
Death By Air Pollution: Time to Take Action

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As the perennial blanket of smog that envelops New Delhi intensified in November 2017, India's Minister of Environment Harsh Vardhan urged his people to remain calm, [stating \(http://www.news18.com/news/politics/no-death-certificate-has-cause-of-death-as-pollution-says-environment-minister-harsh-varadhan-1575807.html\)](http://www.news18.com/news/politics/no-death-certificate-has-cause-of-death-as-pollution-says-environment-minister-harsh-varadhan-1575807.html) "no death certificate has the cause of death as pollution." The [physician \(https://en.wikipedia.org/wiki/Harsh_Vardhan_\(Delhi_politician\)\)](https://en.wikipedia.org/wiki/Harsh_Vardhan_(Delhi_politician)) and Parliament Member went on to clarify his opinion of what constitutes a "true emergency," citing the 1984 [Bhopal \(https://en.wikipedia.org/wiki/Bhopal_disaster\)](https://en.wikipedia.org/wiki/Bhopal_disaster) gas leak incident that asphyxiated over 4,000 people within a matter of hours. His statements irresponsibly downplay the deadly impacts of

everyday air pollution which, unlike cyanide gas, are cumulative.

While debates on climate change and how to curb future emissions rage on in political and activist circles, the emissions in question are gravely impacting our health and economy today. Air pollution causes premature death as well as a wide array of illnesses, including both respiratory and cardiovascular diseases. The problem will continue to get worse unless national governments, public health institutions, and international development organizations recognize this connection and take specific actions to address it.

The World Health Organization (WHO) recently declared that air pollution is the world's [largest environmental health risk](http://www.who.int/phe/health_topics/outdoorair/databases/en/) (http://www.who.int/phe/health_topics/outdoorair/databases/en/). Air pollution is made up of several components with the [WHO](http://www.who.int/topics/air_pollution/en/) (http://www.who.int/topics/air_pollution/en/) identifying five air pollutants of major concern: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. Additionally, the United States [Environmental Protection Agency](https://www.epa.gov/criteria-air-pollutants) (<https://www.epa.gov/criteria-air-pollutants>) (EPA) recognizes lead as an air pollutant that poses a risk to human health. Their origins range from man-made sources such as vehicle emissions, power plants, and agricultural burning, to those that are naturally occurring, like forest fires and volcanoes. A recent [Lancet](http://www.thelancet.com/commissions/pollution-and-health) (<http://www.thelancet.com/commissions/pollution-and-health>) report (<http://www.thelancet.com/commissions/pollution-and-health>) estimated that 6 million people died in 2015 as a result of poor air quality, and this number is projected to grow in the future. To put this into perspective, air pollution kills more than 3 times the number of people who die from HIV/AIDS and malaria combined.

Scientists have long recognized the impact of air pollution on health conditions like asthma, chronic obstructive pulmonary disease (COPD), cancer, cardiovascular disease, and low birth weight – all of which lead to lost lives and reduced economic productivity. The most important event in recent history demonstrating this link occurred during the “[Great Smog](http://www.history.com/news/the-killer-fog-that-blanketed-london-60-years-ago) (<http://www.history.com/news/the-killer-fog-that-blanketed-london-60-years-ago>)” (London) in 1952. For a period of five days, a dense haze of pollution caused by vehicle emissions, power plants, and coal fires engulfed the city. The smog, which was so thick it blocked out the sunlight and triggered thousands of respiratory illnesses. It is still considered the worst air pollution crisis in European history. Experts estimate that between 8,000 and 12,000 people died as a direct result, and countless others experienced long-term health effects.

Nearly 70 years later, scientific research has cleared the air on the relationship between toxic air and human disease, and as with many environmental hazards, indicated that the impact of air pollution is more dangerous for children than adults. In fact, the damage caused by air pollution can begin before a child is even born. A recent study published in the [British Medical Journal](http://www.bmj.com/content/359/bmj.j5299) (<http://www.bmj.com/content/359/bmj.j5299>) demonstrated a clear link between air pollution and premature as well as low birth weight infants. These infants are consequently at a higher risk of numerous ailments, including increased infection rates, chronic medical conditions, and cognitive effects decreasing IQ and future earning potential. [Another study](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0113920) (<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0113920>), focused on low- and middle-income countries, highlighted the increased risk of adverse pregnancy outcomes associated with household air pollution caused by indoor cooking fires, a method of food preparation used by nearly half of the world.

Toxic air continues to affect health outcomes into [adulthood](https://jamanetwork.com/journals/jama/article-abstract/2667069) (<https://jamanetwork.com/journals/jama/article-abstract/2667069>). Exposure to outdoor and indoor air

pollution increases a person's risk of developing cardiovascular diseases and cancer. According to the [American Heart Association \(http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/Air-Pollution-and-Heart-Disease-Stroke_UCM_442923_Article.jsp\)](http://www.heart.org/HEARTORG/Conditions/More/MyHeartandStrokeNews/Air-Pollution-and-Heart-Disease-Stroke_UCM_442923_Article.jsp), inhaled particulate matter causes inflammation of blood vessels and atherosclerosis – hardened and clogged arteries – leading to heart attacks and strokes. For people with asthma, air pollution both triggers asthma attacks and makes them more severe. If you think a regimen of diet and exercise will protect you from the risks of polluted air, you may be wrong. Research published in the [Lancet \(http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32643-0/fulltext?elsca1=tlpr\)](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32643-0/fulltext?elsca1=tlpr) demonstrated that exercising in a polluted environment can negate the beneficial effects of the exercise itself. This, of course, has important implications for physical inactivity and associated diseases.

Simply put, air pollution damages the environment and our health. The majority of deaths from long-term air pollution exposure are concentrated in poor and developing countries, like India and China, which heavily depend on high emission technologies to fuel growing populations and productivity. These countries are now facing rapidly rising rates of non-communicable diseases exacerbated by toxic environments including polluted air. Yet this issue continues to be downplayed both at home and abroad. In the US, recent efforts to roll back the [Clean Power Plan \(https://www.theguardian.com/environment/2017/oct/09/epa-scott-pruitt-abandon-clean-power-plan-obama\)](https://www.theguardian.com/environment/2017/oct/09/epa-scott-pruitt-abandon-clean-power-plan-obama) and [2025 targets for fuel efficiency \(https://www.npr.org/sections/thetwo-way/2017/03/15/519037545/epa-reopens-u-s-rules-setting-vehicle-efficiency-standards-for-2025\)](https://www.npr.org/sections/thetwo-way/2017/03/15/519037545/epa-reopens-u-s-rules-setting-vehicle-efficiency-standards-for-2025) undermine efforts to improve the air we breathe. Robert Phalen, an appointee to the EPA's Scientific Advisory Board, recently echoed the sentiments expressed by India's Minister Vardhan when he [declared \(https://www.aaas.org/blog/member-spotlight/robert-phalen-tests-our-modern-air\)](https://www.aaas.org/blog/member-spotlight/robert-phalen-tests-our-modern-air) that our air “is a little too clean for optimum health.” These statements by Mr. Phalen and Dr. Vardhan directly contradict the overwhelming evidence to the contrary.

Moving forward, scientific research on air pollution must be transformed into actionable policies by national governments, international donor agencies, and the public health and medical communities. Firstly, government subsidies and tax breaks promoting polluting industries must be curtailed. These resources can be redirected toward incentivizing cleaner alternatives. Secondly, international development assistance should fund programs aimed at reducing air pollution. By utilizing green growth strategies and cutting-edge technologies, developing countries can leapfrog traditional mechanisms of economic growth to expand their economies. Finally, international public health and medical communities, including national ministries of health, must formally recognize that air pollution impacts human health. Following these strategies will lead to cleaner air, healthier lives, and healthier economies.

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