

14 ways you can help prevent cancer



Recommendation 11 for Individuals on Air pollution

Take action to reduce exposure to air pollution by:

- Using public transportation, and walking or cycling instead of using a car
- Choosing low-traffic routes when walking, cycling, or exercising
- Keeping your home free of smoke by not burning materials such as coal or wood
- Supporting policies that improve air quality.

Key summary

- Air pollution is the largest environmental health risk factor in the European Union (EU).
- Outdoor air pollution causes lung cancer and possibly contributes to other types of cancer. Exposure to air pollution is also likely to result in poorer survival from cancer.
- Limit contribution to air pollution by avoiding any kind of combustion, including car driving and burning wood or coal indoors or outdoors.
- Limit exposure to air pollution by avoiding pollution hot spots and limiting cycling or walking along routes with high traffic density.
- Reducing outdoor air pollution is primarily the responsibility of local, national, and EU authorities and major industrial facilities. Demanding action from authorities is an effective strategy.

Air pollution and cancer

Most people in the EU live in places where the outdoor air pollution levels exceed the World Health Organization (WHO) guidelines on the maximum levels of major pollutants in the air.

The classification of outdoor air pollution, and more specifically particulate matter,¹ as carcinogenic (cancer-causing) to humans is because it causes lung cancer. Benzene, another common and persistent outdoor air pollutant, is a carcinogen that causes acute myeloid leukaemia in adults. Exposure to outdoor air pollution may also be associated with bladder, breast, and brain cancers.

A large variety of sources influence outdoor air pollution, including motorized traffic, industry, and residential burning of fossil fuels. There is no safe level below which air pollution has no effect. In 2021, 23,000 cancer deaths in the EU were caused by particulate matter in the air.

Indoor air quality is influenced by outdoor air and indoor sources of pollution, including smoking and burning of fossil fuels, such as coal, wood, and natural gas. Household burning of coal is carcinogenic to humans, and household burning of biomass fuel (e.g. wood) is also strongly associated with lung and oesophageal cancers. Burning coal, wood, and other materials (e.g. candles, incense) releases chemicals such as polycyclic aromatic hydrocarbons (PAHs), fine particulate matter, formaldehyde, and benzene, which have been classified as carcinogenic. Exposure to second-hand smoke is also a cause of cancer.

¹ Particulate matter is the term for a mixture of solid particles and liquid droplets found in the air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with the naked eye. Others are so small they can only be detected using an electron microscope.

Actions to reduce your cancer risk

Demand action from authorities to improve outdoor air quality. Reducing outdoor air pollution is primarily the responsibility of local, national, and EU authorities and major industrial facilities and car manufacturers that emit large amounts of air pollutants. Because there are many sources that affect air quality and major air pollutants remain airborne for a long period, everyone is exposed to air pollution. Individuals can only influence their own exposure to a limited extent. Therefore, demanding action from authorities is an effective strategy.

Use public transportation; walk or cycle, instead of using a car. Using transportation other than gasoline- or diesel-powered cars and motorcycles can contribute to reducing air pollution, especially in urban areas. Electric cars avoid combustion emissions but still emit large amounts of particles from brakes, tyres, and road wear. These emissions are lower per person-kilometre for public transportation. Active travel (cycling or walking) or using public transportation reduces air pollution and has the added benefit of increasing physical activity

Choose low-traffic routes when walking, cycling, or exercising. The concentrations of many air pollutants increase substantially closer to major roads, where air pollutant levels may be twice as high compared with nearby minor roads. Concentrations decrease rapidly with increasing distance from a major road; for example, 50 metres from an inner-city major road, concentrations are no longer higher than the usual city air pollution. This

...

is especially relevant for cyclists and pedestrians because, due to their level of physical activity, they inhale more air than car drivers do. Choosing low-traffic routes not only reduces exposure to air pollution but also reduces risks of accidents and noise exposure. Other effective actions to reduce personal exposure to outdoor air pollution include considering the timing and location of outdoor physical activity and using respirators (but not face masks).

Keep your home free from smoke by not burning materials such as coal or wood. Avoid burning coal, wood, candles, gas, and petroleum. Indoor air pollution originates partly from polluted outdoor air, so it is also important to avoid burning materials outside. Open fires are not easy to control and emit particularly high levels of harmful substances. Tobacco smoking is the largest source of indoor air pollution.

Co-benefits for the prevention of noncommunicable diseases (NCDs) with similar risk factors and opportunities for health promotion

Outdoor air pollution is associated with several other health effects in addition to cancer, especially chronic and acute respiratory diseases (asthma) and cardiovascular diseases, which can result in premature death. Air pollution has also been linked with adverse birth outcomes, diabetes, and neurological diseases. Household air pollution has been linked with acute respiratory diseases in children and adults. Exposure to household air pollution can cause NCDs, including stroke, ischaemic heart disease, and chronic obstructive pulmonary disease (COPD). Therefore, taking steps to decrease your exposure to outdoor and indoor air pollution has several additional benefits for health.

Learn about the policies that help support reducing air pollution

Reducing outdoor air pollution is the collective responsibility of local, national, and EU authorities and major industrial facilities that emit large amounts of air pollutants. Aligning the EU limit values with the WHO 2021 air quality guidelines is an important step, alongside policy actions such as regulating combustion, promoting active and greener travel, and aligning with climate change policies in the EU.

At the community level, local and regional authorities should support citizens to actively engage and participate in developing local plans to reduce emissions. Citizens are knowledgeable about their own neighbourhoods. Providing up-to-date information about air quality levels for neighbourhoods, or preferably at individual home address level, is important to empower citizens and raise their awareness.



References

- Blanco et al., (2023). Cancer Epidemiol. 86 Suppl1:102381. PMID: 37852723
- de Nazelle et al. (2011). Environ Int, 37(4):766-777. PMID: 21419493
- GBD 2019 Diseases and Injuries Collaborators. (2020). Lancet, 396(10258):1204-1222. PMID: 33069326
- Hertel et al. (2008). Sci Total Environ. 389(1):58-70. PMID: 17936337
- International Agency for Research on Cancer (2012). Personal Habits and Indoor Combustions. IARC Monographs Vol. 100E
- International Agency for Research on Cancer (2010). Outdoor Air Pollution. IARC Monographs Vol. 109
- International Agency for Research on Cancer (2010). Household use of solid fuels and high temperature frying. IARC Monographs Vol. 95
- Thurston et al. (2017). Eur Respir J. 49(1):1600419. PMID: 28077473
- Turner et al., (2020). CA Cancer J Clin, 70(6):460-479. PMID: 32964460
- World Health Organization. (2024). Household air pollution. Available from: <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>
- Zuurbier et al. (2010). Environ Health Perspect. 118(6):783-789. PMID: 20185385