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Invisible foe in air kills 600,000 in a year

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File photo shows foreign tourists wearing a mask to protect themselves from inhaling in the polluted air while out on the streets in New Delhi. Photo: R.V. Moorthy

Fine particulate matter from industries, cars and biomass causing premature mortality.

Air pollution could have killed at least 600,000 Indians in 2012, a study conducted by the World Health Organisation and made public on Monday said.

That is about a fifth of the 3 million who died worldwide because they were exposed to fine particulate matter (PM_{2.5}) that may have aggravated or been directly responsible for cardiovascular diseases and lung cancer.

India comes just behind China – which witnessed an estimated 800,000 deaths – says the study, which relied on mathematical modelling to arrive at its figures.

It is second among all countries in the absolute number of deaths caused due to exposure to air pollution.

About 2,49,388 Indians died of Ischemic heart disease; 1,95,001 of stroke; 1,10,500 of Chronic Obstructive Pulmonary Disease (COPD) and 26,334 of lung cancer, the study relying on publicly available national data on pollutant levels showed.

The actual impact of air pollution, says the report, is a “conservative figure,” as it does not include the separate impacts on health from other air pollutants such as nitrogen oxides (NO_x) or ozone (O₃), and excludes health impacts where evidence is still limited (such as pre-term birth or low-birth weight), the authors note.

Industries, households, cars and trucks emit complex air pollutants, including invisible PM_{2.5} particulates.

Fine particulates causing chronic illnesses

The impact of fine particulate matter (PM_{2.5}) highlighted by the World Health Organisation (WHO) study is felt through a broad spectrum of acute and chronic illnesses that cause premature death.

These include lung cancer, chronic obstructive pulmonary disease (COPD) and cardiovascular diseases. Worldwide, it is estimated to cause about 16 per cent of lung cancer deaths, 11 per cent of COPD deaths, and more than 20 per cent of ischaemic heart disease and stroke.

Particulate matter pollution is an environmental health problem that affects people worldwide, but low- and middle-income countries disproportionately experience the burden.

A WHO South East Asian Region (SEAR) statement said, "Air pollution is the world's biggest environmental risk to health and must be addressed on a priority basis as it continues to rise, causing long lasting disease and illness."

The study findings, based on data derived from satellite measurements, air transport models and ground station monitors for more than 3000 locations, both rural and urban, were developed by WHO in collaboration with the University of Bath in UK.

Urban nightmare

In instances where accurate PM_{2.5} (that is, 2.5 micrometers or less) measurements were unavailable, the researchers derived their averages based on PM₁₀, which are larger dust particle-concentrations. It notes that more than 80 per cent of people living in urban areas that monitor air pollution are exposed to air quality levels that exceed the World Health Organization (WHO) limits. The study gave the WHO air quality guidelines for PM_{2.5} as 10 micrograms per cubic metre annual average, and 25 micrograms per cubic metre 24-hour average.

While all regions of the world are affected, populations in low-income cities are the most impacted. Overall, 98 per cent of cities in low- and middle income countries with more than 100,000 inhabitants do not meet WHO air quality guidelines. However, in high-income countries, that percentage decreases to 56 per cent.

Earlier this year too, the WHO had warned that nearly 1.4 million Indians may have succumbed to diseases caused by indoor air pollution. The numbers released on Tuesday were specific to outdoor air pollution.

Of all of pollutants, fine particulate matter has the greatest impact on health. A lot of the fine particulate matter comes from fuel combustion, both from mobile sources such as vehicles and from stationary sources such as power plants, industry, households or biomass burning.
