WELCOME TO THE SAICM/UCT LEAD IN PAINT COMMUNITY OF PRACTICE

If you have not signed up to be a part of the UCT SAICM LiP CoP, please sign up at the following link:
https://saicmknowledge.org/community

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).

Discussion 4:

- **Topic:** “Is there lead in my paint? All about testing.”
- **Date:** 8th December 2021
- **Time:** 16h00 – 17h30 (GMT+2)
- **Presenters:** Mihaela Paun, UNEP
  - Jeiel Guarino, IPEN
  - Tamar Berman, Ministry of Health, Israel
  - Adam Kiefer, Mercer University
- **Facilitator:** Andrea Rother, University of Cape Town

Introduce yourself (name, job title, organization and country) in the chat section.

*Only* the presenter and facilitator will speak. Any comments or questions from attendees should be typed in the chat section.

Please kindly keep your microphone muted and cameras off during the discussion.

**NOTE:**

If you are having technical issues, please join the Lead in Paint WhatsApp group, using this link, and we will assist you: https://chat.whatsapp.com/HOMtpqf5YG6EX53gJ6sTR
Lead in Paint
Community of Practice
Discussion 4:
Is there lead in my paint? All about testing.

PRESENTERS

Mihaela Paun
Programme Management Officer, UNEP

Jeiel Guarino
Global Lead Campaigner, IPEN

Tamar Berman
Chief Toxicologist for Environmental Health
Ministry of Health, Israel

Dr. Adam Kiefer
Professor of Chemistry
Mercer University
• **LEAD PAINT TESTING** is a key element to the [UNEP Model Law and Guidance for Regulating Lead Paint](https://www.unep.org/) which is assisting countries in establishing and implementing regulation on lead paint.

**Objectives of lead paint testing**

- **Awareness-raising:**
  - Inform consumers
  - Advocacy for lead paint law

- **Compliance checking:**
  - Obtain documentation for compliance
  - Check compliance

- **Research:**
  - Assess the health and environmental risks
  - Inform policymakers
• Countries might still lack data on the lead content in paint due to challenges in conducting lead paint testing or lack of testing (Q1)
  • Lack of in-country laboratory capacity should not be an obstacle to develop and establishing lead paint law
  • Data from nearby countries is often available
  • UNEP has developed a database of accredited laboratories undertaking lead paint analysis globally
• Different test methods are available worldwide, from portable devices (XRF) to laboratory analysis
  • Even limited testing could make a big difference in developing a lead paint policy around the world (Q2)
• Budget available and results sought will influence the choice of test methods
  • Portable X-ray fluorescence (pXRF) can be a helpful screening tool with verification by Inductively-coupled Plasma Optical Emission Spectroscopy (ICP-OES) (Q3)
Throughout today's discussion, **we invite you to ask questions to the presenters and to each other about lead paint testing** and to share experiences on how this supported **lead paint management** in your country, region and globally.
Why test paints for lead content?

To generate data that will:

- Help raise public awareness about lead paint and lead exposure
- Aid in reaching out to manufacturers to reformulate lead paint
- Encourage governments in promulgating lead paint regulations

Purposive Sampling: What types of paints need to be prioritized for testing?

1. *Solvent-based paints* vs. water-based paints
2. *Decorative architectural paints* vs. industrial paints
3. *Bright-colored paints* vs. dull-colored paints
Methodology

1. Paint market analysis and brand survey
2. Paint purchase
3. Sample preparation
4. Analytical testing
5. Writing the report
6. Publication and dissemination of results and recommendations to stakeholders
What are the barriers/challenges in testing lead in paint?
• Lack of resources to conduct sampling and testing
• Lack of information on how to conduct testing
• Lack of laboratories accredited to conduct total lead content analysis in paint
• Logistical difficulties in shipping samples of paints to labs outside the country
• Storage and disposal of lead paints after testing
• However, the lack of available data in a country should not deter governments and industries to take immediate action; they may be able to find data on lead paint from nearby countries or from countries with similar economic standing
Question 1

Why is paint testing being conducted in your country and, if it is not, what are the barriers?

This question will be discussed for 20 minutes.
Please use chat only, mute your microphone, and turn your video off.
Thank you!

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Background for Question 2

Presented by: Tamar Berman, Israel Ministry of Health

- Mandatory standard required **labelling** of paints with lead content above 0.15% (1500 ppm)
- Spray paints exempt from labelling requirement

**Before testing (2016)**

- **Mandatory standard required** labelling of paints with lead content above 0.15% (1500 ppm)
- **Spray paints exempt** from labelling requirement

**29,000 PPM**

**Limited testing with XRF for painted surfaces and spray paints (2017)**

**229 PPM**

**After testing (2018)**

- **Standard is mandatory** – legally binding
- **No exemptions** for spray paints or industrial paints
- **Lead content has to be below** 90 ppm
- **Between May 2019 – January 2021** – both the old and the new standards were in force; beginning January 2021 only the new standard is in force

**8,689 PPM**
Background for Question 2 (cont.)

Presented by: Tamar Berman, Israel Ministry of Health

Importance of Continued Vigilance after Introduction of New Mandatory Standard on Lead in Paint

Lessons Learned
- Raise awareness among importers and manufacturers
- Importance of testing for compliance
- Don’t assume standard effective alone

Follow – Up Testing:
Lead Concentration in Spray Paints on the Market in Israel, 2021 (N = 22 Paints)

* Maximum concentrations above 8,000 ppm
Question 2

How has lead paint testing made a difference in your country? If you are not testing, how could it be helpful?

This question will be discussed for 25 minutes.
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Background for Question 3

Presented by: Dr. Adam Kiefer, Mercer University

What is the purpose of my analysis?

• Screening: pXRF
• Quantification: lab-based spectroscopy
• Am I analyzing new paint (compliance) or legacy paint (exposure)?

Your Needs Dictate Analytical Technique
Identifying Analytical Techniques For Screening Paint

pXRF is an Excellent Screening Tool
• Fast analysis with no sample preparation
• Relatively inexpensive, low cost per sample
• Can be used in the field (legacy paint) or the lab (legacy paint or new paint)
• Each spectrometer can be used to analyze tens of thousands of samples
• Requires few consumables
  • Does not require / use conventional calibration or certified reference materials

pXRF for estimation, not necessarily quantification

Screening legacy paint in the field
Analytical Techniques for Quantifying Lead in Paint

Analyses using ICP-OES/GF-AAS are **HIGHLY accurate**
- Lab-based technique for legacy paint & **new paint**
- Requires a full laboratory (higher expense)
  - Calibration curve, IPCs, CRMs = Accuracy
  - Acid digestion ensures accuracy regardless of matrix, substrate, and thickness of paint
- Requires trained personnel
- **There is a reason these methods are the standard for quantification of Pb in paint**

**Lab-based spectroscopy for accurate quantification**
pXRF and ICP-OES Tell a Complete Story

- **pXRF is an amazing tool for screening, but care must be taken when interpreting the results!**
- Pb in paint in Guyana ranges from 0 ppm lead to ~250,000 ppm (ICP-OES)
  - pXRF was used for screening
  - All “positive” findings matched!
  - Routinely underestimates
- New Research: Correlating pXRF to ICP-OES

**Today:** pXRF for screening, ICP-OES/GF-AAS for Quantification and Compliance
New Research: Conclusions from Collected Data

- **Excellent** correlation between pXRF and ICP-OES for new paints under controlled conditions
- Combining the accuracy of ICP-OES with the accessibility, low cost, and fast sample acquisition of pXRF

**Tomorrow: Correlating pXRF for to ICP-OES for Quantification and Compliance**

\[
y = 1.2367x - 1950.3 \quad R^2 = 0.9997
\]

![Graph showing Pb Concentrations: pXRF vs ICP-OES in New Paint](image-url)
What methods have you used to test for lead in paint? If you have not tested, what type of methods would you consider using?

This question will be discussed for 25 minutes. Please use chat only, mute your microphone, and turn your video off.

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THANK YOU for attending the Lead in Paint CoP Discussion

SAVE THE DATE:
This is our final LiP CoP discussion for 2021.

Thank you for your continued support and participation over the past year!

Please keep an eye out for dates of our 2022 discussions.

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