

Safeguarding children's health in a changing global environment



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Children are exquisitely vulnerable to environmental hazards.¹ This sensitivity reflects children's unique exposures, their immaturity, and the great complexity of early human development. Exposures during prenatal windows of susceptibility can increase risk for disease in childhood and impair health across the lifespan. WHO estimates that one death in four among children worldwide could be averted by reducing hazardous environmental exposures.²

Three hazards of particular concern today are air pollution, toxic chemicals, and climate change. Air pollution harms children's health by increasing risks of premature birth, low birthweight, stillbirth, and asthma.³ Air pollution is linked also to IQ loss and increased risks of autism and attention deficit hyperactivity disorder.⁴ More than 90% of air-pollution-related deaths occur in low-income and middle-income countries (LMICs).⁵ Chemical pollution is a growing threat.⁵ The health hazards of chemical pollution have been recognised since the publication of Rachel Carson's *Silent Spring* in 1962,⁶ but the problem has worsened since then. Children today are surrounded by an estimated 350 000 manufactured chemicals,⁷ many of which pollute the planet and harm human health. Polychlorinated biphenyls (PCBs), methyl mercury, lead, brominated flame retardants, and organophosphate insecticides impair cognitive function and increase risks of neurodevelopmental disorders.⁴ Phthalates are linked to male reproductive birth defects and neurodevelopmental delays.⁸ In-utero exposure to bis(4-chlorophenyl)-1,1,1-trichloroethane (DDT) increases risk of adult breast cancer.⁶ Prenatal exposures to perfluorinated substances (PFAS) are linked to immune dysfunction and impaired fetal growth.⁹ Climate change increases risks of adverse pregnancy outcomes, heat-related illness, allergic diseases, famine, and migration.¹⁰ The burden of these climate-related hazards is only beginning to be measured.

UNICEF's 2022 report *Places and Spaces: Environments and Children's Well-Being*¹¹ calls on national, regional, and local governments to make protection of children's environmental health a priority. High-income countries need to continue to improve environments for their children, but at the same time they must protect children

globally by reducing consumption, curbing pollution, improving waste management, curtailing greenhouse gas emissions, and moving to a more circular economy. The UNICEF report¹¹ highlights how high-income countries have the best air and water, but are voracious consumers of the planet's resources, the top exporters of hazardous waste, and prodigious generators of greenhouse gases. By contrast, LMICs have poorer air and water, but consume far fewer resources, export little pollution, and make only minimal contributions to climate change. By off-shoring industrial production, exporting pollution and hazardous waste, and generating 86% of greenhouse gases, high-income countries create toxic environments for children worldwide.¹¹

Off-shoring of chemical production is an example. The chemical manufacturing industry was historically concentrated in high-income countries, but today two-thirds of chemical and plastic production occurs in LMICs, where environmental safeguards are often scant. The consequences of inadequate regulation include disasters such as the industrial explosions in Bhopal, India, and Tianjin, China.⁵ Children in LMICs are exposed to toxic industrial chemicals and pesticides, such as asbestos and parathion, that have long been banned in high-income countries. Electronic waste (e-waste)—eg, discarded computers, mobile phones, televisions, and appliances—is another example of exported pollution.¹² Over 50 million tons of e-waste are generated annually, most in



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high-income countries; only 42% of this waste is recycled and 7–25% is exported to LMICs.¹² WHO reports that more than 18 million children, some as young as 5 years, are employed in e-waste recycling, where they are exposed to lead, mercury, and dioxins.¹² The disproportionate health impacts of climate change are a third example. Children in LMICs, especially children in small island states, will suffer the harshest consequences of greenhouse gas emissions from high-income countries.¹⁰

Countries at every level of income can reduce air pollution, slow climate change, and protect children's health by incentivising rapid, wide-scale transition to renewable energy.⁵ Construction of sun and wind farms, termination of subsidies and tax breaks for the fossil fuel industry, and build-outs of electric-powered rail and rapid transit are cost-effective strategies.

Every country, state, and province can protect children against chemical pollution and slow climate change by following the lead of India, Kenya, Rwanda, Thailand, Uruguay, New York State, and California in banning single-use plastics, which now account for 40% of all plastic production.¹³ Manufacture of plastic and its petrochemical additives generates toxic air pollution and produces 5% of all greenhouse gas emissions, a proportion projected to increase to almost 20% by 2050.¹⁴ Countries can further protect children against toxic chemicals by supporting the UNEP Draft Resolution on Ending Plastic Pollution¹⁵ and requiring chemical manufacturers to take financial responsibility for their products across their lifecycle, as legislators in the US state of California have done with the introduction of the Plastic Pollution Producer Responsibility Act in June, 2022.

The international community can protect children from environmental hazards by implementing the Paris Agreement on Climate Change and the Stockholm, Minamata, Montreal, Rotterdam, and Basel conventions on toxic chemicals, hazardous waste, and e-waste. With guidance from WHO and UNICEF, LMICs are already fulfilling many of their obligations under these treaties while also advancing their own priority actions to protect children's health, which include strengthening regulations on chemical manufacturing.¹⁶ The international community and global donors must support these endeavours by providing stable, multi-year technical and financial support and collaborating with LMIC institutions to build professional capacity in toxicology, exposure science, and environmental epidemiology. The UN could

also protect children from environmental hazards by creating a compensation fund that obligates high-income countries and multinational corporations to allocate monies for environmental remediation and climate mitigation in LMICs.

Ultimately, fundamental change is needed to move away from unsustainable economies that focus solely on growth and gross domestic product and fail to account for children's health and natural capital.⁵ If all of us, and especially those who live in high-income countries, do not take responsibility for our common home, it is our children and future generations who will pay the price. We can and must do better.

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