

# Global elimination of lead paint why and how countries should take action

## Policy brief



### Introduction

Lead has toxic effects on almost all body systems and is especially harmful for children and pregnant women. Lead paint is an avoidable source of exposure to lead. “Lead paint” or “lead-based paint” is paint to which one or more lead compounds have been intentionally added by the manufacturer to obtain specific characteristics. One important way to prevent exposure is for countries to establish legally binding regulatory measures prohibiting the addition of lead to paint.

This policy brief summarizes key information explaining the background and rationale for eliminating lead paint, and describes what countries should do. More detailed information is available in the companion technical brief.<sup>1</sup>

### International efforts to eliminate lead paint have increased

Governments are working together to promote policy action at the national and regional level to protect human health from exposure to lead.

- In 2009, the second session of the International Conference on Chemicals Management (ICCM2, Geneva, 11–15 May 2009) nominated lead in paint as an emerging policy issue for voluntary cooperative action for risk reduction by countries under the Strategic Approach to International Chemicals Management (SAICM) policy framework (1).
- In 2011, following a request from governments at ICCM2, the Global Alliance to Eliminate Lead Paint (the Lead Paint Alliance) was established under the joint leadership of the United Nations

Environment Programme (UNEP) and the World Health Organization (WHO). The primary goal of the Alliance is to promote the global phase-out of lead paint through the establishment of legally binding control measures in every country.

- In 2017, the World Health Assembly approved the Road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond (2) (decision WHA70(23)), which includes national action to phase out the use of lead paint.
- In 2017, the United Nations Environmental Assembly adopted resolution UNEP/EA.3/Res.9 on eliminating exposure to lead paint and promoting the environmentally sound management of lead acid batteries.

<sup>1</sup> Global elimination of lead paint: why and how countries should take action. Technical brief. Geneva: World Health Organization; 2020.

- The elimination of lead paint contributes to the achievement of Sustainable Development Goal targets, in particular targets 3.9 and 12.4.

### Legally binding control measures are needed

To achieve the global goal of phasing out lead paint, every country needs to have in place legally binding control measures to stop the manufacture, sale, distribution and import of lead paint. Such measures can include statutes, regulations, and/or mandatory technical standards establishing a binding, enforceable limit on lead in paint, with penalties for non-compliance (3). For brevity, these are referred to here as “lead paint laws”. There are several good reasons for implementing a lead paint law:

- a lead paint law is enforceable, whereas voluntary control measures are not;
- a lead paint law creates strong incentives for change, encouraging:
  - paint manufacturers to reformulate their paints;
  - ingredient suppliers to produce more and better non-lead ingredients; and
  - paint importers and distributors to sell paints that comply with the law;
- a strong law creates a fair competitive market for all paint manufacturers, importers and exporters;
- where lead paint laws are harmonized among countries, this can reduce trade barriers regionally and globally.

The regulation of a range of sources of lead exposure has been demonstrated to protect public health, as reflected in declining population-level blood lead concentrations in many countries (4).

### Lead exposure causes wide-ranging health effects and environmental impacts

Lead exposure, even at low levels, exerts toxic effects on multiple body systems, including the central nervous, cardiovascular, gastrointestinal, reproductive haematological, renal and immunological systems (5). Studies to date have not identified any level of exposure that does not have harmful effects in children or adults (5–7).

Young children are especially vulnerable to lead toxicity, and even low levels of exposure can result in reduced intelligence quotient (IQ), reduced attention span, increased antisocial behaviour and reduced educational attainment (5–7). These impacts can be lifelong, with both personal and societal consequences (8, 9). There are no therapeutic measures that can reverse the effects of lead exposure on neurocognitive or behavioural development (10, 11).

Pregnant women are also vulnerable, and lead exposure is associated with reduced fetal growth, lower birth weight, preterm birth and spontaneous abortion (5, 7, 12). Exposure in adults is associated with increased risk of cardiovascular disease, including hypertension and coronary heart disease (5, 13, 14).

As a consequence of these health impacts, the burden of disease from lead exposure is high: the Institute for Health Metrics and Evaluation (IHME) estimated that, in 2017, lead exposure accounted for 1.06 million deaths and the loss of 24.4 million years of healthy life (disability-adjusted life years – DALYs) worldwide (15).

Lead is, furthermore, a well-documented ecotoxicant, posing threats to both aquatic and terrestrial ecosystems (16).

### Socioeconomic impacts of lead exposure are high

Reductions in IQ adversely affect the individual’s economic productivity. The potential consequent annual economic losses to society from childhood lead exposure have been estimated at \$977 billion in international dollars,<sup>2</sup> i.e. 1.2% of world gross domestic product at its 2011 value (17). Other costs include those attributed to criminal behaviour potentially associated with lead exposure, and health-care costs for the treatment of lead poisoning and cardiovascular and renal disease caused by lead exposure (18).

### Exposure to lead from paint occurs in multiple ways

Lead can be added to paint in the form of pigments, driers and anti-corrosive agents, resulting in extremely high lead content, in the order of thousands of parts per million (ppm). While the paint remains intact, the lead content is not a hazard; however, as the paint ages, it starts to crumble and flake, releasing lead into

<sup>2</sup> An international dollar would buy in the cited country an amount of goods and services comparable with the amount that a United States dollar would buy in the United States of America (Source: <https://datahelpdesk.worldbank.org/knowledgebase/articles/114944-what-is-an-international-dollar>).



household dust. In addition, the removal of interior or exterior lead paint by abrasive methods or by charring or burning releases lead dust, particles and fumes that contaminate the indoor or outdoor environment (19).

Young children are vulnerable to lead exposure from contaminated dust and flaking paint. They spend a lot of time at ground level, and ingest lead-contaminated dust through normal hand-to-mouth behaviour (20). They may also mouth, suck and chew on lead-containing or lead-coated objects, including toys and furniture, and may persistently eat flakes of lead paint (20).

Workers can be exposed to lead during paint manufacture, application and removal if adequate measures are not in place to prevent exposure (21, 22). If there are no facilities at the workplace for changing clothes and washing, workers may bring lead dust home on their clothing and expose their families.

#### **Eliminating lead paint brings economic benefits**

Countries that continue to permit the manufacture, sale and use of lead paint are creating a legacy of continuing lead exposure and long-term negative health effects. Eliminating lead paint now brings future economic benefits in terms of preventing losses due to reduced productivity and avoiding the costs of the health impacts of lead and of dealing with legacy lead paint to make homes and other premises safe. The costs of dealing with legacy paint have been estimated at between US\$ 193.8 million and US\$ 498.7 million in France and between US\$ 1.2 billion and US\$ 11.0 billion in the United States of America (18, 23).

#### **Paints can be produced without added lead**

Alternative, non-lead-based ingredients are available that can be used to formulate paint. Indeed, paints without added lead have been on the market for decades in many countries, particularly those countries that have lead paint laws in place (24).

While there may be some initial investment costs for manufacturers to reformulate their paints, experience has shown that, even when this results in an increase in the retail price, it does not necessarily reduce paint sales in the longer term (25). Many manufacturers, including small- and medium-sized enterprises, have already successfully reformulated their products to avoid the use of lead-based ingredients, seeing it as part of their corporate social responsibility to protect workers, consumers and the environment (26–28).

Making the change to non-lead ingredients gives paint companies access to markets in countries where the lead content in paint is already restricted. Moreover, the existing market for lead-containing paint is likely to shrink as more countries introduce lead paint laws. This is particularly relevant within regional economic communities that have adopted, or are seeking to adopt, stringent regionwide paint standards or regulations that limit lead content, including the European Union, the East African Community and the Eurasian Economic Union.

## A 90-ppm limit for total lead content in paint is protective and feasible

In view of the long-term health impacts of even low levels of exposure to lead, and the lack of therapeutic interventions to prevent some of these impacts, it is essential to minimize lead exposure from all sources as far as possible. This is emphasized by the fact that, for lead contamination in food, there is no longer an internationally accepted intake value that is considered harmless to health (29, 30). In the case of paint, a limit is needed that is protective but also technically feasible for paint manufacturers. The *Model Law and Guidance for Regulating Lead Paint*, developed by the Lead Paint Alliance, recommends a limit of 90 ppm (3).

There is substantial evidence to support the health benefits of reducing the lead content of paint. Studies have shown that lead paint, especially when used in homes, contaminates dust and soil, and that contaminated household dust, in particular, is associated with elevated blood lead concentrations in children and adverse health outcomes (5, 31–37). There is a correlation between high levels of lead in residential paint and levels of lead in house dust (34, 38); homes built before lead paint was banned have higher dust lead loading than those built after regulatory measures took effect (39, 40). Living in an older home decorated with lead paint is a well-established risk factor for elevated blood lead concentrations in children by comparison with those living in homes without lead paint (33, 40–44). Children who pick off and eat flakes of lead paint can develop very high blood lead concentrations and signs of lead poisoning (45, 46).

Beginning in the 1970s and 1980s, most industrialized countries adopted laws or regulations to severely limit the lead content of decorative paints, i.e. paints used on the interiors and exteriors of homes, schools and other premises. Many countries also imposed controls on other lead-containing paints and coatings, especially those used in applications most likely to contribute to children's exposure to lead, such as painted toys. As knowledge about the hazards of chronic low-level exposure to lead has grown, governments have been taking action to lower their maximum limit for the lead content of paints and other coatings. A legal limit of 90 ppm total lead content has now been established by a number of countries for some or all types of paints; these countries include Bangladesh, Cameroon, Canada, China, Ethiopia, India, Iraq, Israel, Jordan, Kenya, Nepal, the Philippines, Sri Lanka, and the United States of America (47, 48). More than 25 other

countries are now working on measures to reduce the permissible limit of lead in paint to 90 ppm.

Numerous paint testing studies have shown that decorative paints without added lead compounds can have a lead content below 90 ppm; by contrast, paints with lead-based ingredients can have a lead content above 100 000 ppm (24, 49). Note that a lead content of zero is not possible because some ingredients, including raw materials from natural sources such as clays and natural pigments, may be contaminated with a small amount of lead. Where manufacturers have taken care to source uncontaminated raw materials or those with only trace amounts of lead, it is possible to obtain a lead content significantly below 90 ppm (24).

Stopping the addition of lead to decorative paint is a priority because it is the paint to which children are most likely to be exposed; however, children can also be exposed to industrial paints used on playground equipment or diverted to household use. Other age groups should also be protected from lead exposure, and regulating the use of lead ingredients in all types of paint will protect workers engaged in manufacturing, applying and removing paint.

The 90-ppm lead limit included in the *Model Law and Guidance for Regulating Lead Paint* provides an appropriate goal for paints generally. Countries may decide to adopt different transition periods for decorative and industrial paints to give manufacturers time to reformulate their products. If achieving a 90-ppm limit is not yet feasible for a specific specialty use, governments are urged to work with stakeholders to discuss how a low lead limit can be achieved.

## Steps towards developing a lead paint law

Depending on the country and its legal structure and regulatory framework and procedures, the development of an effective lead paint law can be a multisectoral process, involving ministries of health, environment, and trade and economy, standards agencies, the paint manufacturing industry, civil society organizations and the public. The specific activities and legal process required will vary from country to country, as will the responsible authority.

Establishing regionally harmonized limits on lead content in paint and other coatings through regional economic communities can help foster the effective implementation of lead paint laws at the national level and reduce trade barriers among trading partners.

## Support available from the Lead Paint Alliance

The Lead Paint Alliance has developed guidance materials and tools to assist countries to establish lead paint laws. These include the *Model Law and Guidance for Regulating Lead Paint* (3), which provides

model legal language and guidance on key elements of effective and enforceable legal requirements; a document summarizing the suggested steps towards developing a lead paint law (50); and a range of awareness-raising and informational materials for local adaptation. More information is available on the Lead Paint Alliance website.<sup>3</sup>

## Conclusions

**WHO has identified lead as one of the 10 chemicals of major public health concern globally** (51). While young children are the ones most vulnerable to the toxic effects of lead, in fact all age groups can be adversely affected by exposure to lead. The health consequences of lead exposure can also result in significant negative economic and social impacts at the population level.

**Lead paint is an important, but preventable, source of exposure to lead.** Already, 72 WHO Member States (73 United Nations Member States) have shown that it is possible to restrict the use of lead in paint (47, 48), and many paint companies have already reformulated or committed themselves to reformulating their paints (26–28). Eliminating lead paint globally is therefore entirely possible and will yield both individual and societal benefits for years to come.

**For governments, regulating lead paint is an important primary prevention measure to tackle a priority chemical of public health concern.** From a strategic perspective, this action contributes to mainstreaming primary prevention in the sound management of chemicals. It also creates an opportunity for the health and environment sectors to work together to protect public health and preserve the integrity of ecosystems. Such joint activity supports the implementation of the WHO Chemicals Roadmap (2) and the Strategic Approach to International Chemicals Management (1).

<sup>3</sup> See <https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/emerging-issues/global-alliance-eliminate-lead-paint>, accessed 13 April 2020.

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