ENVIRONMENT PROTECTION AGENCY – SIERRA LEONE
MARCH 2023

TESTING PAINT FOR LEAD CONTENT IN SIERRA LEONE

In March 2022, the Environment Protection Agency Sierra Leone (EPA-SL) and an international NGO, Lead Exposure Elimination Project (LEEP), jointly conducted a paint testing study to determine the lead content of paints available to purchase in Sierra Leone.

Lead has toxic effects on almost all body systems and is especially harmful for children and pregnant women. Globally, lead paint is an important source of lead poisoning. As lead paint ages it starts to decay, fragmenting into flakes and dust that contaminates the environment and may be swallowed, particularly by young children.

EPA-SL and LEEP tested paints manufactured and imported to Sierra Leone to determine - for the first time - if paint is a source of lead exposure in the country.

Mohamed A Kamara of EPA-SL preparing paint samples

Nineteen (19) cans of solvent-based paints intended for home use were obtained in March 2022 from stores and factories in Freetown, Sierra Leone. Nine of these samples were from three locally manufactured brands and the other ten were from four imported brands. Over 20 hardware and paint stores were visited to ensure all main brands were included; seven brands were identified. Where available, white, yellow and red paint from cans labelled as being from each brand were purchased. If these colours were not available, similar colours were purchased.

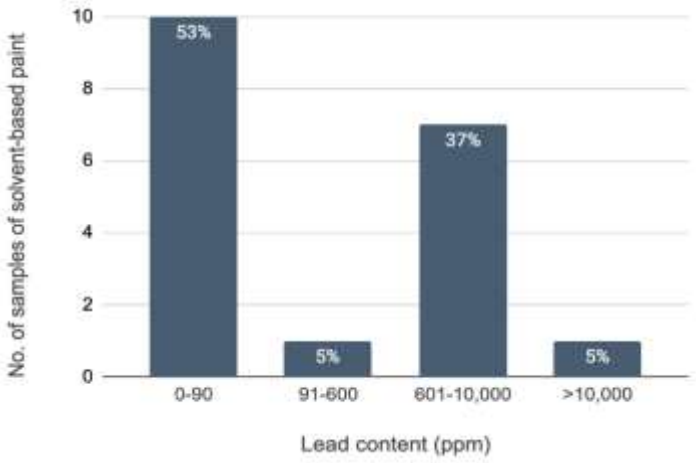
Eight (8) cans of water-based paint from three locally manufactured brands were also obtained. Water-based paint is much less likely to contain high levels of lead (Apanpa-Qasim et al., 2016), so this type was not sampled as extensively.

All paints were analysed by a laboratory at the University of Wisconsin, USA for lead content based on dry weight using inductively coupled plasma atomic emission spectrometry. The laboratory is accredited by the American Industrial Hygiene Association (AIHA) and it participates in the Environmental Lead Proficiency Analytical Testing program (ELPAT). The laboratory's analytical methods and certifications are consistent with those recommended by the World Health Organisation for measuring lead in paint.

Results showed that 47% of the solvent-based paint samples and three of the seven brands (one locally manufactured and two imported) contained dangerously high levels of lead (greater than 90ppm, the maximum level recommended by the WHO). In fact, the lead-based paints generally had lead contents that were many times greater than the recommended limit: 42% of paints had a lead content greater than 600ppm. The highest lead content detected was 32,000ppm, which is over 350 times the recommended limit.

High levels of lead were found in both coloured (red and yellow) and white paints. This indicates that lead pigments and/or lead driers may be the source of lead.

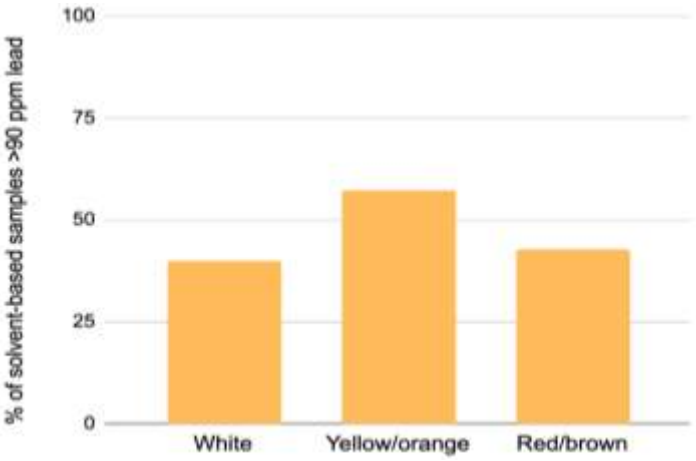
Of the eight samples of water-based paints, one had a lead content slightly higher than the recommended 90ppm limit, at 100ppm. All other samples (87%) were below 60ppm (the limit reported by the laboratory).



Lead content of the 19 samples of solvent-based paints. 90ppm is the maximum limit recommended by WHO.

Working with stakeholders across government, industry and society, EPA-SL is drafting regulations to prevent the manufacture, sale, and import of lead-based paints. The results of this study will serve as a baseline prior to regulation being promulgated and EPA-SL will continue to monitor levels of lead in paint. This is an important step towards protecting the health of the people and the environment in Sierra Leone from lead exposure from paint.

The Sierra Leone study was presented at a webinar by the EPA-SL as a case study on 'standard methods for testing for lead in paint'. The webinar was organised by UNEP in partnership with the American Society for Testing and Materials International (ASTM International), on 21 September 2022.



Proportion of paints that are lead paints (lead content >90ppm) by colour, of the 19 analysed solvent-based samples.

Project stakeholder meeting in March 2022

About LEEP

LEEP is an international NGO that works with policy-makers and industry to end the availability of lead paints. LEEP's mission is to eliminate childhood lead poisoning, and improve the health, wellbeing, and potential of children worldwide. LEEP is a member of the Global Alliance to Eliminate Lead Paint, a joint initiative led by the UN and the WHO.

Acknowledgements: EPA-SL is grateful for the support received from the Lead Exposure Elimination Project, LEEP, which enabled this study to be carried out.