Pollution: think of the children

Children are destined to lead their early lives at the mercy of adult decisions. The lucky ones have carers who prioritise their needs and strive to protect them from harm, but even they are vulnerable to the effects of decisions made by adults in positions of power. A recent *Lancet* Commission on pollution and health, published on Oct 19, highlights the neglected status of pollution on the global health agenda, and aims to accelerate the international response to protect future generations from the effects of environmental toxicities.

A quarter of all deaths in children younger than 5 years are caused by exposure to an unhealthy environment. Nearly a third of years lost due to ill health, disability, or early death as a result of pollution-related disease occur in children under 10 years old. Young children are particularly vulnerable to environmental toxicities because of their small size and developing organs, and their rapid periods of growth and development, especially in utero and in infancy. Early exposure to environmental stressors can result in disease that will remain throughout the life course. For example, high levels of particulate matter in air is associated with preterm birth and low birthweight, both of which increase a newborn's risk of developing asthma in later life. Similarly, exposure to lead via the placenta, breastmilk, or directly can result in neurodevelopmental defects, cognitive impairment, autism, or attention-deficit hyperactivity disorder, which can result in lower IQ, socioeconomic status, or social mobility in adulthood. Lead poisoning in early life results in mild to moderate mental retardation in approximately 600 000 children a year. Emerging environmental hazards, such as the disposal of electronic waste, pose new threats of toxic exposure; a predicted 50 million metric tonnes of electronic waste will be produced by next year.

Pollution disproportionately affects the poor, and children from disadvantaged families are especially at risk. In low-income and middle-income countries, indoor air pollution from burning fuel inside homes for heating, cooking, and lighting creates a substantial burden of respiratory disease in young children. Inadequate sanitation and unsafe water sources are key drivers of diarrhoeal disease, which kills more than 300 000 children aged under 5 years per year. Much electronic waste is processed by impoverished children in developing countries.

Although children in high-income settings are also at risk (primarily from air pollution, lead poisoning, or toxic chemical exposure from poor urban planning), the burden weighs most heavily on a country's poorest children. A report from the UK last month showed that 85% of London schools considered most at risk of air pollution were situated in economically deprived areas. In St John the Baptist, a small town in Louisiana, USA, where most residents are African-American and nearly 17% of adults live below the poverty line, residents are exposed to chloroprene pollution. The emissions, which come from a neoprene factory that neighbours an elementary school, have created a lifetime risk of cancer for the town's inhabitants of 777 per million people—the national average risk is 0·9 per million.

Governments must be willing to monitor their country's damaging emissions and to be held accountable for their effect on citizens. Wealthy countries have the economic influence to demand that their cities and corporations operate in an environmentally accountable manner, in response to accurate monitoring of their emissions. Sadly, some are choosing to do the opposite. On Oct 9, President Trump repealed the Clean Power Plan, which was designed to lower gas emissions from US power plants, and was predicted to prevent 90 000 asthma attacks and 3600 premature deaths per year. Rather than fuelling global pollution, rich countries should be pioneering the struggle against it. China recently made commendable progress in reducing particulate matter levels and improving drinking water purity after adopting explicit environmental legislation. In low-resource settings, interventions to improve water sanitation and reduce indoor air pollution, which can often be implemented without the need for large government investments, should be prioritised to reduce the burden of pollution-related deaths in children under the age of 5 years.

Pollution control should be considered within the context of each resident's right to health, and leaders must engage with civil society to strive for environmental equality across the socioeconomic spectrum. Particular protection must be afforded to children, whose developing immune systems are especially susceptible to external stressors. There is no greater threat to the wellbeing of our children and future generations than that from environmental change. ■ *The Lancet Child & Adolescent Health*

africa924

Published **Online**
November 1, 2017
http://dx.doi.org/10.1016/S2352-4642(17)30133-5

For **The *Lancet* Commission on pollution and health** see **The Lancet Commissions**
Lancet 2017; published online Oct 19. http://dx.doi.org/10.1016/S0140-6736(17)32345-0

For more on **electronic waste** see **Reflections**
Lancet Child Adolesc Health 2017; **1:** 172–73