Directives 2004/107/EC and 2008/50/EC) regulates some of the major air pollutants, including **particulate matter** ($PM_{2,5}$ and PM_{10}), **nitrogen dioxide** (NO_2), **sulphur dioxide** (SO_2), **benzene, carbon monoxide** (CO) and **ozone** (O_3), all of which are emitted through power generation, burning of fossil fuels, agriculture and the use of polluting means of transport. In addition, there are also other particles known as "pollutants of concern" such as **ultrafine particles (UFPs)**, **black carbon (BC)** and **ammonia (NH_3)**, also linked with the same human activities.

Air quality and health in Europe

Air pollution is the single biggest environmental risk for human health and well-being in Europe. The environmental health facts and science are robust, with a disease burden that lies on par with other major global health risks such as unhealthy diet and tobacco smoking[1]. WHO data from 2019 show that about 6,7 million premature deaths were due to outdoor and indoor air pollution across the world[2].

The burden of disease caused by air pollution remains unacceptably high in Europe. **In 2020, more than 311,000 premature deaths were caused by exposure to air pollution levels in the EU**[3]. When air pollution does not kill, it affects health and quality of life: in 2019 air pollution was linked with 3,9 million disability-adjusted life years (DALYs) in Europe[4].

Despite air pollution being "the invisible killer", its impacts on human health are unequivocal. Ella Adoo-Kissi-Debrah, a British schoolgirl of just nine years who died in 2013 of an asthma attack will be remembered for being the first individual in Europe whose death was directly attributed to exposure to toxic air[5]. People in the UK and in the EU are overwhelmingly reporting that they feel a lack of information on air quality issues in their country[6,7].

Air pollution destroys lung health

Air pollution knows no borders and no condition, affecting everything. When inhaled, pollutant particles tend to deposited in the respiratory tract. Depending on the quantity and composition of the particles, this concentration may cause damage to the human airways and lungs, typically expressed though a sudden or chronic inflammatory response[8].

However, the risk from exposure to air pollution differs sharply among various population groups: children, pregnant women, the elderly, and people with pre-existing chronic conditions such as airways and lung diseases, cardiovascular and metabolic diseases, are far more impacted. As a 2016 report put it, vulnerable groups are 'prisoners of air pollution', as they have to stay indoors and limit their activity when pollution levels are too high[9]. **Both short- and long-term exposure to air pollution can lead to or exacerbate a wide range of diseases, including asthma, chronic obstructive pulmonary disease (COPD), and lung cancers**[1,4,10]. Exposure to $PM_{2,5}$, SO_2, NO_2 and O_3 is specifically associated with damages in the respiratory and lung system, as they can alter the development of both immune function and lung mechanics, including lung injury and self-repair[4,11].

Prenatal and early-life exposure to air pollution also has severe consequences. Multiple studies have shown clear evidence that early exposure to air pollution can damage the lungs, with latest research pointing towards increased likelihood of asthma later in life[9,12,13,14]. In fact, epidemiologic data shows that the foetus is also vulnerable to the mother breathing pollutants. Given that is known that lung function remains the same since early life, with no catch-up growth, the protection of the foetus and infant must be the highest priority[19].

This burden does not go unnoticed by the EU population: about 89% consider respiratory diseases such as asthma a serious problem linked to air pollution in their country[7].

Poverty linked to air pollution

The impact of air pollution is significant in economic terms. Morbidity and mortality due to air pollution leads to reduced labour productivity and sick leave. In addition, illness due to air pollution puts health systems in strain. **In 2017, air pollution costed EUR 600bn on welfare loss, and provoked healthcare costs equivalent to EUR 15bn across EU countries**[4].

Air pollution is also a clear factor of socio-economic inequality[15]. After all, exposure to air pollution highly depends on location. According to WHO, **more than 80% of people living in urban areas are exposed to air quality levels that exceed WHO limits** e.g. next to high-traffic roads, with limited access to green areas etc[16].

Recommendations by the respiratory health community for the revision of the EU Ambient Air Quality Directives

The current review of the EU air quality rules is a unique moment for air quality in Europe. Tackling air pollution is enshrined as a central element of Europe's 'zero pollution ambition', in the EU Green Deal of 2019. Most importantly, there is increasing evidence on the multiple adverse health effects of air pollution, such as the WHO Air Quality Guidelines, which have updated our knowledge.

Besides, **air quality is far from a stand-alone policy, as it affects (and is affected by) other policy areas**. One key example is climate: major air pollutants such as particulate matter, carbon dioxide and ozone are also "climate forcers", as they contribute to the warming of the planet[17]. Therefore, the reduction of air pollution can benefit the EU targets for climate too, and especially the goal for climate neutrality by 2050. But eventually, a truly ambitious air quality policy passes through changes in a broad range of existing models in economy and society, including how we do business, produce and use energy, move from place to place, engage in agriculture etc.

In view of the ongoing legislative revision, the respiratory community unites its voice under the following **key recommendations**:

1 An EU air quality framework that promotes a high level of public health protection

The 2021 WHO Air Quality Guidelines provide with clear and alarming evidence on the impacts of air pollution on people. Air pollution is harmful to human health even at levels that until recently were considered 'safe'[18]. The 2021 Guidelines therefore encourage countries to reduce the limits of major pollutants, such as $PM_{2,5}$, PM_{10}, NO_2, SO_2 and O_3, widening the existing **gap between the current level of protection in the EU legislation and the level needed to avoid disease**.

The EU's mandate to public health is at strain given the scientific evidence. The Commission proposal for a revised Air Quality Directive provides for mid-term targets by 2030 (Art. 13, Annex I), and for full alignment with 2021 guidelines only post-2030, without offering a more specific estimation. Such a timeline leaves citizens hopelessly exposed to harmful air pollution.

The European Lung Health Group expects a health-protective EU air quality framework that:

- **Translates science into law, through the full alignment of EU air quality standards with the WHO Air Quality Guidelines for all major pollutants.** The WHO Guidelines must be used as a bare minimum, recognising that current knowledge is likely to be outdated soon, considering worrying emerging scientific evidence quantifying the environmental impacts on health.

- **Speeds up regulation and enforcement to ensure full alignment with WHO recommendations by no later than 2030**, reflecting the need to reduce the burden of air pollution and support the EU targets related to noncommunicable diseases (NCDs), and the climate objectives. The revised EU directive should also provide with clarity on the enforcement timeline, especially on the EU mechanisms to integrate new evidence emerging from WHO and other sources.

- **Streamlines the use of binding limit values** as the most effective tool to reduce air pollution, as opposed to less strict standards. This includes establishing limit values also for ozone, typically linked with damages in the airways system and worse asthma symptoms, which is currently governed via target values.

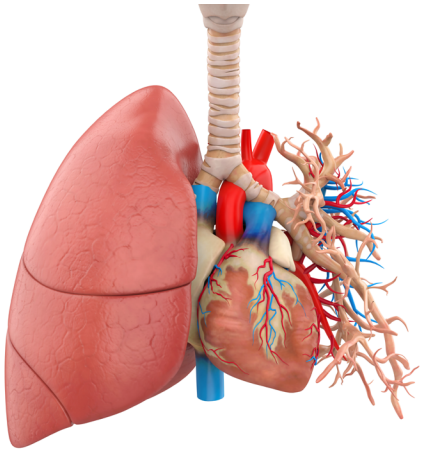
2 An EU air quality framework that is future-proof and facilitates further research on air quality

A subject of in-depth scientific research, the effects of air pollution on human health today represents a robust body of knowledge available to inform policymakers. It also a developing field that alerts about the **systemic relationship between industrialised lifestyle, environmental degradation, and disease**.

The introduction of an EU regular review mechanism in the revision proposal (Art. 3), based on the assessment of latest available evidence on the impacts of air quality on health is of outmost importance to protect the population. It will ensure that the EU is fully informed about research results, but also has the power to follow-up with a revision proposal to upgrade the directive to the latest knowledge.

The European Lung Health Group expects a science-based EU air quality framework that:

- Ensures a **review process that prioritises health-centred goals over political and economic considerations**. This implies evolving towards a more participatory approach that encourages the involvement of citizens and vulnerable groups in the gathering of real-world air quality data and the implementation of air quality measures.
- **Supports independent scientific research** in areas where there are still significant knowledge gaps (e.g. the impact of pollutant mixtures on respiratory health) through EU research funds, public private partnerships and multilateral bodies funded schemes and projects.
- Anticipates the **conditions and requirements whereby a review shall be launched**, with links to specific health-related 'trigger points'.
- Allows for **fast-track revision of EU air quality premises beyond the applied pollutant-based scope**. This would allow including limit values to other air pollutants presently not covered by the directive, such as ultrafine particles, black carbon, and volatile organic compounds (VOCs).



3 An EU air quality framework that ensures accurate monitoring of air pollution

Robust monitoring must be at the centre of the EU air quality framework as the main tool to assess progress, identify gaps, and determine action at all levels, including corrective measures. Moreover, **an air quality monitoring system must be designed in a way that represents the real pollution level**; includes all dangerous pollutants; and also enables the continuous flow of data.

The current EU Air Quality Directive require the monitoring for six major pollutants. The proposal foresees some mandatory monitoring for "pollutants of emerging concern", such as ultrafine particles (UFPs), black carbon (BC) and ammonia (NH_3). However, these new obligations fall short on the dimension of the problem with the quality of the air we breathe, as the monitoring for these pollutants remains partial and linked to loose requirements and criteria (e.g. only in 'monitoring supersites').

This broadening approach should also be applied to citizen's participation. Moreover, the proposal lacked scope on adding a citizen science aspect on air pollution monitoring, including a perspective of improving monitoring through relevant means. Given the existence of scientifically-proven measurement methods for personal use (e.g. low-cost monitors), **pollution data can be captured more locally, timely and real-world**, enriching the official monitoring and contributing to individual and collective health protection.

The European Lung Health Group expects an EU air quality framework that:

- Deeply embeds **the protection of health in the siting and designing of sampling stations**, based on health-related criteria e.g. in the most populated areas and under specifications such as height that represent the real levels of polluted air we breathe. A particular focus must also be given in sites mostly frequented by vulnerable populations, such as around hospitals and schools.

- Sets obligations for a **well-functioning monitoring network** and an unhindered real-time flow of data from the whole network of sampling points across the EU.

- Establishes a **stricter monitoring framework for emerging pollutants**, putting them, at least in terms of monitoring, on equal footing with the main pollutants. Such obligation to monitor should be based on health considerations as, for example black carbon has clear impacts on respiratory health beyond supersites.

- Supports **'citizen science' initiatives** to enlarge air quality data, thus complementing the official monitoring of public authorities. Synergies with the European Green Deal data space and relevant actions foreseen in the area of air pollution would add significant value to this end.

4 An EU air quality framework that is enforced and citizen-centred

The revision of the Air Quality Directives connects the European Green Deal and the EU Health Union. On the one hand, the imperative need to revert climate change and environmental degradation. On the other hand, the quest for more solidarity and coordination on health crisis, including environmentally led ones.

Currently there are 18 member States under infringement procedures due to non-enforcement of the EU air quality levels. Proportionate yet strict and **health-related penalties to countries in case of exceedance of pollutant limits would provide a strong economic incentive to deliver clean air, in addition to the related health benefits**.

The revision of the Directive brings the possibility for individual citizens affected by air pollution to take their governments to the court for failing to comply with the air quality legislation (Art. 27). The access to justice is linked to another new element of the proposal, the right for compensation for health damages (Art. 28).

However, there are more considerations to develop in order to truly enable access justice and repair: it must be accompanied with citizen accessibility and specific judicial capacity locally, to allow for a straightforward legal mechanism, unhindered for both individuals and organisations.

The European Lung Health Group expects an EU air quality framework that is enforced based on citizen-centred principles and that:

- Establishes **strict penalties and quick litigation procedures** for authorities failing to meet the established pollution limits.
- Ensures **swift and practically easy access to justice** for both individuals and organisations in case of exceedance of pollution limits, together with regular reviews of relevant national measures.
- Provides for **timely compensation for health damages** by exposure to air pollution, based on procedures that are not burdensome for both individuals and organisations representing them.

5 An EU air quality framework that uses information to protect citizens

The right to access information on environmental issues such as air pollution is enshrined in EU law (Directive 2003/4/EC on public access to environmental information). However, access to public information on air quality remains difficult across the EU countries, due to a patchwork of data coming from different sources and levels. The result is that 60% of people in Europe do not feel well-informed on air quality issues in their country, while about 89% consider it an issue of high concern due to its with health conditions such as asthma and other respiratory conditions.

Access to real-time air quality information is a prevention measure that allows people to decide to change their behaviours accordingly. This is why the revised air quality framework must be driven by a strong commitment to an informed, empowered population.

The introduction of national air quality indices (Art. 22, par. 2), providing hourly updates on the pollution levels at local level, is promising yet needs further improvements. National indices will be a useful tool only as long as there are clear provisions about what information they must contain, how they will be implemented in practice, and their interaction with the broader public information requirements (Annex IX). Moreover, all air pollution data addressed to the public should be coupled with health-related messaging and advice, whether they come from the index or other sources.

In addition, the revision does not progress on "information thresholds", which are not expanded beyond ozone (Annex I, Section 4, point B), a tool designed to provide immediate information when certain pollutant levels are reached, thus aimed at protecting vulnerable people.

The European Lung Health Group expects an EU air quality framework that will modernise the information system to citizens and that:

- Enables **real-time public information on air quality**, including messaging targeted to vulnerable groups, such as lung disease patients. National indices must work based on solid requirements that will prevent a patchy and deficient implementation at the national level.
- **Expands the scope of information thresholds** to include $PM_{2,5}$, PM_{10}, NO_2, SO_2, CO, to allow self-protection and prevention in the occasions of health-threatening pollution peaks.
- Applies **an approach to air quality that encourages protection at all government levels** and across sectors (e.g. transport, energy, industry, agriculture, and residential heating) aware-raising campaigns, and informing on the effects of individual pollutant choices, such as wood burning.

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Conclusions

The disease burden of air pollution is largely preventable and sound policies can dramatically improve air quality levels. **The EU has the mandate and the power to step up its efforts, here and now.**

For an air quality policy framework that protects human health, the EU needs to show leadership on multiple levels. Ambitious and science-based EU-wide targets must be coupled with effective measures at the national and local level that prioritise health and the environment. **We urgently need a legal framework that ensures effective monitoring; enables timely public information; supports scientific research on air quality; and empowers citizens**.

But, first and foremost, the EU can gain a lot from an active, vibrant European respiratory community. **Patients and healthcare professionals have a unique role to play**, as they combine the technical capacity with the first-hand experience needed to act as a key watchdog of air quality policies at all levels. We collectively are ready to work with utmost ambition, for the protection of current and future generations from the grave impacts of air pollution.

About the European Lung Health Group

The European Lung Health Group is an informal group of European level patient organisations and healthcare professionals, representing 179 member associations across 34 European countries, including 9 from non-EU states, active in the respiratory health spectrum which ranges from common infectious diseases (such as tuberculosis, pneumonia and SARS) and non-communicable diseases (such as allergies, asthma, chronic obstructive pulmonary disease (COPD), bronchiectasis and lung cancer) to those classified as rare and ultra rare (alpha-1, idiopathic pulmonary fibrosis, pulmonary hypertension).

Our mission focuses on improving respiratory health care and protection of our lungs. We are bringing together know-how to support our organisations in empowering patients with lung diseases, improving quality of life, optimising access to treatments and multidisciplinary care, early diagnosis, and research. At the European level, we reinforce the messages of our organisations to strive for better care, increased patient participation and improved prevention.

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For more information: https://breathevision.eu/about#acknowledgements