Setting the scene for Air Pollution

Source: https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health

Key facts about air pollutions reported by WHO

- Air pollution is one of the **greatest environmental risk to health**. By reducing air pollution levels, countries can reduce the burden of disease from stroke, heart disease, lung cancer, and both chronic and acute respiratory diseases, including asthma.
- The lower the levels of air pollution, the better the cardiovascular and respiratory health of the population will be, both long- and short-term.
- The WHO Air Quality Guidelines: Global Update 2021 provide an assessment of health effects of air pollution and thresholds for health–harmful pollution levels.
- In 2019, 99% of the world population was living in places where the WHO air quality guidelines levels were not met.
- Ambient (outdoor air pollution) in both cities and rural areas was estimated to cause 4.2 million premature deaths worldwide in 2016.
- Some 91% of those premature deaths occurred in low- and middle-income countries, and the greatest number in the WHO South-East Asia and Western Pacific regions.
- Policies and investments supporting cleaner transport, energy-efficient homes, power generation, industry and better municipal waste management would reduce key sources of outdoor air pollution.
- In addition to outdoor air pollution, indoor smoke is a serious health risk for some 2.6 billion people who cook and heat their homes with biomass, kerosene fuels and coal.

Background

Ambient (outdoor) air pollution in both cities and rural areas was estimated to cause 4.2 million premature deaths worldwide per year in 2016; this mortality is due to exposure to fine particulate matter of 2.5 microns or less in diameter (PM2.5), which cause cardiovascular and respiratory disease, and cancers.

People living in low- and middle-income countries disproportionately experience the burden of outdoor air pollution with 91% (of the 4.2 million premature deaths) occurring in low- and middle-income countries, and the greatest burden in the WHO South-East Asia and Western Pacific regions. The latest burden estimates reflect the very significant role air pollution plays in cardiovascular illness and death. More and more, evidence demonstrating the linkages between ambient air pollution and the cardiovascular disease risk is becoming available, including studies from highly polluted areas.

WHO estimates that in 2016, some 58% of outdoor air pollution-related premature deaths were due to ischaemic heart disease and stroke, while 18% of deaths were due to chronic obstructive pulmonary disease and acute lower respiratory infections respectively, and 6% of deaths were due to lung cancer.

Some deaths may be attributed to more than one risk factor at the same time. For example, both smoking and ambient air pollution affect lung cancer. Some lung cancer deaths could have been averted by improving ambient air quality, or by reducing tobacco smoking.

A 2013 assessment by WHO's International Agency for Research on Cancer (IARC) concluded that outdoor air pollution is carcinogenic to humans, with the particulate matter component of air pollution most closely associated with increased cancer incidence, especially lung cancer. An association also has been observed between outdoor air pollution and increase in cancer of the urinary tract/bladder.

Addressing all risk factors for noncommunicable diseases – including air pollution – is key to protecting public health.

Most sources of outdoor air pollution are well beyond the control of individuals and demands concerted action by local, national and regional level policy-makers working in sectors like transport, energy, waste management, urban planning, and agriculture.

There are many **examples of successful policies** in transport, urban planning, power generation and industry **that reduce air pollution**:

- **for industry:** clean technologies that reduce industrial smokestack emissions; improved management of urban and agricultural waste, including capture of methane gas emitted from waste sites as an alternative to incineration (for use as biogas);
- **for energy:** ensuring access to affordable clean household energy solutions for cooking, heating and lighting;
- **for transport:** shifting to clean modes of power generation; prioritizing rapid urban transit, walking and cycling networks in cities as well as rail interurban freight and passenger travel; shifting to cleaner heavy-duty diesel vehicles and low-emissions vehicles and fuels, including fuels with reduced sulfur content;
- **for urban planning:** improving the energy efficiency of buildings and making cities more green and compact, and thus energy efficient;
- **for power generation:** increased use of low-emissions fuels and renewable combustion-free power sources (like solar, wind or hydropower); co-generation of heat and power; and distributed energy generation (e.g. mini-grids and rooftop solar power generation);
- **for municipal and agricultural waste management:** strategies for waste reduction, waste separation, recycling and reuse or waste reprocessing; as well as improved methods of biological waste management such as anaerobic waste digestion to produce biogas, are feasible, low cost alternatives to the open incineration of solid waste. Where incineration is unavoidable, then combustion technologies with strict emission controls are critical.

In addition to outdoor air pollution, indoor smoke from household air pollution is a serious health risk for some 2.6 billion people who cook and heat their homes with biomass fuels and coal. Some 3.8 million premature deaths were attributable to household air pollution in 2016. Almost all of the burden was in low-middle-income countries. Household air pollution is also a major source of outdoor air pollution in both urban and rural areas, accounting for up to 50% in some regions of the world.

The *WHO Global air quality guidelines* offer global guidance on thresholds and limits for key air pollutants that pose health risks.The Guidelines apply worldwide to both outdoor and indoor environments and are based on expert evaluation of current scientific evidence for:

- particulate matter (PM)
- ozone (O_3)
- nitrogen dioxide (NO_2)
- sulfur dioxide (SO_2).

See additional sources for setting the scene:

Connection between air quality and climate change and the impact of COVID-19 on air quality: at WMO Air Quality and Climate Bulletin released for Clean Air Day

Air pollution sources and impacts as well as clean air measures: at Air pollution measures for Asia and the Pacific