

World view



By Nafisatou
Cissé

Lead poisoning is a massive but solvable global problem

Funding to help nations eliminate lead paint and other sources of exposure would save millions of lives and one trillion dollars a year in income loss.

Lead is toxic to every system in the human body. This week marks 60 years since a crucial study by Mitsunobu Tatsumoto and Clair Patterson in *Nature* found that the world's oceans were awash with lead (M. Tatsumoto and C. Patterson *Nature* 199, 350–352; 1963). Contamination from petrol, paint and industrial sources had leaked planet-wide – it was a public-health crisis. Since then, the fight against lead poisoning has seen great success: in 2021, leaded fuels were completely phased out. Yet much remains to be done.

Around the world, 815 million children – 1 in 3 – have dangerous levels of lead in their bloodstream, enough to cause irreversible brain damage, intellectual disability, lower educational attainment, behavioural disorders, reduced lifetime earnings, anaemia, kidney disease and cardiovascular disease. The health effects in children and adults lead to nearly one million deaths annually and widespread disability. Lead's impacts on cognitive development are estimated to cause nearly US\$1 trillion of income loss in low- and middle-income countries (LMICs) each year.

The shocking lack of attention to such an enormous and solvable problem is probably because 94% of the disease burden from lead exposure happens in LMICs. Each year, only about \$10 million of international funding is spent on addressing global lead poisoning. This is orders of magnitude less than the \$8.2 billion that governments donated last year for HIV/AIDS, which similarly kills nearly one million people a year.

Laws banning lead paint are highly effective at preventing lead exposure – but there are more than 70 countries without lead-paint laws, and others where such laws are not well enforced. Strong laws and enforcement are the main things we call for at the Lead Exposure Elimination Project (LEEP), at which I am a programme manager and team leader. I previously coordinated the World Health Organization's efforts to eliminate lead paint in Africa. This issue is personal to me: in Burkina Faso, where I grew up and where most of my 23 nieces and nephews live, around 9 million children have lead poisoning, yet the country has no lead-paint law.

Lead paint has been banned in most high-income countries for decades – but in many LMICs, it is still unregulated and widely used in homes, schools and playgrounds. Its poisonous dust and flakes can be ingested accidentally, particularly by young children. Lead in paint is entirely unnecessary. It is added to give colour, to speed drying and to prevent corrosion, but alternatives are widely available.

Gathering evidence of lead levels in a country's paint can cost just a few thousand dollars.*

Nafisatou Cissé is a programme manager and team leader at the Lead Exposure Elimination Project (LEEP) in Lomé, Togo. e-mail: nafisa@leadelimination.org

LEEP supports governments to ban the manufacture and sale of lead paints, working collaboratively with industry and non-governmental organizations. Over the past three years, 6 of our 12 governmental partners – Malawi, Madagascar, Zimbabwe, Sierra Leone, Pakistan and Ghana – have committed to regulating lead paint, and industries in four of these countries are already switching to non-lead paint.

Most of our partners have no local data on whether their paint contains lead, so we conduct studies by getting samples of paint from the market, drying them and then testing them using spectroscopy. The cost is about \$35 per sample in the United States. Gathering evidence of lead levels in a country's paint can cost just a few thousand dollars.

We also provide technical assistance to manufacturers to help them reformulate their paint. LEEP offers them free consultations, written guidance and help with sourcing lead-free ingredients. Once manufacturers have switched, we analyse samples to check the new lead content.

We have seen remarkably fast progress. In Pakistan, LEEP and researchers at Aga Khan University in Karachi began a study in 2021 (D. Siddiqui *et al.* *F1000Research* 12, 166; 2023) that found extremely high levels of lead in paints sold for residential use. LEEP began working with Pakistan's regulatory authority and paint industry to improve enforcement. Just four months later, ten paint manufacturers, including five of the most popular brands, reported that they are switching to non-lead paint.

Last year, Senegal adopted a voluntary standard limiting lead in paints to the recommended level, under a United Nations Environment Programme project funded by the Global Environment Facility, a multilateral environmental fund. LEEP is working with the Senegalese government to make the standard mandatory and with paint manufacturers to reformulate their products.

Although each government and manufacturer might choose a slightly different approach to solving this issue – which LEEP supports – our work is remarkably similar across countries, making expansion straightforward.

Although there has been progress, more attention and resources are needed. The Global Alliance to Eliminate Lead Paint, of which LEEP is a member, has already been set up as a vehicle for this effort. But paint is just one source of lead pollution. Others, which vary geographically, include aluminium cookware, ceramics, spices, cosmetics and battery recycling sites. The relative contributions of these sources are unclear owing to a lack of data, and some could be more consequential than lead paint.

Bringing awareness and resources to global lead poisoning at a level matched to the problem's scale would mean hundreds of millions of children will live healthier, happier lives and reach their full potential to contribute to their communities, countries and the world.

Correction

The article 'Lead poisoning is a massive but solvable global problem' (*Nature* **619**, 674; 2023) originally stated that 70 countries have no lead-paint laws, this should have read "more than 70". The article also stated that LEEP studies paints by getting samples from manufacturers, in fact, it gets them from the wider market. In addition, the original printed page carried the wrong volume number and issue date, these should have been volume 619, dated 27 July 2023.