Pollution was responsible for 9 million deaths in 2019, with little progress during the previous four years

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A new report shows that pollution was responsible for 9 million deaths in 2019—equivalent to one in six deaths worldwide—a number virtually

unchanged since the last analysis in 2015.

The new report is an update to *The Lancet* Commission on Pollution and Health, published in *The Lancet Planetary Health*, and states that although the number of deaths from pollution sources associated with extreme poverty (such as indoor air pollution and water pollution) has decreased, these reductions are offset by increased deaths attributable to industrial pollution (such as ambient air pollution and chemical pollution).

"The health impacts of pollution remain enormous, and low- and middle-income countries bear the brunt of this burden. Despite its enormous health, social and economic impacts, pollution prevention is largely overlooked in the international development agenda," says Richard Fuller, lead author. "Attention and funding has only minimally increased since 2015, despite well-documented increases in public concern about pollution and its health effects."

"Pollution is still the largest existential threat to human and planetary health and jeopardizes the sustainability of modern societies. Preventing pollution can also slow climate change—achieving a double benefit for planetary health—and our report calls for a massive, rapid transition away from all fossil fuels to clean, renewable energy," adds co-author Professor Philip Landrigan, Director, Global Public Health Program and Global Pollution Observatory at Boston College.

The 2017 *Lancet* Commission on Pollution and Health, using data from the 2015 Global Burden of Disease (GBD) study, found that pollution was responsible for an estimated 9 million deaths—16% of all deaths globally. The new report provides updated estimates for the health effects of pollution based on the most recently available 2019 GBD data and methodological updates, as well as an assessment of trends since 2000.

Of the 9 million pollution-attributable deaths in 2019, air pollution (both household and ambient) remains responsible for the greatest number of deaths at 6.67 million worldwide. Water pollution was responsible for 1.36 million premature deaths. Lead contributed 900,000 premature deaths, followed by toxic occupational hazards at 870,000 deaths.

The decline in deaths from traditional pollution since 2000 (household air pollution from solid fuels and unsafe water) is most evident in Africa. This can be explained by improvements in water supply and sanitation, antibiotics and treatments, and cleaner fuels.

However, this mortality decrease has been offset by a substantial increase in deaths from exposure to industrial pollution—such as ambient air pollution, lead pollution, and other forms chemical pollution—across all regions over the past 20 years. This is particularly evident in Southeast Asia, where rising levels of industrial pollution are combined with aging populations and increasing numbers of people exposed.

Ambient air pollution was responsible for 4.5 million deaths in 2019, up from 4.2 million deaths in 2015 and 2.9 million in 2000. Deaths from hazardous chemical pollutants increased from 0.9 million in 2000, to 1.7 million in 2015, to 1.8 million in 2019, with 900,000 deaths attributable to lead pollution in 2019. Overall, deaths from modern pollution have increased by 66 percent in the past two decades, from an estimated 3.8 million deaths in 2000 to 6.3 million deaths in 2019. Figures on deaths from chemical pollutants are likely to be underestimates as only a small number of manufactured chemicals in commerce have been adequately tested for safety or toxicity.

Excess deaths due to pollution have led to economic losses totaling $4.6 trillion US dollars in 2019, equating to 6.2% of global economic output. The study also notes pollution's deep inequity, with 92% of pollution-

related deaths, and the greatest burden of pollution's economic losses, occurring in low-income and middle-income countries.

The authors of the new study conclude with eight recommendations that build on those given in the *Lancet* Commission on pollution and health. These include calls for an independent, Intergovernmental Panel on Climate Change (IPCC)-style science/policy panel on pollution, alongside increased funding for pollution control from governments, independent and philanthropic donors, and improved pollution monitoring and data collection. International organizations also need to approve and establish a better connection between science and policy for pollution, like those for climate and biodiversity, initially for chemicals, waste, and air pollution.

"Pollution, climate change and biodiversity loss are closely linked. Successful control of these conjoined threats requires a globally supported, formal science-policy interface to inform intervention, influence research and guide funding. Pollution has typically been viewed as a local issue to be addressed through subnational and national regulation or occasionally with regional policy in higher income regions. However, it is clear that pollution is a planetary threat, and that its drivers, dispersion, and health impacts transcend local boundaries and demand a global response. Global action on all major modern pollutants is needed," says Rachael Kupka, co-author and Executive Director of the Global Alliance on Health and Pollution.

More information: Pollution and health: a progress update, *The Lancet Planetary Health* (2022). www.thelancet.com/commissions/pollution-and-health

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