

Letter from Glasgow

AIR POLLUTION

When I first arrived in Glasgow in 1962 aged 5, I wondered where I had landed. The sky was grey reflecting Glasgow's wet climate; which is also why Scotland is so green with grass, trees and other vegetation. Readers should know that over time Glaswegians (residents of Glasgow) come to know and are able to discriminate between different types of grey sky to interpret the weather. The name 'Glasgow' itself means 'dear green place' in Cumbric, an ancient Common Brittonic language. I thought, at first, that this was an ironic name given to it because, to a 5-year-old straight from Delhi, Glasgow appeared to be a dark place with a grey sky and black buildings. The only green I could see were the numerous parks, large and small, sprinkled around the city. I was to learn when I was older that the reason for the black buildings was the air pollution from Glasgow's industry and households had impregnated and discoloured the beautiful blonde and red sandstone of the buildings. It never occurred to me then that if that was what air pollution did to buildings, what did it do our bodies?

As I grew up in Glasgow the air pollution decreased which, unknown to me at the time, was a result of legislation passed in the UK in the 1950s and 1960s to improve air quality. The effects of that legislation were gradually taking effect with controls on industrial air pollution and from burning coal in households. Air pollution had been a major public health problem and, later as a trainee in public health, I remember well the discourse and discussion on the London smog of 1952.^{1,2} The London smog was the result of a number of reasons including meteorological factors, the geography of London, and air pollution combining to produce the smog. A spell of cold weather led to more coal burnt in homes, compounded by coal-fired power stations, steam locomotives, other industrial air pollution, and traffic fumes. While the London smog of 1952 was the worst episode, it was indicative of air pollution in London and elsewhere in the UK. The resultant deaths, disease and disability from the London smog led to major changes in the UK with the introduction of Clean Air Acts in 1956 and 1968 which, together with changes in energy policy, such as moving to gas heating and the reduction of industry-related air pollution, improved air quality and banished the smogs to history. While that was a step forward, more remains to be done in the UK to improve air quality such as controlling pollution from vehicle exhausts. It is no surprise that the UK was recently reported to have missed its 2020 European Union targets for reducing air pollution.

As readers of the Letter from Glasgow will know, Delhi is close to my heart. So it is with sadness I read of the huge problems of air pollution in the Indian capital in 2019.^{3,4} The precise reasons for the Delhi smog are, of course, different from the cause of the smogs in the UK in the past, but air pollution is a common factor and one that is possible to change. We know that India has 14 of the world's most polluted cities in the world with Delhi sixth worst, and toxic air is estimated to have caused 1.24 million deaths in India in 2017 or 12.5% of total deaths.⁵ In toxic air, among other constituents, the presence of dangerous levels of PM_{2.5} (particulate matter with a diameter <2.5 μ), which can penetrate into the gas exchange area of alveoli, is hazardous to human health. Even dangerous levels of PM₁₀ (particulate

matter with a diameter <10 μ) can reach the bronchioles or alveoli causing bronchoconstriction and hence exacerbate problems in patients with compromised lung function. As with other health issues, those in lower socioeconomic groups are disproportionately affected because poorer people may not be able to escape the air pollution easily, e.g. they may work outdoors, live next to major roads with traffic pollution, or live close to factories emitting pollution. Nor can they readily afford to buy technological devices which can mitigate the effects of air pollution such as air filtration devices or effective smog masks.

Unless the population of Delhi is somehow immune to air pollution there will be an increase in deaths, disability and disease due to it. The issue is identifying and enumerating this. It is noteworthy that it was only after the London smog of 1952 when the data and information were analysed that the effects on people's health and mortality were fully appreciated. I will leave it to my colleagues in India in academia, research units and other organizations to study more precisely and understand the causes and consequences of Delhi's air pollution. This will undoubtedly include: meteorological factors; geography; industrial, domestic and vehicle pollution; agricultural changes in crop harvesting and stubble burning in neighbouring states; and the mortality and morbidity caused by air pollution.⁶

While politicians play games with who is to blame and what the evidence suggests, people suffer. I baulk when the Minister for Health and Family Welfare in the Indian Government recommends eating carrots to protect against 'night blindness... and other pollution-related harm to health'.⁷ The Indian government too keeps denying links between air pollution and harm to health. This was exemplified by the Environment Minister's statement in the past that 'There is no conclusive data available in the country to establish direct relationship of death exclusively with air pollution'.^{6,8} Without wishing to labour the point, causality in epidemiology is evaluated using a number criteria such as the strength and consistency of association between a putative factor and ill-health. The harm air pollution can cause the people of Delhi is studied using evidence drawn from many different types of data, information and intelligence from India and globally—from basic sciences (both biological and physical), clinical studies, environmental studies and epidemiological studies to name just a few. This is pieced together to assess and to understand how, and by how much, air pollution damages the health of people in Delhi. Further studies will, undoubtedly, identify more precisely the effects of the latest air pollution incident on health.

The air that we breathe is almost taken for granted by us. As babies when we take that first breath and our lungs fill with air to the last gasp when we end our life on earth, air provides the oxygen we need. Unlike water, which has been commodified to a lesser or greater extent, air has not yet been monetized apart from a limited extent such as oxygen bars selling oxygen for recreational purposes. Given its importance we need to ensure that it is not polluted with other gases or particulate matter. Therefore, air pollution is a key issue for society, for industry, and for governments at all levels, and for public health to tackle.

Public health has its mantra that 'prevention is better than

cure' and preventing and mitigating the harm from air pollution exemplifies this par excellence. To achieve this requires not piecemeal actions, but a strategic and systematic approach to prevent and control air pollution in agriculture, industry, homes and transport. The ending of unnecessary deaths, disability and disease due to air pollution among the people of Delhi and India demands nothing less.

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