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Statement on Air Pollution and Health

Clean air is vital to life. Suffering and death from polluted air are avoidable. Immediate, necessary action will prevent air pollution and its staggering toll on life and the fiscus.

In 2016, 91% of the world's population lived in places that did not meet the World Health Organization's (WHO) air quality guidelines.[1] One air pollutant of immense concern is atmospheric particulate matter (PM) which is the sum of the complex combination of solid and liquid particles of organic and inorganic substances suspended in the air. The key components of PM are present in different concentrations depending on the area of air which is tested. Particles with a diameter of 10 microns or less are known as PM_{10} and can affect human health. Particles with a diameter of 2.5 microns or less ($PM_{2.5}$) are more dangerous as they can penetrate the lung barrier and enter the bloodstream, disseminating to various organs. Chronic exposure to these particles increases the risk of developing multiple diseases and conditions.[2,3] There is evidence that air pollution affects human health at every stage of life, with the most vulnerable populations being the young, elderly and health-compromised. Evidence is mounting that associates air pollution with the premature deaths of at least five million people per year, as well as increasing susceptibility to and aggravating existing conditions.[1-3]

The main source of air pollution globally is the use and burning of biomass and fossil fuels for power, heat, transport and food production.[1-3] In South Africa in 2016 the death rate attributed to household air pollution was 34 per 100 000 population, calculated considering acute and chronic respiratory diseases linked to air pollution exposure, and cardiovascular diseases for which air pollution is a risk factor.[4] In South Africa, historically, low-cost residential areas were sited close to industrial zones. The continued influx of people to these urban and industrial areas has led to informal dwellings in and around the area boundaries. Providing basic services to these settlements is often delayed and/or frequently interrupted. Consequently, communities have limited resources: biomass and fossil fuels for cooking and for burning waste, often in illegal dumpsites. Household air pollution occurs from incomplete combustion of solid fuels, which generates smoke. Currently many areas in South Africa exceed National Ambient Air Quality Standards, and the geographical concentration of large population centres and industry have caused hotspots of air quality Priority Areas.[3]

In July 2019, the Academy of Science of South Africa (ASSAf) joined the science academies of Germany, Brazil and the USA, as well as the US National Academy of Medicine, at the United Nations headquarters in New York to issue an urgent call to citizens, governments and businesses to reduce global air pollution.[5] The delegation presented a science–policy statement[6] to senior UN representatives and high-level diplomats. ASSAf was represented at the event by Executive Officer, Professor Himla Soodyall, who was joined by Senior Specialist Scientist in the Environment and Health Research Unit of the South African Medical Research Council, Dr Caradee Wright.[5]

National academies are crucial as they are a forum in which scientists from every discipline can come together, share and reflect upon their findings, placing them in a unique position to address intricate issues such as the interplay between health and pollution. It is essential that the issue of pollution be moved up the policy agenda. Collaborations and continued strengthening of partnerships with other policy areas, such as climate change, sustainable development and food security, would expedite this process.

The Statement[6] appeals for emissions controls in all countries as well as proper monitoring of key pollutants, especially $PM_{2.5}$, and stresses that more funding is needed to invest in air pollution reduction measures to match the scale of the problem. Decisive action by stakeholders can result in cost-effective management of air pollution. Combatting air pollution will help fight climate change as the pivotal common source is the continued use of fossil fuels.

Many more stakeholders internationally will need to join the initiative to ensure and hasten its success. Policymakers and the public need to engage with researchers to improve the future health of people and the planet. September 2019 will see international action being taken. A full-text publication is planned for the September issue of *Annals of Global Health*, promoting global dissemination of the statement and ensuring it is indexed and accessible through PubMed and other databases. Furthermore, about 500 delegates from the Environmental Health fraternity are expected to attend a 2-day conference in 2019 – a collaboration between WHO and the Public Health Association of South Africa – for a national WHO-facilitated dialogue on air pollution and health, based on outcomes of the 1st WHO global conference on air pollution and health and the 3rd African Inter-Ministerial Conference on Health and Environment, both held in 2018, which also resolved to address air pollution as a regional priority.

The Statement is available at https://air-pollution.health/

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