



LEAD IN SOLVENT-BASED PAINTS FOR HOME USE IN THE REPUBLIC OF ARMENIA



English Summary

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Armenian Women for Health
and Healthy Environment NGO
Հայ կանաչը հիմունք ստացուցրեցին
և ստացե շքանկար միջավայրի ԶԿ

IPEN
a toxics-free future



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IPEN is a leading global network of non-governmental organizations (NGOs) working in more than 100 developing countries and countries with economies in transition. IPEN works to establish and implement safe chemicals policies and practices to protect human health and the environment. It does this by building the capacity of its member organizations to implement on-the-ground activities, learn from each other's work, and work at the international level to set priorities and achieve new policies. Its mission is a toxics-free future for all.

IPEN has been engaged in the SAICM process since 2003, and its global network helped to develop the SAICM international policy framework. At its founding, in 1998, IPEN focused on advancing the development and implementation of the Stockholm Convention on persistent organic pollutants (POPs). Today, its mission also includes promoting safe chemicals management through the SAICM process (where it holds the public interest organization seat on the SAICM Bureau), halting the spread of toxic metals, and building a movement for a toxics-free future.

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PREFACE AND ACKNOWLEDGEMENTS

In 2007 and 2008, NGOs in the IPEN network collected and analyzed decorative (home use) paints on the market in 11 developing countries, and in countries with economies in transition. The results were startling. In every one of these countries, many of the paints contained dangerously high lead levels. In response, IPEN launched its Global Lead Paint Elimination Campaign, which seeks to eliminate lead paint by 2020 and raise widespread awareness among business entrepreneurs and consumers about the adverse human health impacts of lead paint, particularly on the health of children. Since then, IPEN-affiliated NGOs and others have sampled and analyzed paints on the market in approximately 40 low- and middle-income countries.

These and other studies suggest that lead paints for home use continue to be widely produced, sold, and used in developing countries even though most highly industrial countries banned lead paints for household use more than 40 years ago.

This report presents new data on the total lead content of solvent-based paints for home use available on the market in Armenia. It also presents background information on why the use of lead paint is a source of serious concern, especially to children's health; a review of national policy frameworks that are in place to ban or restrict the manufacture, import, export, distribution, sale and use of lead paint; and a strong justification to adopt and enforce further regulatory controls in Armenia. Finally, it proposes action steps by different stakeholders to protect children and others from lead paint.

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This study was undertaken as part of IPEN's Global Lead Paint Elimination Campaign. It was conducted in Armenia by Armenian Women for Health and Healthy Environment NGO (AWHHE) in partnership with

IPEN, and funded by the New York Community Trust (NYCT) and the Swedish Government.

While this study was undertaken with funding assistance from the New York Community Trust and the Swedish Government, responsibility for the content lies entirely with IPEN and AWHHE. The New York Community Trust and the Swedish Government do not necessarily share the expressed views and interpretations.

IPEN is an international NGO network of health and environmental organizations from all regions of the world of which AWHHE is a member. IPEN is a leading global organization working to establish and implement safe chemicals policies and practices to protect human health and the environment. Its mission is a toxics-free future for all. IPEN helps build the capacity of its member organizations to implement on-the-ground activities, learn from each other's work, and work at the international level to set priorities and achieve new policies.

The Armenian Women for Health and Healthy Environment NGO (AWHHE) was established in 1999 with the mission to explore the issue of environmental pollution in Armenia; advocate for the right of people to live in a healthy environment; work on the decrease of environmental health risks; and promote healthy lifestyle focusing on women and children. Being a women's organization, AWHHE is keen on promoting gender aspects in Armenia's sustainable development agenda. Since 1999, AWHHE has been a member of IPEN and a member of the Eastern Europe, Caucasus, and Central Asia (EECCA) NGO network on chemical safety coordinated by IPEN hub Eco-Accord.

BACKGROUND

Lead is a toxic metal that causes adverse effects on both human health and the environment. While lead exposure is also harmful to adults, lead exposure harms children at much lower levels, and the health effects are generally irreversible and can have a lifelong impact.

The younger the child, the more harmful lead can be, and children with nutritional deficiencies absorb ingested lead at an increased rate. The human fetus is the most vulnerable, and a pregnant woman can transfer lead that has accumulated in her body to her developing child.¹ Lead is also transferred through breast milk when lead is present in a nursing mother.²

Evidence of reduced intelligence caused by childhood exposure to lead has led the World Health Organization (WHO) to list “lead-caused mental retardation” as a recognized disease. WHO also lists it as one of the top ten diseases whose health burden among children is due to modifiable environmental factors.

Lead paint is a major source of childhood lead exposure. The term lead paint is used in this report to describe any paint to which one or more lead compounds have been added. The cut-off concentration for lead paint used in the report is 90 parts per million (ppm, dry weight of paint), the strictest legal limit enacted in the world today.

A recent study investigating the economic impact of childhood lead exposure on national economies in all low- and middle-income countries estimated a total cumulative cost burden of \$977 billion international dollars³ per year. In Armenia, the economic loss is estimated to be 414 million international dollars, or 2.29 percent of Gross Domestic Product (GDP).⁴

¹ Bellinger, D.C., *Very low lead exposures and children's neurodevelopment*. Current Opinion in Pediatrics, 2008. 20(2): p. 172-177.

² Bjorklund, K.L., et al., *Metals and trace element concentrations in breast milk of first time healthy mothers: a biological monitoring study*. Environmental Health, 2012. 11.

³ An International dollar is a currency unit used by economists and international organizations to compare the values of different currencies. It adjusts the value of the U.S. dollar to reflect currency exchange rates, purchasing power parity [PPP], and average commodity prices within each country. According to the World Bank, “An international dollar has the same purchasing power over GDP as the U.S. dollar has in the United States.” The international dollar values in this report were calculated from a World Bank table that lists GDP per capita by country based on purchasing power parity and expressed in international dollars.

⁴ <http://www.med.nyu.edu/pediatrics/research/environmentalpediatrics/leadexposure>

Most highly industrial countries adopted laws or regulations to control the lead content of decorative paints—the paints used on the interiors and exteriors of homes, schools, and other child-occupied facilities—beginning in the 1970s and 1980s. In Armenia, all paints are subject to compulsory state registration and testing. Armenia is a member of the Eurasian Economic Union. Once its draft Technical Regulation on the Safety of Paints is adopted, paints used for buildings lived in or used by people must not contain driers containing metals or other chemicals belonging to hazard class 1 in quantities greater than 0.5% (5,000 ppm) dry residue and paints must not contain lead-containing pigments of chemical hazard class 1 in quantities greater than 15% (150,000 ppm) dry residue.

On June 2016, AWHHE purchased a total of 49 cans of solvent-based paint intended for home use from stores in Yerevan, Armenia. The paints represented 20 different brands produced in 7 countries. All paints were analyzed by an accredited laboratory in the United States of America for their total lead content, based on dry weight of the paint. The paint samples were analyzed using method EPA3050B/7420, i.e., through acid digestion of the samples, followed by Flame Atomic Absorption Spectrometry, as recognized by the WHO as appropriate for the purpose.⁵ The laboratory participates in the Environmental Lead Proficiency Analytical Testing (ELPAT) program operated by the American Industrial Hygiene Association (AIHA), assuring the reliability of the analytical results.

⁵ World Health Organization, *Brief guide to analytical methods for measuring lead in paint*. 2011, WHO Library Cataloguing-in-Publication Data.

RESULTS

29 out of 49 analyzed solvent-based paints for home use [59 percent of paints] were lead paints, i.e., they contained a total lead concentration above 90 parts per million (ppm, dry weight of paint). This is also the regulatory limit for lead in decorative paint in the Philippines, Nepal and the United States of America. In addition, 28 out of 49 analyzed solvent-based paints for home use [57 percent of paints] contained a total lead concentration above 600 ppm – the regulatory limit for lead in decorative paint in South Africa, Brazil and Sri Lanka.

9 paints [18 percent of paints] contained dangerously high lead concentrations above 10,000 ppm. The highest total lead concentration detected was 180,000 ppm in a yellow alkyd paint sold for home use.

On the other hand, 20 out of 49 solvent-based paints for home use [41 percent of paints] contained total lead concentrations at, or below 90 ppm, suggesting that the technology exists to produce paint without lead ingredients.

15 out of 20 analyzed brands [75 percent of paint brands] sold at least one lead paint, i.e., a paint with total lead concentration above 90 ppm. 8 out of 20 analyzed brands [40 percent of paint brands] sold at least one lead paint with dangerously high lead concentrations above 10,000 ppm.

Paints containing lead above 90 ppm were manufactured in Iran, Russia, Turkey, Ukraine, and United Arab Emirates. The highest lead concentration detected was 180,000 ppm in a yellow Alvan Alkyd Paint sold for home use. This paint was manufactured in Iran.

Yellow and red paints most frequently contained dangerously high lead concentrations above 10,000 ppm. Of 19 yellow paints, 8 [42 percent of yellow paints] contained lead levels above 10,000 ppm, and of 15 red paints, 1 [7 percent of red paints] contained lead levels above 10,000 ppm.

The ten solvent-based paints with the highest amounts of lead are summarized in Table 1.

TABLE 1. TOP 10 SOLVENT-BASED PAINTS WITH THE HIGHEST LEAD CONTENT.

Rank	Sample No.	Brand	Country of Manufacture	Color	Lead Content (ppm)
1	ARM-02	Alvan/Empire	Iran	yellow	180,000
2	ARM-18	Lakra	Russia	red	39,000
3	ARM-41	Permolit	Turkey	yellow	21,000
4	ARM-05	Dekor	Russia	yellow	19,000
5	ARM-36	Farbex	Ukraine	yellow	19,000
6	ARM-12	Craft	Russia	yellow	17,000
7	ARM-17	Lakra	Russia	yellow	17,000
8	ARM-30	Smile	Ukraine	yellow	14,000
9	ARM-28	National	United Arab Emirates	yellow	12,000
10	ARM-32	Barva	Ukraine	yellow	6,700

In general, paint can labels did not carry meaningful information about lead content or the hazards of lead paint. Only 2 out of 49 paints [4 percent of paints] provided information about lead on their labels and most paints carried little information about any ingredients on can labels. However, one paint contained 1,100 ppm lead despite advertisement or claim on its product label that “it does not contain lead.” Most paints were merely labeled as “solvents, pigments and resin,” with no further details on the type of solvents and pigments [organic or inorganic] provided on paint can labels. Manufacturing dates or batch numbers were included on the labels of 45 out of 49 paints [92 percent of paints] included in this study. Most warning symbols on the paint cans indicated the flammability of the paints, but had no precautionary warnings on the effects of lead dust to children and pregnant women were provided.

Lead levels in this study are consistent with the results of a similar paint study conducted in Armenia by Khazer NGO in 2011. In that study, 26 solvent-based paints from 8 brands were purchased and analyzed. In the previous study, 20 of 26 paints [77 percent of paints] contained total lead levels above 90 ppm, and 10 of 26 paints [38 percent of paints] contained total lead levels above 10,000 ppm.

A comparison between the two studies showed some improvement: the percentage of paints with lead content above 10,000 ppm decreased, as did the percentage of paints with lead content exceeding 90 ppm. On the other hand, the paint with the highest level of lead increased from 130,000 ppm in 2011 up to 180,000 ppm in the 2016 study.

CONCLUSIONS

This study demonstrates that solvent-based paints for home use with high concentrations of lead are widely available in Armenia since the paints included in this study were from brands commonly sold in retail stores all over Armenia. However, the fact that 20 out of 49 paints [41 percent of paints] contained lead concentrations below 90 ppm indicates that the technology to produce paints without added lead exists in producing countries. The study results provide a strong justification to adopt and enforce a regulation that will ban the manufacture, import, export, distribution, sale and use of paints with total lead concentrations greater than 90 ppm.

RECOMMENDATIONS

To address the problem of lead in paint, AWHHE and IPEN propose the following recommendations:

Government and Government Agencies

The Ministry of Nature Protection and the Ministry of Health of the Republic of Armenia should immediately draft a regulation that will ban the manufacture, import, export, distribution, sale and use of paints that contain total lead concentrations exceeding 90 ppm, the most restrictive standard in the world. They should also require paint companies to display sufficient information indicating harmful content on paint can labels such as solvents and provide a warning on possible lead dust hazards when disturbing painted surfaces.

Paint Industry

Paint companies that still produce lead paints should expeditiously stop the use of leaded paint ingredients in paint formulations. Paint companies that have shifted to non-lead paint production should get their products certified through independent, third party verification procedures to increase the customer's ability to choose paints with no added lead.

Individual, Household and Institutional Consumers

Paint consumers should demand paints with no added lead from paint manufacturers and retailers, as well as full disclosure of a paint product's lead content. Household and institutional consumers should ask for, consciously buy, and apply only paints with no added lead in places frequently used by children such as homes, schools, day care centers, parks and playgrounds.

Organizations and Professional Groups

Public health groups, consumer organizations and other concerned entities should support the elimination of lead paint, and conduct activities to inform and protect children from lead exposure through lead paint, lead in dust and soil, and other sources of lead.

All Stakeholders

All stakeholders should come together and unite in promoting a strong policy that will eliminate lead paint in Armenia.



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