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Medical evidence drove legal action to clean up the air we breathe—climate justice may be next

A growing corpus of legal action, grounded in medical and scientific evidence on the harmful effects of environmental pollution, aims to defend human rights to life and health.

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Rachel Carson's seminal 1962 book *Silent Spring* highlighted research on the health consequences of exposure to the agricultural pesticide dichlorodiphenyltrichloroethane (DDT). The outpouring of public concern that followed led to government restrictions on its use and, ultimately, a global ban in the Stockholm Convention on Persistent Organic Pollutants. However, such definitive legislative action in the light of scientific understanding of health risks is regrettably rare.

Toxicologists and epidemiologists have shown how exposure to air and water pollution—and to toxic substances such as pesticides—can cause cancer, respiratory, neurological, and cardiovascular diseases, among others. Epidemiological evidence has shown the scale of the mortality and morbidity burdens of many sources of environmental pollution. Yet pollution is pervasive and relatively unhindered. Some of its health risks have been known since Victorian times, but air pollution remains one of the main environmental health risks in Europe,¹ causing around 300 000 premature deaths annually in the EU.² Even where pollution is regulated, standards often fall short of medical recommendations. For instance, 96% of the EU's urban population is still breathing air that is above the World Health Organization's (WHO) maximum recommended thresholds for fine particulate matter (PM_{2.5}).³

Where policy making has fallen short, medical evidence has proved invaluable in holding public authorities accountable for the impact of unlawful air pollution on people's health. In the UK, the coroner's inquest into the death of Ella Adoo-Kissi-Debrah concluded that exposure to high levels of air pollution contributed materially to the 9-year-old girl's death: the first time an English coroner had named air pollution as a cause of death.⁴ The coroner's decision provided evidence for a subsequent personal injury claim by Ella's family against the government, which was settled in 2024⁵ and contributed to strengthening air quality standards in England.⁶

Rulings of the European Court of Human Rights have also strengthened individuals' protections from the detrimental health effects of environmental pollution.⁷ The European Convention on Human Rights offers no explicit right to health, but the convention's articles on the rights to life and respect to private and family life have been invoked to facilitate health related claims. The court has shown to be open to health based arguments in environmental cases. In these judgments, the court

drew on epidemiological evidence showing that the victims had experienced health impacts due to environmental pollution.

The case of *Cannavacciuolo and Others v Italy*,⁸ decided in 2025 by the European Court of Human Rights, provides an important example. The judgment drew from a body of epidemiological evidence showing the health impacts of large scale pollution in the Campania region in Italy, including peer reviewed research and studies conducted by the Italian Senate and the WHO. The court used this scientific evidence to establish a "real and imminent risk" to life and held for the first time that failure to limit pollution constituted a violation of the right to life under Article 2 of the European Convention on Human Rights.⁹ Similarly, in a series of recent civil liability cases in France, where compensation was awarded to families for the health impacts experienced by their children, medical evidence has been used to prove causal links between short term peaks in air pollution and aggravation of respiratory symptoms as a result of the exposure.¹⁰ On close inspection, similar scientific grounds and legal bases could offer routes to climate justice as well.

Just as epidemiological and physiological research demonstrated the scale of health impacts caused by air pollution, similar scientific methods are starting to uncover the health burdens of climate change.¹¹ One widely cited 2021 study showed that about 37% of heat related mortality is now attributable to human related climate change.¹² And, mirroring continued pervasive environmental pollution, states' climate action worldwide falls far short of what would be needed to limit warming to 1.5°C¹³—the limit that, in the Paris Agreement, all countries agreed would be necessary to avoid dangerous climate change.

Advances in attribution science, combined with existing health research methods, can demonstrate the extent to which climate change is harming health. Relatively few studies attributing health impacts to climate change have been published so far; but as this research field matures, methods are becoming more widely recognised,¹⁴ opening up new routes for climate accountability.¹⁵

Legal cases are being filed in domestic and regional human rights courts arguing that inadequate climate targets are contravening states' obligations to protect claimants' rights against the adverse effects of climate change, including on their physical and mental health.¹⁶ In *Müllner v Austria*,¹⁷ a case pending before the European Court of Human Rights at the time of writing, the applicant claims that Austria's failure to

mitigate its contribution to climate change is worsening his symptoms of temperature-sensitive multiple sclerosis (Uhthoff's syndrome), constituting a violation of his human rights. Scientific evidence to this effect could prove crucial to meet the "especially high threshold" to establish the victim status for individual applicants established by the European Court of Human Rights in last year's decision against Switzerland¹⁸ and reiterated in its recent decision against Germany.¹⁹

In its advisory opinion on the obligations of states in respect to climate change, handed down in July 2025, the International Court of Justice affirmed the close link between the enjoyment of human rights and climate change, referencing studies conducted by WHO, and clarified that injured individuals may hold states responsible for not limiting the adverse effects of climate change.²⁰ This followed an earlier pronouncement by the Inter-American Court of Human Rights in its advisory opinion in May 2025, which affirmed that states have specific duties to protect the health of individuals from life threatening effects of climate change.²¹ Scientific evidence demonstrating the human health consequences of climate change is likely to assume greater importance in lawsuits in national, regional, and international forums that are anticipated to build on these legal opinions.

In lawsuits concerning environmental pollution, medical experts have had a key role in helping courts understand the protections needed to uphold health related laws. Scientists and medical practitioners can be appointed as court experts, submit third party evidence to a case, or conduct research that provides the evidentiary basis for legal arguments by parties. Improved understanding of the health consequences of climate change could have a similar effect, clarifying the extent to which states are meeting their legal obligations to protect health, and opening up routes for climate justice where they fall short.

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