

Five Actions to

End Childhood Lead Poisoning



Children's
Environmental Health
Collaborative

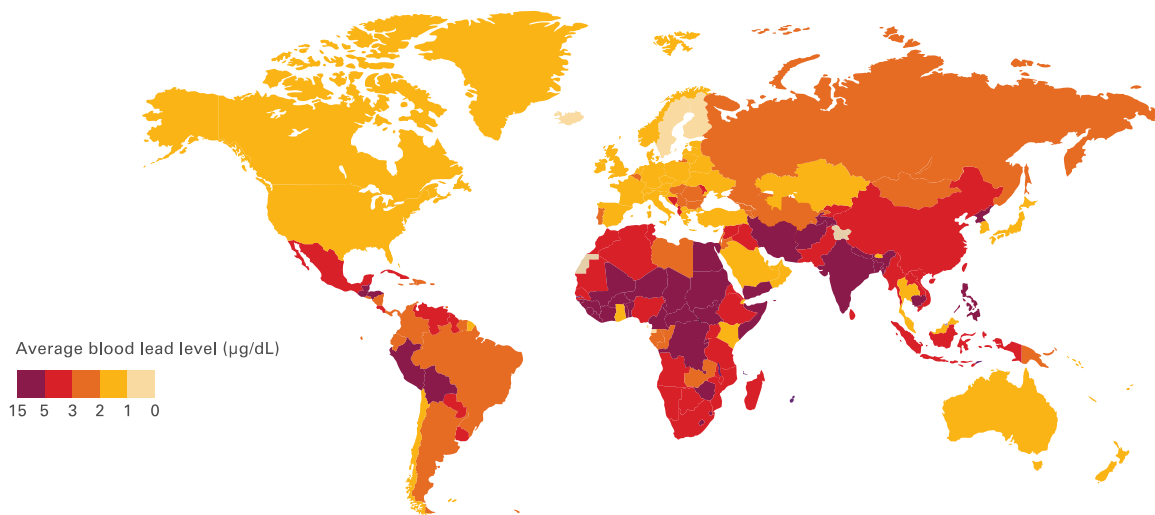
Lead is poisoning around one in three children globally on a massive and previously unrecognized scale. Lead poisoning is a major contributor to intellectual disability among children in low- and middle-income countries. As a result, vast economic and social potential is being lost from the widespread cognitive decline and the long-term health effects caused by lead poisoning.

Lead ^{Pb} is a highly poisonous heavy metal. Exposure to even small amounts of lead over time can have lifelong effects on children, inflicting irreversible damage to their developing bodies and brains. The symptoms of lead poisoning are hard to spot. It can lurk quietly in children's bodies as an invisible and growing threat to their health, undiscovered until it is too late to prevent the harm it causes.

Prevention is the only solution. There is no cure for lead poisoning – the damage it causes cannot be reversed. Governments, the private sector and civil society must collaborate to urgently increase efforts to end childhood lead poisoning.

Globally, an estimated 800 million children are affected by lead poisoning.¹ Lead is a public health hazard in every region of the world, contributing to disease burden, disability and death. Most of the children with the highest blood lead levels live in Asia and Africa, but many are also affected in Central and South America and Eastern Europe, as well as in pockets within high-income countries.

Figure 1: Children's average blood lead levels by country



Source: Data from Institute for Health Metrics and Evaluation, 2019.

Disclaimer: The boundaries and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the United Nations Children's Fund concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Lines on maps represent approximate border lines for which there may not yet be full agreement.

The full extent of global lead poisoning has only recently come to light.² In 2019, the Institute for Health Metrics and Evaluation³ estimated that lead exposure accounted for more than 900,000 deaths annually and was responsible for a significant global disease burden due to the long-term effects of lead exposure on health.⁴ Lead can compromise neurological, cardiovascular and reproductive systems, including increased risk of high blood pressure and kidney damage later in life.

- The negative effects of lead poisoning are far greater for children than for adults as children's brains and bodies are rapidly developing in early childhood. **Younger children**, especially those below 5 years of age, absorb up to four to five times the amount of lead that adults do.⁵
- Even the lowest levels of lead in the blood can cause irreversible damage to a child's body.⁶ Severe consequences to lead exposure in children have been linked with neurological damage, lower intelligence quotient (IQ) scores, diminished academic achievement, attention deficits and behavioural problems.
- There is **NO safe level of exposure to lead** that is known to be without harmful effects.⁷ Even blood lead concentrations below 5 µg/dL have also been associated with cognitive decline in children.
- The impact of exposure is cumulative – the more a child is exposed to lead, the greater the range and severity of symptoms.⁸
- Childhood lead poisoning can result in learning disabilities and challenges that affect children's executive functioning, impulse control and levels of aggression. There is potentially a link to violence and crime in adulthood.⁹ A study by the Center for Global Development suggests that more than **20 per cent of the learning gap between rich and poor countries can be attributed to elevated levels of lead in the blood.**¹⁰
- **Lead from past exposures stored in the bones of pregnant women** can be released back into their bloodstreams during pregnancy, exposing their baby in utero.¹¹ Exposure of pregnant women to high levels of lead can cause miscarriage, stillbirth, premature birth and low birth weight.¹²

Significant levels of lead poisoning in many low- and middle-income countries result from the irregular use of lead in consumer products such as spices, paints and dyes, cookware and ceramics, cosmetics, toys, leaded glass, jewellery, ceramics, ammunition, and fishing weights. Other potential important sources include contaminated water due to lead pipes and fittings, residual pollution from leaded gasoline, light aviation fuel, e-waste recycling, and some traditional medicines, ceremonial powders, and folkloric traditions.¹³

Lead is mainly used for lead-acid batteries (LAB) in vehicles and other industrial applications. Almost all the lead in LAB can be recovered and recycled. However, in low- and middle-income countries, substantial numbers of used lead-acid batteries (ULAB) are recycled in informal, uncontrolled and unregulated settings that contaminate the air, water and soil in the surrounding communities.

The World Bank's 2023 assessment reveals that the global cost of lead exposure was US\$6.0 trillion in 2019, which was equivalent to 6.9 per cent of the global gross domestic product.¹⁴ This study ranks the estimated global health burden of lead exposure as an environmental risk factor on par with PM2.5 ambient and household air pollution combined, and ahead of unsafe household drinking water, sanitation and handwashing.¹⁵

Society's return on investment in preventing children's exposure to lead poisoning is extensive: improved health and development of children, higher IQs, less violence, and productive futures for millions of children and their countries.



We must act now with a sense of urgency

This is a solvable problem that has a high return on investment. High-income countries, such as the United States,¹⁶ have prioritized this issue and successfully reduced the levels of childhood lead exposure. Proven solutions exist and can be implemented now.

To end childhood lead poisoning, government leadership is critical. The private sector has an obligation to ensure safe stewardship and responsible use of lead, while civil society can play a critical role by inspiring action.

Although extensive guidance exists on addressing different aspects of the problem of lead poisoning, there is no pathway to guide decisive action by national stakeholders on what it will take to eradicate this insidious threat to childhood. **This document outlines five asks each for governments, the private sector and civil society, which together aim to introduce and connect the various guidelines to address this problem holistically.**

By working together, governments, the private sector and civil society **CAN** end childhood lead poisoning and **CAN** give hundreds of millions of children the opportunity to reach their full potential.

Figure 2: Five actions to end lead poisoning





Governments take leadership and prioritize action

Governments have the power to put an end to lead poisoning, as well as to alleviate the suffering of those who have already been exposed. They can start by understanding the extent to which childhood lead poisoning is still an issue in their respective countries and by prioritizing a whole-of-government response. Through strong legislation and policies, and with robust enforcement capacities, it is possible to address the sources of lead exposure. To ensure lasting change, governments must strengthen capacities to continuously identify and care for cases of childhood lead poisoning. This includes improving public understanding of the dangers of exposure to lead through public safety announcements and other awareness campaigns.

Finally, governments that have made significant progress on the issue can serve as ‘champions’ to encourage other governments to prioritize action.



Action 1

Assess childhood lead exposure and its sources

An initial estimate can be drawn from secondary sources of information, including from the Institute for Health Metrics and Evaluation’s global burden of disease study. A literature review of existing in-country studies may also help identify high-risk areas where children are most affected, the socio-economic profile of these communities and potential sources of exposure.

The next step is to include monitoring of blood lead levels of children in a national household survey, such as a Multiple Indicator Cluster Survey (MICS) or a Demographic and Health Survey or through routine screening programmes. Testing of blood samples requires the engagement of accredited in-country, regional or international laboratories that utilize sensitive analytical methods in line with the relevant standards approved by the International Organization for Standardization (ISO). These laboratories can also help to identify potential sources of exposure and determine their contribution to the levels of lead poisoning.



Action 2

Act decisively across sectors

Ending childhood lead poisoning requires a whole-of-government approach. This entails coordination with relevant ministries – health, environment, trade and industry, education, finance, and land management, among others – and agreeing on sectoral responses. These responses should be included in a budgeted national action plan that considers key international treaties, conventions and voluntary agreements that exist to prevent lead poisoning. The national plan should consider the role of private sector and civil society in addressing childhood lead poisoning.



Action 3

Develop capacities to protect children

The health system must be equipped to protect children from lead exposure. Trained health care workers play a critical role in the prevention of lead poisoning, specifically in the recognition of the symptoms of lead exposure, the testing of blood lead levels and the management of lead poisoning. Equally important are facilities to measure blood lead levels; availability of essential medicines and the development of structures for referral; and testing and management of exposure, including nutrition, education and supplements.

An important starting point to ensure early screening of children and pregnant women is the development and maintenance of a childhood blood lead surveillance system. Undernourished children are more susceptible to lead poisoning because they absorb more lead if they are lacking nutrients such as calcium and iron.¹⁷ Children aged 10 years and under should be given calcium and iron supplementation¹⁸ if they have a blood lead concentration level of $\geq 5 \mu\text{g/dL}$, have, or are likely to have, inadequate calcium intake or iron deficiency.

The institutionalization of Children's Environmental Health Units within ministries of health and ministries of the environment is key to the implementation of a childhood lead poisoning prevention programme. These units should lead the development of strategies for improving health system capacity; the provision of consultative medical services; and the implementation of public education about the impact of lead exposure on children's health.



Action 4

Toughen measures to reduce lead in the environment

Adopting appropriate laws, standards and regulations to eliminate or limit the use of lead in all consumer products is a key step to reduce lead levels in the environment. Though many still lack such policies and legislation, a growing number of countries have laws and regulatory measures in place to eliminate the use of lead compounds in consumer products such as paint, ceramics and pottery, children's toys, cosmetics, spices, cookware and traditional medicines. National environmental standards for lead in air, water and soil are equally critical.

The use of lead may be unavoidable in certain industrial applications. Therefore, it is important to develop and implement national strategies for the environmentally sound management of lead in these applications, including recycling of ULAB, e-waste and other products. If national legislation, policies and good practices to protect children from lead exposure are not already in place, international standards, norms, guidelines and guidance around the recycling and transportation of ULAB can be used as building blocks for their development.



Action 5

Eliminate the sources of lead poisoning

Informal recycling of ULAB can be a major source of lead poisoning in certain conditions. In such situations, the recommended strategy is to develop and implement policy and economic measures that address unregulated recyclers operating in the informal sector with due concern for their livelihoods.

The prevalence of informal recycling practices and insufficient industrial hygiene may have resulted in widespread lead-contaminated sites in communities. Each toxic site will have unique clean-up requirements, which may involve: the removal of waste and contaminated soil; planting grass and vegetation; the installation of barrier cloths; and paving and covering areas with clean fill.



Private sector ensures responsible use of lead and safe stewardship

Globally, considerable progress has been made in eliminating lead in fuels and paints. Several private sector companies¹⁹ in industries using lead have contributed significantly to these efforts in partnership with governments, United Nations agencies, scientists and affected communities.

The paint industry²⁰ has taken steps to eliminate lead in their products or to create operational processes that provide safe work environments for their employees. The lead industry²¹ has created or participated in programmes to recycle lead-containing products, like responsibly collecting and recycling lead-acid batteries.



Action 1

Stop the use of lead in consumer products

The use of lead in consumer products such as paints, toys, cosmetics, cookware, spices and medicine should be prohibited. In addition to quality control measures, the reformulation of products to remove lead or substitute with safe alternatives is an important step that the private sector can take to prevent childhood lead exposure. For example, the United Nations Environment Programme's [Lead Paint Reformulation Technical Guidelines](#) provide a helpful resource for private sector companies considering the shift to alternatives in paint.

Advertising can be used to promote products that do not contain lead. By raising awareness on the private sector's social responsibility to eliminate the use of lead in their products, consumers will in turn gain a greater understanding of the issue.



Action 2

Ensure safe stewardship of lead in industrial applications

The use of lead in industrial applications, such as in batteries and electronics, should not put children and their families at high risk of exposure to lead. Moreover, the implementation and promotion of circular economy solutions²² can ensure the sound management of the entire life cycle of products containing lead. Companies have created or participated in programmes that ensure that recyclable lead-containing products, such as LAB, are responsibly collected and recycled. Private sector companies using lead in industrial applications should implement and promote similar circular economy solutions and tracking systems.

The following actions should be taken to provide a safe work environment that prevents lead exposure among employees: appropriate industrial hygiene and occupational safety measures; improved awareness of the risk factors among employees and managers; and the elimination of environmentally unsound practices.



Action 3

Account for supply chains

Producers in both the commercial and public sectors should ensure the safe management of lead across their supply chains.

Various options can be considered to improve producer responsibility and responsible sourcing throughout the supply chain of a product. In the LAB industry, for example, take-back clauses can be introduced whereby the LAB manufacturer or supplier agrees to collect and recycle the ULAB at the end of its useful life; policies can be enacted of only selling a replacement LAB when a ULAB is surrendered as part of exchange or deposit refund schemes; and discount schemes can be implemented for LAB replacement purchases. The introduction of 'reverse logistics' – ULAB collection and return to the LAB manufacturer/importer for recycling when a new LAB is delivered to a retail outlet – can reduce the cost of ULAB collection.

The private sector can promote responsible sourcing and prevent materials entering the market from recyclers who fail to establish controls and processes to protect public health and the environment. Furthermore, the private sector can engage the informal sector in the supply value chain, such as in collection and segregation of lead-added products and send these to licensed recyclers. In many low- and middle-income countries, inadequate transportation networks render the cost of collecting and recycling ULAB by formal operators unprofitable. However, informal scrap dealers usually collect more than just ULAB, which can make ULAB collection viable.



Action 4

Comply with the laws and regulations

The private sector's adherence to all health, safety, labour, environmental and consumer standards, regulations and laws regarding the use of lead is of critical importance to eliminating lead poisoning. Additionally, the private sector also has a responsibility to encourage continuous improvement in the environmental, health and safety performance, including occupational safety of employees.

Private sector associations play a key role in promoting the environmental, health and safety standards of their member companies. These associations also actively participate in global initiatives to raise the operating standards of producers and recyclers of various lead-containing products in low- and middle-income countries.



Action 5

Share information and expertise

Private sector companies that use lead or have substituted lead in industrial applications are encouraged to publish or add to an annual sustainability report. This report would provide information on safe stewardship and other issues pertaining to the health and safety performance of the organization, thus promoting transparency in reporting progress to interested stakeholders.

The private sector can also share technical expertise on accessible, low-cost technologies and services that can detect lead in products, improve human biomonitoring, and advise on alternative options to the use of lead.

'Champions' in the private sector can influence other business leaders to tackle the issue of childhood lead poisoning in corporate social responsibility programmes. Programmes to improve awareness regarding the dangers of lead exposure and safe stewardship across the value chain can be promoted by educating workers in repair shops, resellers, the informal sector and consumers.



Civil society inspires others to act

Civil society has historically played a critical role in human development and in bringing about change. It has done this by filling gaps unmet by governments or the private sector, providing research and data for governments and citizens, holding governments accountable, conducting advocacy, and providing alternative policies for governments, the private sector and other stakeholders.²³

The tenacious advocacy of civil society, including in academia and professional associations, has played an important role in advancing progress on ending lead poisoning around the world. In fact, the widespread use of lead in low- and middle-income countries and the resulting unfolding public health crises require accelerated action, particularly from civil society based in low- and middle-income countries.



Action 1

Advocate for decisive action from governments and industries

The development and enforcement of strong legislation and policies are key to ending childhood lead poisoning. Studies on the extent of childhood lead poisoning and the sources of exposure are useful tools for raising awareness of the need for governments to draft laws, legally binding regulations and/or mandatory standards. Civil society has a key role to play in demanding action at national and subnational levels to improve compliance with national laws, regulations and/or mandatory standards to reduce the risk of childhood lead exposure.

Civil society with a relevant track record can also provide technical assistance to both national and subnational levels of government in the drafting of laws, regulations and mandatory standards. In addition, they can support governments in monitoring the enforcement of these policies.



Action 2

Mobilize communities to demand better protection

Civil society can play a key role in promoting community awareness on childhood lead poisoning and demand better protection. Youth associations, professional associations, academia and local non-governmental organizations are a powerful voice for change. By increasing awareness via social media, print or broadcast media, they can alert the public to the dangers of lead exposure and the damage this does to children and their future. By promoting awareness with community leaders and groups, caregivers and frontline service providers, they can mobilize increased attention, vigilance and action to prevent childhood lead poisoning.



Action 3

Educate networks on the issue

Professional associations, youth associations, academic networks and other civil society organizations are well-positioned to educate their networks on **the issue of childhood lead poisoning and how the issue could be addressed**. For instance, local medical, paediatric and nurses' associations can be engaged to develop a better understanding of how to prevent, detect, care for and treat lead poisoning in children. Teachers' associations can engage the teaching community to better understand the impact of lead poisoning on IQ levels and learning outcomes. Academic networks can develop and share technical expertise on environmental testing (i.e., lead in air, water, soil) or the use of portable machines such as an X-ray fluorescence analyzer.



Action 4

Research the sources and effects of lead

Local research is a very effective tool for mobilizing policymakers and communities to prevent childhood lead poisoning. Civil society can consider planning and implementing context-specific research such as measuring the levels of childhood lead poisoning in their areas, environmental testing, source apportionment studies, and examining associations between childhood lead poisoning and learning, as well as behavioural outcomes.



Action 5

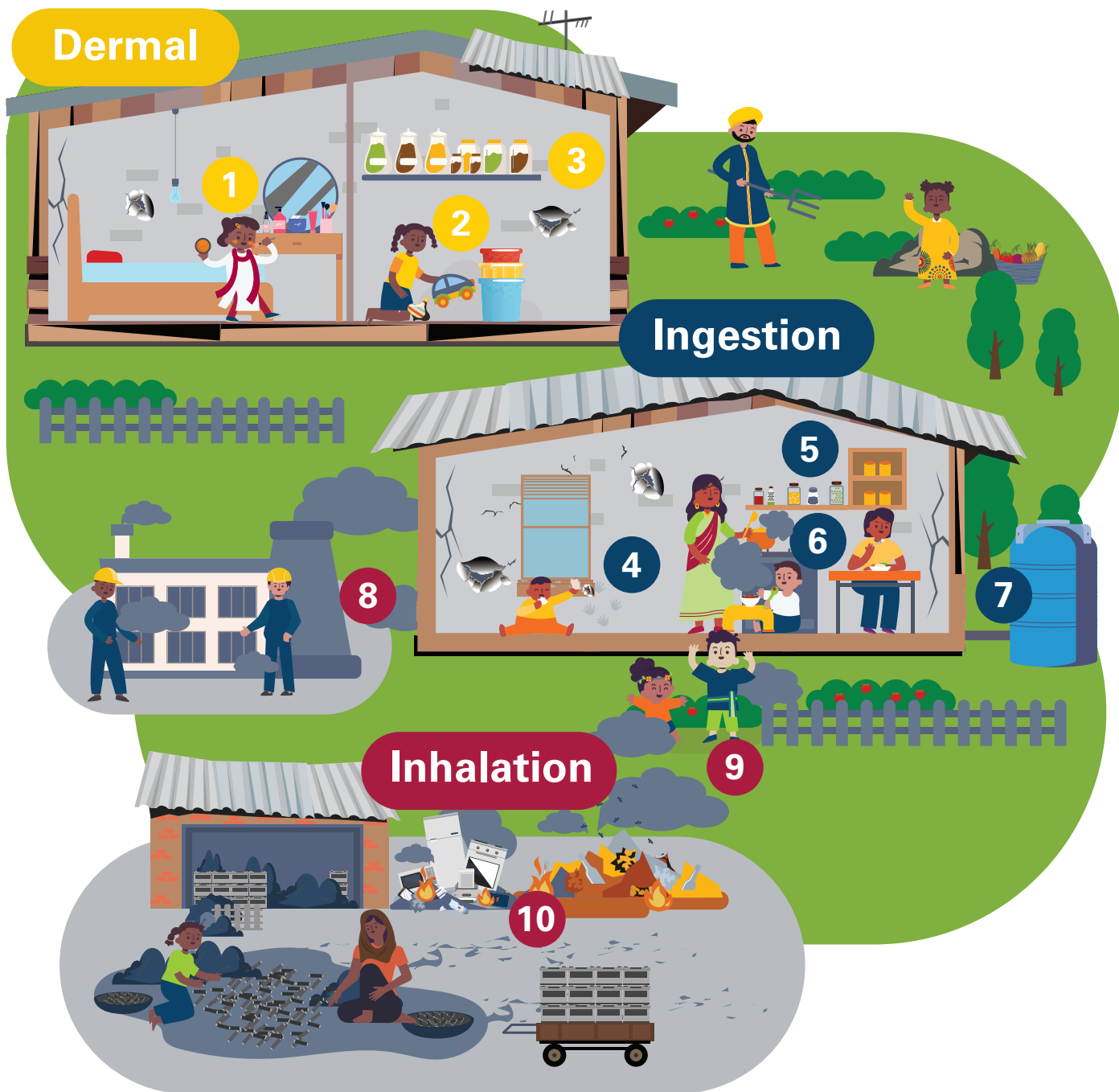
Support the national response

Civil society can play a critical role in shaping the development of a national, multisectoral response by being part of the design process.

The operationalization of a national, multisectoral response may benefit from the support of civil society, which can play an important role in conducting additional critical research, evidence-based advocacy to demand action, supporting youth engagement and improving public awareness. Civil society with relevant expertise, experience and networks can encourage the private sector to use alternatives to lead in their industrial applications, shift industries to eliminate lead from their products, and identify, as well as clean up, contaminated sites.



Figure 3: Lead can be found in the environment where children live and play



- | | |
|---|---|
| 1 Cosmetics | 7 Water pipes and fixtures |
| 2 Toys and jewellery | 8 Occupational exposure |
| 3 Traditional medicines | 9 Contaminated environment from industrial pollution |
| 4 Paints and pigments | 10 Unsound recycling of batteries, electrical and electronic waste |
| 5 Spices and candies | |
| 6 Ceramic and metallic cookware and dishes | |

Resources

Below is a list of resources to better understand the issue, the sources of exposure and the implementation strategies to address the problem of childhood lead poisoning.

Intergovernmental organizations/United Nations

- [The Toxic Truth: Children's exposure to lead pollution undermines a generation of future potential](#)
- [G7 Workshop on Lead as a Major Threat for Human Health and the Environment: An integrated approach strengthening cooperation towards solutions – Workshop summary report](#)
- [United Nations Environmental Assembly of the United Nations Environment Programme: 3/9. Eliminating exposure to lead paint and promoting environmentally sound management of waste lead-acid batteries](#)
- [Chemicals Road Map](#)
- [Strategic Approach to International Chemicals Management](#)
- [Toolkit for Establishing Laws to Eliminate Lead Paint](#)
- [Global Elimination of Lead Paint: Why and how countries should take action – Technical brief](#)
- [Model Law and Guidance for Regulating Lead Paint](#)
- [Lead Paint Reformulation Technical Guidelines](#)
- [Update on the Global Status of Legal Limits on Lead in Paint, December 2021](#)
- [A Guidance Manual for Policymakers and Regulators for the Environmentally Sound Management of Waste or Used Lead Acid Batteries in Africa](#)
- [Air Quality Guidelines for Europe: Second edition](#)
- [Guidelines for Drinking-Water Quality: Fourth edition incorporating the first and second addenda](#)
- [Children's Environmental Health Units](#)
- [WHO Guideline for Clinical Management of Exposure to Lead](#)
- [Guidance on Organizing an Advocacy or Awareness-Raising Campaign on Lead Paint](#)
- [Global Alliance to Eliminate Lead Paint](#)
- [Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal](#)
- [Basel Convention Promotion of Environmentally Sound Management in the Informal Sector](#)
- [How Governments Can Put Lead to Bed \(video\)](#)
- [You Have the Power to End Lead Poisoning \(video\)](#)
- [Why Lead Poisoning Is a Danger to Your Child's Health \(video\)](#)

Government

- [Georgia Multiple Indicator Cluster Survey 2018: Survey findings report](#)
- [Environmental Health and Medicine Education: Case studies in environmental medicine](#)
- [Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women](#)
- [Small Area Surveillance to Estimate Prevalence of Childhood Blood and Environmental Lead Levels](#)
- [Childhood Lead Poisoning Prevention Program](#)

Private Sector

- Lead Battery 360°
- International Lead Association
- Voluntary Blood Lead Reduction Programme
- Battery Council International
- Association of European Automotive and Industrial Battery Manufacturers
- Association of Battery Recyclers
- Responsible Battery Coalition
- Global Battery Alliance
- Consequences of a Mobile Future: Creating an environmentally conscious life cycle for lead-acid batteries
- Standard Operating Procedures for Environmentally Sound Management of Used Lead-Acid Batteries

Civil Society

- Opportunities for the G7 to Address the Global Crisis of Lead Poisoning in the 21st Century: A rapid stocktaking report
- Global Burden of Disease: Lead exposure – Level 3 risk
- The Global Lead Program
- Toxic Sites Identification Program
- Blood Lead Levels in Low-Income and Middle-Income Countries: A systematic review
- International Pollutants Elimination Network
- Lead Exposure Elimination Project
- Coalition to Prevent Lead Poisoning

Endnotes

- 1 United Nations Children’s Fund and Pure Earth, *The Toxic Truth: Children’s exposure to lead pollution undermines a generation of future potential*, UNICEF, New York, July 2020.
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- 14 Larsen, Bjorn and Ernesto Sanchez-Triana, ‘Global health burden and cost of leaf exposure in children and adults: a health impact and economic modelling analysis’, World Bank, Washington, D.C., 2023.
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for every child

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