

Model Law and Guidance for Regulating Lead Paint

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Introduction

This document provides guidance to countries drafting new laws to establish legal limits on lead content in paints, as a measure to protect human health and the environment. It can also be a useful tool for countries interested in modifying their existing laws. It was developed by the United Nations Environment Programme (UN Environment) in support of the Global Alliance to Eliminate Lead Paint (Lead Paint Alliance).¹

‘Lead paint’ is paint or a similar coating material to which one or more lead compounds have been added. The primary goal of the Lead Paint Alliance is to prevent the exposure of children to lead from paints containing lead, and to minimize occupational exposure to lead paint. The Lead Paint Alliance is working to phase out the manufacture and sale of lead paint, and eventually to eliminate the risks that such paints pose.

To achieve this global goal, all countries must eliminate the use of lead additives in new paints by establishing and enforcing lead paint laws. An important strategic goal of the Lead Paint Alliance is for all countries to have lead paint laws in place by 2020.² As of September 2017, only one-third of countries around the world had confirmed to the Lead Paint Alliance that they have legally binding controls on lead paint.³ There are still many countries where using lead paint in homes and schools, and on toys and other children’s products is not prohibited. This creates a significant risk to children. Countries that have not yet done so are urged to enact and enforce effective national legislation, regulations and/or standards to stop the manufacture, sale and import of lead paints.

Countries that have enacted laws to limit the lead content in paint have generally used one of two approaches: (1) establish a set of chemical-specific regulatory limits based on the risks of individual lead compounds that are used as additives in paint (currently used in the European Union REACH

regulation⁴); or (2) establish a single regulatory limit on the total concentration of lead in paint from all sources (currently used in 31 countries).⁵ Both approaches have been successful in limiting the lead content in paint, but the chemical-specific approach requires risk assessments of individual lead compounds that may be beyond the capacity of many developing countries. In contrast, a single regulatory limit on total lead content does not require extensive risk assessments and is much simpler for governments to implement and enforce. Manufacturers can achieve a low legal limit on total lead content in paint by developing formulations that do not intentionally use any lead additives and that take into account potential residual lead content in raw material ingredients.

Purpose and Scope

The purpose of this guidance is to assist countries to enact new laws (or to modify their existing laws) to establish a single regulatory limit on the total lead content in paints. The guidance describes the key elements of effective and enforceable legal requirements. It also provides a model law that incorporates the key elements and reflects the best approaches currently found in lead paint laws around the world.

Countries may use the model law to help develop their own laws, in accordance with existing legal frameworks and other national circumstances. For example, some countries use consumer protection laws that establish a limit on lead content in consumer paints (e.g. the USA), while others establish limits on lead in paints through a regulation or legal order under a chemicals management law (e.g. the Philippines) or as part of an environmental protection law (e.g. Nepal). Some countries have established lead limits through a national standards bureau (e.g. Kenya). The model law can be adapted to fit within a country’s legal

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- 1 This model law and guidance supplements the online ‘Toolkit for Establishing Laws to Control the Use of Lead in Paint’, developed by partners of the Lead Paint Alliance. This toolkit, which was “designed to provide information to government officials who are interested in establishing legal limits for lead in paints in their countries”, contains useful background information (but not model legal text, which is included in this Model Law and Guidance) and is available at <https://www.unenvironment.org/toolkit-establishing-laws-eliminate-lead-paint>
 - 2 The Lead Paint Alliance was formed under the auspices of the Strategic Approach to International Chemicals Management (SAICM), pursuant to SAICM Resolution II/4 B. SAICM provides a policy framework to achieve the goal that, by 2020, chemicals will be produced and used in ways that minimize significant adverse impacts on the environment and human health. The strategic goals for the Lead Paint Alliance are included in its 2012 Business Plan, available at <https://www.unenvironment.org/resources/publication/global-alliance-eliminate-lead-paint-business-plan>
 - 3 WHO, *Regulations and Controls on Lead Paint*, Global Health Observatory, World Health Organization, available at http://www.who.int/gho/phe/chemical_safety/lead_paint_regulations/en
 - 4 See website of European Chemicals Agency at <https://echa.europa.eu/regulations/reach/understanding-reach>
 - 5 UNEP (2017), *Update on the Global Status of Legal Limits on Lead in Paint: September 2017*, United Nations Environment Programme, available at <https://www.unenvironment.org/resources/publication/2017-update-global-status-legal-limits-lead-paint>

framework but should retain the key aspects described in this guidance.

For the sake of brevity, this guidance uses the term ‘agency’ to refer to the relevant government entity that will be responsible for implementing the lead paint law. In different countries, the relevant government entity may be, for example, the environment ministry/agency, the health ministry/agency, or the standards-setting bureau. Where different entities will be responsible for implementing different parts of a lead paint law, it will be important for them to collaborate from the outset of the drafting process, and to agree on and establish clear lines of responsibility.

As countries draft new laws to limit lead content in paint, it is recommended that they provide access to information about the new laws and opportunities for public consultation and engagement. The paint and coatings industry and other stakeholders can often provide valuable input and suggestions for effective laws. Many countries that have been successful in enacting lead paint laws have actively engaged stakeholders (such as paint manufacturers and civil society organizations) by establishing working groups or similar mechanisms for input and discussion throughout the process.

Finally, while this model law and guidance focuses on establishing a regulatory limit on the total lead content in new paint and similar coating materials, consumer exposure to lead from paint already applied to products may need stricter control. Accordingly, countries may wish to review their existing consumer product safety laws and consider prohibiting the import and manufacture of consumer products coated with lead paint, especially products intended for use by children.

Method of Development

A proposed draft of this guidance document was developed by a working group of representatives from UN Environment, the World Health Organization and the US Environmental Protection Agency. The working group looked at examples of existing laws and regulations pertaining to lead paint from several countries and reviewed information compiled in the *Global Report on the Status of Legal Limits on Lead in Paint*, published by UN Environment in 2016. The group also consulted with government bodies

responsible for consumer protection and standard setting.

The proposed draft was reviewed by the Lead Paint Alliance Advisory Council. The Advisory Council is comprised of representatives from governments, industry, environmental and health NGOs, and international organizations. A revised draft was then provided for review by partners of the Alliance and the general public via the Lead Paint Alliance website. Comments from this secondary review were considered during the finalization of the guidance.

Background on Lead in Paint

Paint is typically a mixture of resins, pigments, fillers, solvents and other additives. Historically, lead compounds have been intentionally added to paint to give it certain properties such as colour, reduced corrosion on metal surfaces or faster drying time. For the same reasons, lead compounds may be present in other types of coatings, including varnishes, lacquers, enamels, glazes and primers. Lead additives are most commonly used in solvent-based paint due to their specific chemical properties; such solvent-based lead paints and coatings are still widely available and used in many countries. Water-based latex paint, on the other hand, rarely contains intentionally added lead compounds.⁶

Paints may also include ingredients contaminated with lead. For example, paints may include natural clays and other raw materials that may contain residual lead content. Therefore, it is not technically feasible to set a ‘zero’ limit for lead content in paint. However, if a manufacturer does not intentionally add lead compounds to its paints and takes into account the residual lead content in raw materials, then the total lead content in the paint will be low.⁷

In countries without legal limits, paint with high levels of lead can still be used for decoration of interior and exterior surfaces in homes and public buildings; on roads, bridges and industrial equipment; and on toys, furniture and playground equipment. However, nonlead pigments, driers and anti-corrosive ingredients are widely available for use in solvent-based paints and are used by manufacturers to produce high-quality paints in all regions of the world. Increasingly, paint producers around the world are publicly acknowledging the feasibility of eliminating

6 IPEN (2016), *Global Lead Paint Elimination Report*, available at <http://ipen.org/documents/global-lead-paint-report-2016>

7 IPEN (2016) *Global Lead Paint Elimination Report*, available at <http://ipen.org/documents/global-lead-paint-report-2016>

the use of intentionally added lead compounds in all paints.

The Case for Legal Limits

The weathering, peeling or chipping of old lead paint releases lead into dust and soil, in and around homes, schools and other locations. Dust contaminated with lead can also be brought into the home on the clothes of those who work in industries where such dust is generated, including paint factories where lead continues to be used. Lead-contaminated soil and dust are easily ingested and absorbed, particularly by young children when they play on the floor or outdoors and put their hands or objects in their mouths. Children also ingest lead if they mouth and chew toys painted with lead paint. Both children and adults can be exposed to lead in paint chips and dust generated during the removal of old lead paint.

The negative health effects from exposure to lead have been known for many years, and include effects on multiple body systems. Lead can cause permanent damage to the brain and nervous system, resulting in decreased IQ and behavioural problems. It can also cause anaemia, increase the risk of kidney damage and hypertension, and impair reproductive function.

Young children are especially vulnerable to the adverse effects of lead. Even relatively low levels of exposure can cause serious and, in some cases, irreversible neurological damage. There is no known level of lead exposure that is considered safe.

The negative impacts on children's developing brains from exposure to lead have staggering economic costs. These costs are borne by the affected children, their families, and societies at large. They include health care costs, losses in productivity and intellectual disability. The Institute for Health Metrics and Evaluation has estimated that, based on 2015 data, lead exposures from all sources account for 12.4 percent of cases of idiopathic intellectual disability (i.e. intellectual disability without another known cause).⁸ The largest financial burden is borne by low and

middle-income countries. Estimated annual costs (in international dollars) of lead exposure by global region, based on loss of IQ, include: Africa – \$134.7 billion; Latin America and the Caribbean – \$142.3 billion; and Asia – \$699.9 billion.⁹ In addition, the cost of removing existing lead paint from surfaces in homes, schools and other buildings can be substantial.¹⁰ It therefore makes economic sense for countries to enact laws that prevent future removal costs by establishing a legal limit on lead content in new paint.

By contrast, the financial cost of eliminating the use of lead compounds in many paints is low; many manufacturers have already successfully reformulated paint products to avoid the intentional addition of lead. According to a paint industry spokesman, "the reformulation of residential and decorative paints to eliminate lead additives is feasible, and the technical and cost impacts are manageable".¹¹

Lead released into the environment from any source, including lead paint, is also toxic to plants, animals and micro-organisms. In all studied animals, lead has been shown to cause adverse effects in several organs and organ systems, including blood, central nervous, kidney, reproductive and immune systems. It bioaccumulates in most organisms, with environmental exposures occurring through multiple sources and pathways.

Eliminating the source of lead exposure is the single most effective way of protecting people from the harmful effects of lead. The removal of lead from gasoline has produced dramatic reductions in airborne emissions and associated exposures, and public health impacts around the globe. Similarly, most industrialized countries adopted laws or regulations to control the lead content of residential and decorative paints in the 1970s and 1980s, based on clear findings that paint containing lead is a major source of lead exposure for children. The continued use of lead in paint in many parts of the world, however, remains an unaddressed source of human exposure. Laws, regulations or enforceable standards are needed in every country

8 Institute for Health Metrics and Evaluation (2016), *GBD Compare Data Visualization*. Seattle, WA: IHME, University of Washington, available at <http://vizhub.healthdata.org/gbd-compare>

9 Attina and Trasande (2013), *Economic Costs of Childhood Lead Exposure in Low- and Middle-Income Countries*. Report and map available from <http://www.med.nyu.edu/pediatrics/research/environmentalpediatrics/leadexposure>

10 For example, the cost of removing lead paint from homes most in need of remediation in the United States has been estimated at between \$1.2 billion and \$11.0 billion. Gould (2009), 'Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control', *Environmental Health Perspectives* 117, p. 1162.

11 IPPIC (2016), Presentation to The World Bank on March 15, 2016: Practical Sustainability Interventions: *Protecting Public Health and Promoting Economic Development through Legal Limits on Lead in Paint*, The International Paint and Printing Ink Council, Washington D.C.

to stop the manufacture, sale and import of lead-containing paints.

The global paint and coatings industry is rapidly expanding as a result of the economic development of countries around the world. Therefore, unless the practice of manufacturing and selling paints with added lead is eliminated, the risks of lead exposure will also increase. The growing demand for paints, especially for residential and decorative use in developing countries, should be met with paints that are not formulated with added lead compounds. Establishing lead paint laws will help countries ensure that the level of lead in domestic production and imported paint (and similar coating materials) does not exceed the national legal limit.

By producing or using paints without added lead compounds, paint manufacturers and commercial paint users (such as toy manufacturers) can ensure their continued access to markets where lead content in paint is already restricted. It can also reduce potential commercial risks (including health risks to workers and customers, and compliance and liability claims) and protect the reputation of the industry.

Objectives and Key Elements of Effective Lead Paint Laws

The objectives of legal limits on lead in paint, established through lead paint legislation and/or regulation (hereafter described as 'lead paint law'), include: (1) the prevention of the manufacture, sale and import of paint that contains lead above an established legal limit; (2) the development of a system with methods for compliance and enforcement; and (3) the establishment of institutional responsibilities and arrangements for the management and enforcement of the lead paint law.

In accordance with these objectives, the key elements of a lead paint law include the following:

- A** Defining key terms and ensuring that the scope of the law is clear:
 - a persons and activities that are regulated (e.g. manufacture, sale and import)

- b types of paint applications that are regulated (e.g. all paint applications or certain applications such as residential, decorative, etc.)

- B** Establishing a clear legal limit on total lead content in paint
- C** Setting the effective dates of the new requirements
- D** Providing methods for ensuring compliance and enforcement
- E** Specifying consequences of non-compliance
- F** Providing any necessary general provisions

This section provides explanations and drafting notes for the key elements of a lead paint law. A model law reflecting these key elements is provided in Appendix I.

Key Element A: Define key terms and ensure that the scope of the law is clear

Lead paint laws should clearly define key terms used throughout the law. Key terms may include, for example, 'manufacturer', 'paint', and 'total lead content'. The model law in Appendix I provides definitions of key terms (see Appendix I, section A).

To be successful, a law should specify the activities and persons that are regulated. The model law in Appendix I prohibits the sale, offer for sale, manufacture for sale, distribution into commerce and import of paint that exceeds the established legal limit (see Appendix I, sections B and F). The model law places specific requirements (e.g. testing and declarations of conformity) on manufacturers and importers of paint (see Appendix I, section D).

The law should also specify the types of paint that are regulated. Countries should decide whether to apply the legal limit to all paints or to allow exemptions for certain paints for specific purposes. It is entirely possible to restrict the use of lead in all paints, and the Philippines and Kenya have done so.¹² This has the benefit of protecting the whole population from lead exposure from paint, especially in countries where both household paint and industrial paint are frequently sold side by side in retail outlets.

¹² WHO, *Regulations and Controls on Lead Paint*, Global Health Observatory, World Health Organization, available at http://www.who.int/gho/phe/chemical_safety/lead_paint_regulations/en

The model law provided in Appendix I applies the total lead limit to all paints (household, industrial, agricultural, etc.) (see Appendix I, section B). However, if a country chooses to exempt certain types or uses of paints from the total lead limit, it should require such paints to bear a legible, visible warning label so that consumers are aware of the potential health hazards involved with using exempted paint.

If exemptions are allowed then the following language is recommended for a labelling requirement — as well as for the label itself:

Manufacturers and importers of paint and similar coating materials that are not subject to the ban set forth in [insert section] shall include on the label of each paint or similar coating product a warning stating: “DANGER: CONTAINS LEAD. DO NOT APPLY TO SURFACES ACCESSIBLE TO CHILDREN OR PREGNANT WOMEN”. Failure to include such a label shall subject the manufacturer or importer to penalties as set forth in [insert penalties section].

Key Element B: Establish a clear legal limit on the total lead content in new paint

As discussed in the Introduction, the purpose of this document is to assist countries interested in establishing a single regulatory limit on the total concentration of lead in paint from all sources. Setting a specific legal limit on total lead content helps the regulated community understand the rules and ensures that the law is more easily enforceable. This requires specifying a quantitative limit and a valid method to measure the quantity for lead in paint.

The lowest and most protective regulatory limit that has been set in countries for lead in residential and decorative paints is 90 parts per million (ppm) total lead content, based on the weight of the total non-volatile content of the paint or the weight of the dried paint film. (This specific limit can also be measured and expressed in a law or standard as 0.009 percent or 90 mg/kg of total lead, based on the dry weight of the paint film.) The 90 ppm limit is technically feasible for manufacturers to achieve by avoiding the addition of lead compounds and taking into account

residual (unintentional) lead content in certain paint ingredients.

Paint testing conducted by environmental groups in numerous developing countries shows that, while high levels of lead are not uncommon, levels below 90 ppm are achievable.¹³ Canada, India, Kenya, Nepal, the Philippines, Tanzania and the United States of America have all set a legal limit of 90 ppm total lead content. Several other countries are also considering adopting the 90 ppm regulatory standard. Switzerland and Thailand have limits of 100 ppm total lead, while some countries have adopted a limit of 600 ppm: Argentina, Brazil, Chile, Costa Rica, Dominica, Guyana, Jordan, Mexico, Oman, Panama, South Africa, Sri Lanka and Uruguay.¹⁴ The model law in Appendix I uses 90 ppm as the total lead limit because it is the lowest existing legal limit and thus provides the best available health protection, and is technically feasible. (See Appendix I, section B).

It is important to specify that the legal limit in paint should be defined as ‘total lead’ content rather than ‘soluble lead’ content.¹⁵ Currently, a few countries regulate paint on toys using a limit on soluble lead, which is the amount of lead that can be extracted using a standard acid treatment test. Measuring soluble lead is intended to simulate the amount of lead that is bioavailable for absorption by children, such as when a child chews on a toy coated with lead paint. Recent research suggests, however, that soluble lead is not the predominant form of exposure for children, and that particulate (insoluble) lead found in dust, soil and paint chips is a more significant contributor to chronic and acute exposure.¹⁶ Unmaintained painted surfaces, as well as weathering and ageing, generate paint chips and dust that contaminate soil and house dust, thus increasing the potential for exposure to lead. All lead in paint, whether soluble or insoluble in a lab test, has the potential to be available for exposure through inhalation or ingestion, especially by young children who crawl and play on the floor and outside on soil. While there is no safe level of lead exposure, a regulatory limit based on total lead will be more protective of health than a limit based only on soluble lead. The model law in Appendix I therefore uses a regulatory approach based on limiting the total lead content in paint. (See Appendix I, section B).

13 IPEN (2016), *Global Lead Paint Elimination Report*, available at <http://ipen.org/documents/global-lead-paint-report-2016>

14 UNEP (2017), *Update on the Global Status of Legal Limits on Lead in Paint: September 2017*, United Nations Environment Programme, available at <https://www.unenvironment.org/resources/publication/2017-update-global-status-legal-limits-lead-paint>

15 For an overview of measurement methods, see WHO (2011), *Brief guide to analytical methods for measuring lead in paint*, available at: http://www.who.int/ipcs/assessment/public_health/lead_paint.pdf

16 Deshommes E., et al. (2012), *Experimental Determination of the Oral Bioavailability and Bioaccessibility of Lead Particles*; *Chemistry Central Journal*; Vol. 6, p. 138.

Key Element C: Set effective dates for the new requirements

Lead paint laws should specify dates when the requirements set out in the law will come into effect. In establishing such dates, countries may wish to work with industry to determine a reasonable amount of time needed to source and procure alternative materials, to alter product formulations and processes, and to sell or dispose of existing stocks of paint containing lead above the total limit.

One way to allow time for industry to change its practices and come into compliance with the total lead limit is to provide a reasonably delayed effective date for the 90 ppm total lead limit, applicable to all paints covered by the law. Most lead paint laws that limit lead to 90 ppm or 100 ppm have required compliance within one year of passage of the law.¹⁷ (For sample language for a delayed effective date, see Appendix I, section C, option 1).

As an alternative to a broadly applicable delayed effective date for the 90 ppm limit, countries may wish to provide phased effective dates, depending on the type of paint. This approach is designed to take into account the different uses and performance requirements of paints, and the relative harms posed by such uses. For example, a law could allow more time for industrial paints to come into compliance with the total lead limit but less time for decorative paints intended for household use or other applications likely to contribute to childhood lead exposure. (For sample language for a phased effective date, see Appendix I, section C, option 2).

Countries should encourage laboratories to acquire the necessary equipment, expertise and accreditation

Key Element D: Establish mechanisms to promote compliance with, and enforcement of, the total lead limit

Effective lead paint laws promote compliance and provide mechanisms for enforcing the legal limit. They also assign clear responsibilities for the various actions required by the new law or regulation. Mechanisms for promoting compliance with, and enforcement of, the legal limit should include: (1) required testing of paint and similar coating materials by a third-party laboratory; (2) required 'declarations of conformity' with the total lead limit by manufacturers and importers based on the third-party laboratory testing; and (3) authorized government inspections to ensure compliance with the total lead limit. In addition to these mechanisms built into the law itself, governments can also promote compliance by educating industry about the requirements of the law and how to meet them.

i) Third-Party Testing

To promote compliance, a lead paint law should require manufacturers and importers to submit sufficient samples of paint or similar coating materials to a third-party laboratory accredited under international standards for testing for compliance with the 90 ppm total lead limit. Manufacturers and importers will rely on this third-party testing to issue declarations of conformity, certifying that their paint product or similar coating material complies with the 90 ppm total lead limit (see section ii. below). 'Sufficient samples' is defined as the number of samples the 'agency' determines necessary to provide a high degree of assurance that the tests conducted accurately demonstrate compliance with the 90 ppm total lead limit.

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