



Strategic Approach
to International
Chemicals Management



Lead Concentrations in New Residential Paints in Cameroon

Report

by

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CREPD is a Cameroon based NGO created since 2004 dedicated to bridge the gap between science and action in Cameroon and sub-Sahara Africa and to promote sustainable development. The organization obtained its legal status in 2005.

CREPD focuses on health and environmental issues in collaboration with government, industry, and non-governmental organizations. Successful projects have been carried out on sound management of persistent toxic chemicals (mercury, lead, cadmium) in products including cosmetics, batteries, leather, and on Persistent Organic Pollutants (POPs) to help implement the Stockholm Convention in Cameroon. CREPD has a consultative status with UNEP and is active in two public interest NGO umbrella organizations (International POPs Elimination Network and Health Care Without Harm).

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EXECUTIVE SUMMARY

Lead is the most serious environmental threat to children and a significant occupational hazard worldwide. In spite of the availability of substitutes for lead and lead compounds used in paints sold for residential applications and of the elimination of lead in new paints in most of the developed world, paint manufacturers across the globe continue to produce lead paint for sale in developing countries. This study includes an investigation of the decorative (i.e. architectural paints for residential use) paint market in Cameroon and analysis of the concentration of lead in paints sold in retail outlets in Cameroon in 2011.

CREPD conducted a nationwide survey of 76 retail and wholesale paint suppliers, and found that approximately 80% of paints offered for sale are manufactured in Cameroon. The three largest suppliers include Seigneurie, Smalto, and National Paint. Seigneurie is a local subsidiary of the U.S. Company PPG, Smalto is based in Cameroon, and National Paint is imported from the UAE. The survey results also indicated that only 8.5% of paints had labels identifying any of the ingredients and none of the lead paints included a warning. Only two metal primers from different manufacturers indicated that lead was present as “lead minium”.

Sixty paint samples and 14 liquid pigment samples were collected from retail outlets in Cameroon and were analyzed for lead content. Sixty-seven percent of the samples had concentrations that exceeded the U.S. standard of 90 ppm. All but one of the samples with lead concentrations greater than 90 ppm had lead concentrations greater than 600 ppm. The lead concentrations among paints with significant lead levels ranged from 310 to 500,000 ppm. Lead concentrations in this range suggest that the lead compounds are added intentionally and are not due to background levels or contamination of any ingredients.

The production and marketing of lead paint in Cameroon is creating both a short and long-term hazard in the country that may take decades to correct. Damaged and deteriorated paint that come with aging are associated with the highest potential exposures due to dust and soil contamination. Most young children get most of their exposure from contact with contaminated dust and soil in and around homes with lead paint. In addition, painters and construction workers are particularly vulnerable to lead hazards when renovating older structures with lead paint or preparing surfaces for repainting. The costs to safely abate lead

paint hazards in and around homes, schools, and other child occupied facilities are substantial and impose significant long-term costs on society.

The widespread use of lead paint in Cameroon is causing a significant risk to public health that will continue for decades unless action is taken. We recommend that Cameroon develop mandatory standards to limit the lead content of paint manufactured, imported and sold in the country and to mandate that product labeling include the chemical composition. The public should also be educated through warning labels on paint containers and other means on the hazards of disturbing painted surfaces that may contain lead during construction and paint preparation.

INTRODUCTION

Paint is a widely used on the interior and exterior of buildings in Cameroon. Lead is added to paint to improve durability, corrosion resistance, water resistance, and drying. Readily available substitutes for all lead compounds in paint exist, including titanium dioxide, barium sulfate, and silicon or aluminum oxides used to increase durability (Tanquerel des Planches and Dana, 1848; Rabin, 1989; Adebamowo, et al., 2007). However, the use of lead or lead compounds in paint as pigments such as lead oxide, lead carbonate (also known as white lead) and lead chromate (ILZSG, 2004) is still common practice in developing countries. Lead compounds are also used as drying agents in paints, although they can be substituted with compounds of other metals such as zinc, cobalt, iron, or magnesium.

In this study, paint containing lead in concentrations greater than or equal to 90 ppm is considered to be lead paint based on the legal definition in the U.S. This level also helps differentiate lead compounds that are intentionally added from the low background concentrations that may be present in some ingredients.

Lead is recognized as a significant environmental health issue by the United Nations and other international bodies. The Dakar Resolution called for the Elimination of Lead in Paints, adopted by the Intergovernmental Forum on Chemical Safety at its sixth session, held in Dakar from 15 to 19 September 2008. In addition, the UN sponsored International Conference on Chemical Management (ICCM) in Geneva from 11 to 15 May 2009, decided that lead in paint merited concerted action at the global, regional and national levels in view of its adverse effects on human health and the environment. Resolution II/4 of the ICCM endorses a global partnership to eliminate the use of lead in paints as an important contribution to the implementation of paragraph 57 of the Plan of Implementation of the World Summit on Sustainable Development.

Previously there was no baseline information on the manufacture and distribution of lead containing paint in Cameroon. Risks to children and adults from exposures to paint in homes are prodigious due to the lack of information concerning lead concentrations, and lack of consumer awareness about the adverse effects on health and the environment. The purpose of this pilot project is to gather information about the paints sold in retail outlets in Cameroon and to determine the concentration of lead in both domestic and imported paints. This

information is intended to help inform future regulatory efforts, public education and awareness campaigns, and to initiate dialogue with paint manufacturers about reformulating their products with safer alternatives.

MARKET SURVEY

Prior to collecting any paint samples, a survey was completed in order to collect general market information about the paints being sold in Cameroon. A standard survey tool was developed, tested and used to collect information about paint brands, types, labeling, packing materials, manufacturer, country of origin, chemical composition, volumes, and prices from retailers and wholesalers of paints in Cameroon. Data was collected on a total of 1,376 containers of paint that were being offered for sale during our site visit at 76 retail outlets and wholesalers distributing residential/decorative and industrial paints in Cameroon. The 1,376 containers in our inventory represented approximately 300 unique paint products with many appearing in multiple retail and wholesale outlets. Forty-five percent were oil-based paints or enamels, 38% were latex, and 17% were other (synthetic). The paints came from 52 manufacturers, including 20 domestic manufacturers and 32 foreign entities. Based on our survey, the companies with the largest number of products available in these outlets were Seigneurie/CEP, Smalto , and National Paint (UAE).

The approximate distribution of the origin of the 1,376 paints observed in the survey were as follows:

- Cameroon 80%
- UAE 8%
- EU 5%
- Tunisia 2%
- Other countries 4%

Our survey found that paints being marketed in Cameroon come from all the continents, but the local manufactures are dominating. We were not able to find any market share data indicating the volume of sales for any specific manufacturer or for the country as a whole.

The market survey also gathered information concerning labeling practices with respect to ingredients, warning labels, and other health and environmental information. Only 8.5% of the 1,376 containers observed had labels with information about chemical composition on the packaging. Our review indicated that there is a lack of information provided to consumers that can contribute to increasing exposures among painters and the general public.

Two product labels from different manufacturers of metal primer indicated that “lead minium” (i.e., red lead) is present, but neither provided the concentration of lead, a list of ingredients, or any warning label. In fact none of the paint containers observed in the survey had labels clearly indicating that lead was present at any a specific concentration. In addition, none of the products contained any caution or warnings in regards to lead hazards.

As a result, we see an immediate need for a standardized system of informative paint labeling with special emphasis on lead content to be implemented along with a pubic education campaign.

PAINT SAMPLING AND ANALYSIS

Sixty paints and 14 pigments were purchased from retail shops in the cities of Yaoundé, Douala, Bafoussam, Bamenda, Kumba, Ngaoundéré, Garoua and Maroua between January and September 2011. The paints came from 15 different manufactures (seven local and eight foreign) and the pigments came from two local manufacturers. The paints purchased were oil-based or enamel paints in containers with quantities less than or equal to 1 kg. Water-based latex paints are less likely to contain lead (Abhay Kumar, 2009) and therefore only one sample was collected and tested in this study. Liquid pigments were purchased in 200 ml tubes. These products are generally sold to be added to paints for proper tinting depending on color specifications.

After purchasing, the paint containers were brought to CREPD’s office in Yaoundé for processing. Samples were painted onto and dried on transparent and colorless glass with a surface area of 90 cm² and placed in a wood frame holder for drying. Depending upon weather conditions and paint properties, paints were dried for 5 to 9 days. The dry paint was then scraped off of the glass slides with a razor blade onto white paper, weighed, and placed

in a labeled plastic bag with a unique sample identification number for shipment. Steps taken to avoid cross contamination included use of a new paint brush for each sample, cleaning of glass slides with solvent and acetone after scraping and before applying a new sample on its surface, use of clean razor blades, avoiding ink-containing paper at all the processing steps, and careful monitoring of compliance with these practices by all the technicians. Personal protective equipment, including laboratory overalls, eyeglasses, disposable respirator, and gloves, was utilized during the sample processing steps.

Well-processed samples were then sent using a commercial delivery service to OK International, a partner NGO in USA for analysis at Galson Laboratories (East Syracuse, New York). Samples were analyzed for total lead content by Inductively Coupled Plasma Emission Spectroscopy, after digesting the samples with modified OSHA 125G/SW846 6010C.

SAMPLING RESULTS AND DISCUSSION

Results of analysis for lead are listed in Annex 1, Table 1 sorted by manufacturer. A total of 40 samples (67%) of the paints analyzed had lead concentrations over 90 ppm, and are consequently classified as lead paint according to the U.S. standard (see Table 2). Thirty-nine samples (98%) of paints tested with lead concentrations that exceeded 90 ppm had lead concentrations over 600 ppm. Twenty of the new paint samples tested (33%) were found to be non-lead paint (lead concentration < 90 ppm) (see Table 1). The highest lead concentration reported at 500,000 ppm (50% lead by weight) was found in a metal primer manufactured by a local company. This value is 5,556 times higher than the standard value of 90 ppm. Our results indicated that there was a significant amount of variability in lead concentrations in the paint samples tested, even among those manufactured by the same company.

As expected, the only latex paint sample collected had less than 23 ppm of total lead. All 14 liquid pigments have total lead concentration below 49 ppm (see Table 3). Among the 60 new paint samples (Table 1), 24 came from Seigneurie and its subsidiary, SOCIPEC, and 14 came from Smalto, the two largest local paint companies in Cameroon. Among the 24 paint samples from Seigneurie analyzed, 9 samples were lead paints, while all 14 samples from Smalto were lead paints. These two largest paint suppliers accounted for 58% of the lead paint samples in our limited sample (23/40).

CONCLUSION

The lead concentration in consumer paint sold in Cameroon varies greatly but the majority of paints appear to contain lead above U.S. regulatory levels. The results of our limited sample indicate that paints being applied to residential structures in Cameroon contain significant concentrations of lead ranging up to 500,000 ppm. This situation is of serious concern to children's health and to workers involved in paint manufacturing, applying paints, and disturbing painted surfaces. The long-term socioeconomic impact to Cameroon may also be prodigious. The lead concentrations found in new decorative paints marketed in Cameroon indicate that lead is intentionally added as an ingredient in the manufacturing process. This practice was confirmed in an interview with at least one major paint manufacturer in the country. This practice is contrary to the global initiatives aimed at eliminating the intentional use of lead in paint worldwide. In addition, the labelling on the paints marketed in Cameroon is insufficient to inform consumers and warn workers of potential lead hazards.

The testing results presented in this study on paints marketed in Cameroon call for urgent action on the part of the Government including the development of a standard to limit lead in paint sold or distributed in Cameroon. In addition, we call on paint manufacturers making, selling or otherwise distributing paints in Cameroon to immediately phase out the use of lead in paint. Architects, engineers, and construction companies must also specify the use of paint products that do not contain lead above 90 ppm.

These measures are urgently needed to address this situation. Because the majority of lead paint marketed in Cameroon is manufactured locally, domestic measures including national regulations to mandate maximum lead levels in paint can be effective. Of course these regulations should also apply to foreign companies supplying the Cameroon paint market. In addition, manufacturers must be required to label products with a list of chemical ingredients and appropriate warnings to be introduced along with consumer education regarding the hazards of lead.

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Annex 1

Table 1 : Lead Concentration In Paint Samples (Sorted by Manufacturer)

<i>Sample ID</i>	<i>Manufacturer</i>	<i>Country of origin</i>	<i>Concentration (ppm)</i>
05811-71	CIAC	Cameroon	1600
05811-63	CITIZEN CHEMICAL INDUSTRY	Nigeria	<25
05811-70	EVER PAINT INDUSTRY	UAE	2700
20511-57	IMSA	Cameroon	<24
27711-60	INDUS-CHIMIE	IvoryCoast	2800
05811-64	INDUSTRA	IvoryCoast	5500
20511-32	International Trust	UAE	2700
05811-66	National Paint	UAE	66000
20511-55	National Paint	UAE	61000
20511-45	National Paint	UAE	54000
06811-72	National Paint	UAE	6300
05811-74	National Paint	UAE	71
20511-46	National Paint	UAE	36
27711-59	National Paint	UAE	<22
20511-30	ONIP	France	<25
05811-69	SCPM	Cameroon	960
20511-39	Seigneurie	Cameroon	500000
20511-34	Seigneurie	Cameroon	69000
05811-67	Seigneurie	Cameroon	62000
11811-05	Seigneurie	Cameroon	59000
20511-54	Seigneurie	Cameroon	34000
20511-53	Seigneurie	Cameroon	29000
11811-04	Seigneurie	Cameroon	23000
20511-44	Seigneurie	Cameroon	1800
05811-68	Seigneurie	Cameroon	310
06811-73	Seigneurie	Cameroon	<47
11811-01	Seigneurie	Cameroon	< 25
11811-02	Seigneurie	Cameroon	< 25
05811-62	Seigneurie	Cameroon	<23
11811-03	Seigneurie	Cameroon	<21
11811-08	Seigneurie	Cameroon	<22
20511-33	Seigneurie	Cameroon	<23
20511-36	Seigneurie	Cameroon	<23
11811-06	Seigneurie	Cameroon	<24
11811-07	Seigneurie	Cameroon	<24
20511-49	Seigneurie	Cameroon	<24

20511-37	Seigneurie	Cameroon	<25
20511-42	Seigneurie	Cameroon	<47
11811-17	Seigneurie/SOCIPEC	Cameroon	49
11811-18	Seigneurie/SOCIPEC	Cameroon	<23*
20511-38	Simpex	Greece	16000
20511-56	Simpex	Greece	3100
20511-50	Simpex	Greece	2800
20511-47	Simpex	Greece	2500
20511-35	Simpex	Greece	1600
11811-16	Simplex	Greece	20000
20511-31	Smalto	Cameroon	240000
20511-48	Smalto	Cameroon	43000
11811-10	Smalto	Cameroon	33000
11811-11	Smalto	Cameroon	3700
20511-40	Smalto	Cameroon	2900
20511-51	Smalto	Cameroon	2900
27711-61	Smalto	Cameroon	2500
11811-12	Smalto	Cameroon	2300
20511-52	Smalto	Cameroon	2200
05811-65	Smalto	Cameroon	2100
11811-09	Smalto	Cameroon	1500
20511-41	Smalto	Cameroon	1500
05811-75	Smalto	Cameroon	1500
20511-43	Soquicam	Cameroon	710
27711-58	VINACOLOR	Cameroon	2500

* Latex paint sample.

Table 2: Lead Concentration in Paint Samples with Concentrations Over 90 ppm

Sample ID	Manufacturer	Country of origin	Conc. (ppm)
05811-68	Seigneurie	Cameroon	310
20511-43	Soquicam	Cameroon	710
05811-69	SCPM	Cameroon	960
11811-09	Smalto	Cameroon	1500
20511-41	Smalto	Cameroon	1500
06811-75	Smalto	Cameroon	1500
20511-35	Simpex	Greece	1600
05811-71	CIAC	Cameroon	1600
20511-44	Seigneurie	Cameroon	1800
05811-65	Smalto	Cameroon	2100
20511-52	Smalto	Cameroon	2200
11811-12	Smalto	Cameroon	2300
20511-47	Simpex	Greece	2500
27711-58	VINACOLOR	Cameroon	2500
27711-61	Smalto	Cameroon	2500
20511-32	International Trust	UAE	2700
05811-70	Ever Paint Industry	UAE	2700
20511-50	Simpex	Greece	2800
27711-60	INDUS-CHIMIE	Ivory Coast	2800
20511-40	Smalto	Cameroon	2900
20511-51	Smalto	Cameroon	2900
20511-56	Simpex	Greece	3100
11811-11	Smalto	Cameroon	3700
05811-64	INDUSTRA	Ivory Coast	5500
06811-72	National Paint	UAE	6300
20511-38	Simpex	Greece	16000
11811-16	Simpex	Greece	20000
11811-04	Seigneurie	Cameroon	23000
20511-53	Seigneurie	Cameroon	29000
11811-10	Smalto	Cameroon	33000
20511-54	Seigneurie	Cameroon	34000
20511-48	Smalto	Cameroon	43000
20511-45	National Paint	UAE	54000
11811-05	Seigneurie	Cameroon	59000
20511-55	National Paint	UAE	61000
05811-67	Seigneurie	Cameroon	62000
05811-66	National Paint	UAE	66000
20511-34	Seigneurie	Cameroon	69000
20511-31	Smalto	Cameroon	240000
20511-39	Seigneurie	Cameroon	500000

Table 3: Lead Concentration In Liquid Pigments Purchased In Cameroon

<i>Sample ID</i>	<i>Manufacturer</i>	<i>Country of Origin</i>	<i>Concentration (ppm)</i>
30811-26	Liquid Pigment	Cameroon	45
11811-15	High Tec Comp	Cameroon	<23
30811-27	Liquid Pigment	Cameroon	<23
30811-20	Liquid Pigment	Cameroon	<24
30811-25	Liquid Pigment	Cameroon	<24
11811-13	High Tec Comp	Cameroon	<25
11811-19	HTC	Cameroon	<25
30811-21	Liquid Pigment	Cameroon	<25
30811-29	Liquid Pigment	Cameroon	<44
30811-28	Liquid Pigment	Cameroon	<45
30811-23	Liquid Pigment	Cameroon	<46
30811-22	Liquid Pigment	Cameroon	<48
11811-14	High Tec Comp	Cameroon	<49
30811-24	Liquid Pigment	Cameroon	<49