

Air pollution

The World Health Organization (WHO) defines air pollution as ‘contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere’.

Sources of pollution

Outdoors, the main sources of air pollution are:

- vehicle emissions
- by-products of manufacturing and power generation (e.g. coal-fueled power plants)
- wildfires
- volcanic eruptions

Indoors, the main sources are:

- solid fuels and kerosene for cooking and heating

Types of air pollution

Air is polluted by particles and gases:

- **Particulate matter** includes sulfates, nitrates, carbon and mineral dusts.
- **Gases** include ozone, carbon dioxide, carbon monoxide, nitrogen oxides and sulfur oxides.

Nearly all the world’s population breathe air with pollution levels that exceed the WHO’s guideline limits.

Effects on health and menopause

Population studies have found that air pollution is associated with:

- increased mortality
- respiratory disease (asthma, emphysema, chronic bronchitis)
- heart disease and stroke
- diabetes
- cancer (of the breast or lung, and also leukemia and lymphoma)
- dementia
- early menopause
- osteoporosis

Air pollution was responsible for 6.7 million deaths globally in 2019.

Further information

Cucinella et al. (2023) Impact of climate and environmental change on the menopause <https://doi.org/10.1016/j.maturitas.2023.107825>

European Environment agency. Air pollution <https://www.eea.europa.eu/en/topics/in-depth/air-pollution#:~:text=All%20EU%20countries%20reported%20levels,set%20by%20WHO%20in%202021>

Fuller et al. (2022) Pollution and health: a progress update [https://doi.org/10.1016/S2542-5196\(22\)00090-0](https://doi.org/10.1016/S2542-5196(22)00090-0)

National Institute of Environmental Health Services. Air Pollution and Your Health <https://www.niehs.nih.gov/health/topics/agents/air-pollution>

World Health Organization. Air pollution https://www.who.int/health-topics/air-pollution#tab=tab_1