



Global Data on Lead in New Enamel Decorative Paints

Inception Workshop of the Project

“Promoting elimination of the use of lead paints in China and Africa”

Beijing, People's Republic of China,

25th -27th April 2016

Presenter by UNEP



Levels of lead in Paint

Results of UNEP-IPEN lead in paint testing

LEAD IN ENAMEL DECORATIVE PAINTS

NATIONAL PAINT TESTING RESULTS:
A NINE COUNTRY STUDY

Argentina, Azerbaijan, Chile, Cote d'Ivoire, Ethiopia, Ghana, Kyrgyzstan, Tunisia, Uruguay +
results from other studies for an additional 27 countries



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涂料中的铅被认为是儿童铅暴露的主要来源之一

Introduction

- ✓ Exposure to lead is much more harmful to children than adults, and the health effects are generally irreversible and can have a lifelong impact.
- ✓ The younger the child, the more harmful lead can be.
- ✓ The human fetus is the most vulnerable and a pregnant woman can transfer lead that has accumulated in her body to that of her developing child.
- ✓ The World Health Organization to list “lead caused mental retardation” as a recognized disease.
- ✓ WHO also lists it as one of the top 10 diseases whose health burden among children is due to modifiable environmental factors.



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LEAD IN PAINT
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Test results by country 新搪瓷装饰涂料总铅浓度资料汇总

Country	Number of Samples	Number of Brands	Average Lead Concentration ppm	Per cent Greater Than 90 ppm (Number)	Per cent Greater Than 600 ppm (Number)	Per cent Greater Than 10,000 ppm (Number)	Minimum ppm	Maximum ppm
Argentina	30	12	17,000	23% (7)	23% (7)	17% (5)	< 5	130,000
Azerbaijan	30	16	2,600	77% (23)	67% (20)	7% (2)	< 5	20,000
Chile	23	6	52.6	4% (1)	4% (1)	0% (0)	< 5	1,100
Cote d'Ivoire	20	7	8,700	70% (14)	65% (13)	25% (5)	< 5	42,000
Cote d'Ivoire Anti Corrosive Paints	10	5	27,500	80% (8)	80% (8)	10% (1)	< 15	260,000
Ethiopia	23	8	18,500	87% (20)	83% (19)	30% (7)	< 15	130,000
Ghana	18	8	5,030	33% (6)	28% (5)	17% (3)	< 5	42,000
Kyrgyzstan	30	11	7,160	67% (20)	57% (17)	10% (3)	< 5	99,000
Tunisia	30	16	17,900	70% (21)	63% (19)	27% (8)	< 5	170,000
Uruguay	30	10	9.8	0% (0)	0% (0)	0% (0)	< 5	63

Global Data on Lead in New Enamel Decorative Paints

铅全局数据在新的搪瓷装饰涂料

Country	Year of Study/ Report	Number of Samples	Average, ppm Lead	Per cent of Samples greater than 90 ppm Lead	Per cent of Samples greater than 600 ppm Lead	Per cent of Samples greater than 10,000 ppm Lead
Argentina ¹	2013	30	17,000	23%	23%	17%
Azerbaijan ¹	2013	30	2,570	70%	60%	7%
Armenia ²	2013	26	24,800	77%	77%	38%
Bangladesh ²	2011	6	42,300	100%	100%	83%
Belarus ⁴	2009	22	5,560	82%	68%	9%
Brazil ⁵	2013 / 2011	20	5,644	35%	30%	10%
Brazil ⁴	2009	24	15,000	42%	37%	21%
Cameroon ⁵	2011	60	23,100	67%	65%	Not available
Chile ¹	2013	23	52.6	4.3%	4.3%	0%
China ⁴	2006	64	15,100	44%	33%	25%
China ⁷	2008	58	Not available	Not available	50%	Not available
China (Taiwan) ¹²	2011	15	24,000	56%	56%	Not Available
Cote d'Ivoire ¹	2013	20	8,700	70%	65%	25%
Egypt ⁴	2006	20	26,200	65%	65%	Not Available
Ecuador ⁴	2009	10	32,000	70%	60%	Not Available
Ethiopia ¹	2013	23	18,500	87%	83%	30%
Ghana ¹	2013	18	5,030	33%	28%	17%
India ⁴	2006	72	29,700	88%	82%	47%
India ⁸	1999	24	50,800	100%	92%	54%
India ⁹	2007/ 2009	31	26,100	Not Available	84%	Not available
India ⁴	2009	22	9,410	36%	36%	36%
India ¹⁰	2009	25	32,700	72%	72%	64%
India ²	2009	26	16,600	50%	50%	19%
Indonesia ⁴		11	14,800	82%	73%	36%
Kazakhstan ²	2013	26	15,700	81%	77%	38%

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铅全局数据在新的搪瓷装饰涂料

Country	Year of Study/ Report	Number of Samples	Average, ppm Lead	Per cent of Samples greater than 90 ppm Lead	Per cent of Samples greater than 600 ppm Lead	Per cent of Samples greater than 10,000 ppm Lead
Kenya ¹¹	2012	31	14,900	87%	81%	39%
Kyrgyzstan ¹	2013	30	7,160	67%	57%	10%
Lebanon ¹²	2012	15	48,300	87%	73%	53%
Malaysia ⁶	2009	72	24,500	60%	50%	39%
Mexico ⁴	2009	20	51,900	100%	100%	95%
Nepal ³	2011	12	28,400	67%	33%	33%
Nigeria ⁴	2009	23	37,000	100%	100%	65%
Nigeria ⁶	2006	25	15,800	96%	96%	44%
Paraguay ¹²	2012	15	23,100	27%	27%	20%
Peru ⁶	2009	10	11,600	90%	80%	40%
Philippines ⁴	2009	15	28,400	67%	60%	27%
Russia ¹²	2102	21	8,340	76%	67%	19%
Senegal ⁴	2009	21	5,870	86%	76%	19%
Seychelles ⁶		28	24,900	75%	61%	43%
Singapore ⁶		41	6,990	44%	37%	7%
South Africa ⁴	2009	29	19,900	65%	62%	28%
Sri Lanka ⁴	2009	19	25,200	68%	68%	37%
Tanzania ⁴	2009	20	14,500	100%	95%	25%
Thailand ⁴	2009	17	61,900	47%	47%	41%
Thailand ¹⁴	2010	31	13,000	87%	84%	55%
Tunisia ¹	2013	30	17,900	70%	57%	27%
Uruguay ¹	2013	30	9.8	0%	0%	0%

Lead in new enamel decorative paints: *Key findings*

Red, yellow, green and other brightly colored paints had the highest lead content

Green paints also had high lead contents.
4 of 8 samples had Pb >10,000 ppm
1 sample had Pb >100,000 ppm

Yellow paints had the highest lead contents.
In 7 countries at least 1 sample had Pb >10,000 ppm
In 3 countries at least 1 sample had Pb >100,000 ppm

Red paints also had high lead contents.
In 6 countries at least 1 sample had Pb >10,000 ppm
1 sample contained 99,000 ppm Pb

White Paints had the lowest lead content



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Lead in new enamel decorative paints:

Key findings

Lead Levels in Paints

- Most of the paints tested in the countries would not meet regulatory standards established in most highly industrialized countries
- Paints with extremely high levels of lead are still available in most countries
- In most countries with lead paint, equivalent paint with no added lead is available.

涂料中铅的含量

在这些国家检测的大多数涂料不符合在大多数高度工业化国家中规定的监管标准

在九个项目国家中的五个国家，67% 以上被检测的涂料样品铅含量大于90 ppm - 这是美国的监管限值。这些国家是：阿塞拜疆、科特迪瓦、埃塞俄比亚、吉尔吉斯斯坦和突尼斯。

同样在这五个国家，57% 以上被检测的涂料样品铅含量大于600 ppm，这是阿根廷、智利和乌拉圭的监管标准。



Findings

A total of 234 cans of enamel decorative paints were purchased in retail establishments in the following nine countries: Argentina, Azerbaijan, Chile, Cote d'Ivoire, Ethiopia, Ghana, Kyrgyzstan, Tunisia, and Uruguay. An additional ten cans of anti-corrosive enamel paints were purchased in Cote d'Ivoire. All the paints – the 234 samples of decorative paints and the ten samples of anti-corrosive paints – were tested for their total lead content, dry weight.

Countries selected for testing are regionally and linguistically diverse, do not appear to have publically available data on the lead content of decorative paints for sale on their national market, and had a capable IPEN partner NGO with both the interest and the ability to carry out this project.

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调查结果

在下列九个国家的零售场所总共购买了234罐搪瓷装饰涂料：阿根廷、阿塞拜疆、智利、科特迪瓦、埃塞俄比亚、加纳、吉尔吉斯斯坦、突尼斯和乌拉圭。在科特迪瓦购买了另外十罐防腐蚀搪瓷涂料。所有这些涂料 – 234个装饰涂料样品和十个防腐蚀涂料样品都进行了总铅含量（干重）检测。

被选来进行检测的国家所在区域和使用的语言不同，对他们国家市场上出售的装饰涂料的铅含量似乎没有可公开获得的资料，但有一个能干的IPEN伙伴非政府组织，有兴趣和能力开展这个项目。

Paints with extremely high levels of lead are still available in most countries.

In seven of the nine countries, some paint samples tested had lead concentrations greater than 10,000 ppm. Five of these samples were from Argentina; two from Azerbaijan; six from Cote d'Ivoire; ten from Ethiopia; three from Ghana; three from Kyrgyzstan; and eight from Tunisia.

In four of the nine countries – Argentina, Ethiopia, Kyrgyzstan, and Tunisia – one or more of the paints tested had lead levels of 99,100 ppm lead or greater; they were all nearly 10 percent or more lead by weight.

In most countries with lead paint, equivalent paint with no added lead is available.

In six of the seven countries with lead paint – Argentina, Azerbaijan, Cote d'Ivoire, Ghana, Kyrgyzstan and Tunisia, paints with very low lead contents coexists in the market with lead paint.

铅含量极高的涂料仍可在多数国家获得。

在这九个国家中的七个国家，某些被检测样品铅的浓度高于10,000 ppm。这些样品中的五个来自阿根廷；两个来自阿塞拜疆；六个来自科特迪瓦；十个来自埃塞俄比亚；三个来自加纳，三个来自吉尔吉斯斯坦；八个来自突尼斯。

在这九个国家中的四个国家 - 阿根廷、埃塞俄比亚、吉尔吉斯斯坦，突尼斯 - 一个或一个以上被检测的涂料的铅含量为99,100 ppm或更高；其铅含量按重量计，全都接近或大于百分之十。

在大多数有含铅涂料的国家都能得到未加铅的等效的涂料。

在有含铅涂料的七个国家中的六个国家 - 阿根廷、阿塞拜疆、科特迪瓦、加纳、吉尔吉斯斯坦和突尼斯铅含量非常低的涂料和铅涂料在市场上同时存在。



Lead Concentrations in Paints by Color

White Paints had the lowest lead contentThe white decorative paints tested had, on average, the lowest lead content, and many contained no lead at the level of detection or only trace quantities of lead. Only one of the 77 white samples tested contained more than 5,500 ppm lead.

Yellow, red and other brightly colored paints had the highest lead contentThe yellow decorative paints tested had, on average, the highest lead contents. A total of 58 samples of yellow decorative paint were tested. In seven of the nine countries, one or more of the yellow decorative paints tested had lead content greater than 10,000 ppm. In three of the nine countries, at least one of these had lead content greater than 100,000 ppm lead.

Many red paints had high lead contentA total of 69 samples of red decorative paints were tested. In six of the nine countries, one or more of the red decorative paints had lead content greater than 10,000 ppm. None had lead content greater than 100,000 ppm lead but one sample of red decorative contained 99,000 ppm lead.

Green paints also had high lead contentA total of 30 decorative paints in colors other than white, red and yellow were tested.

Eight of these were green. Half of the green decorative paints tested contained more than 10,000 ppm lead; one contained more than 100,000 ppm lead.

one contained more than 100,000 ppm lead



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不同颜色涂料中的铅浓度

白色涂料铅含量最低

被检测的白色装饰涂料平均铅含量最低，许多检测不到铅或只有痕量的铅。在被检测的77个白色涂料样品中只有一个铅含量大于5,500 ppm。

黄色、红色和其他色彩鲜艳的涂料铅含量最高

被检测的黄色装饰涂料平均铅含量最高。总共检测了58个黄色装饰涂料样品。在这九个国家中的七个国家，被检测的一个或一个以上黄色装饰涂料的铅含量大于10,000 ppm。在这九个国家中的三个国家，至少有一个被检测的黄色涂料样品的铅含量大于100,000 ppm。

许多红色涂料的铅含量高

总共检测了69个红色装饰涂料样品。在这九个国家中的六个国家，一个或一个以上红色装饰涂料的铅含量大于10,000 ppm。没有铅含量大于100,000 ppm的，但有一个红色装饰涂料样品含99,000 ppm的铅。

绿色涂料铅含量也高

总共检测了30个白色、黄色和红色以外的其他颜色的装饰涂料样品。

这些涂料样品中的八个是绿色的。所检测的绿色装饰涂料的一半铅含量大于10,000 ppm；一个含量大于100,000 ppm。



Lead Concentrations in Paints by Country

Few countries have established regulatory frameworks, but those that have, generally have lower lead paint levels

In two of the nine countries, Chile and Uruguay, all the enamel decorative paints tested had low total lead concentrations.

Both Chile and Uruguay have recently enacted national executive decrees that prohibit the production, import, distribution, sale and use of decorative paints with a lead concentration above 600 ppm.

In each of the other seven countries, two or more of the samples of enamel decorative paints tested had lead content greater than 10,000 ppm. In four of these countries, at least one of the decorative paints tested had a lead concentration at or above 99,000 ppm lead. In five of the nine countries, more than half of the decorative paint samples tested had lead content greater than 600 ppm lead, the regulatory limit in many other countries (See Table A below for a summary of total data for new decorative enamel paint in the nine countries of the present study)

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各国涂料中铅的浓度

很少有国家建立了监管框架，但是已有监管框架的国家涂料中铅含量较低

在这九个国家中的两个国家 - 智利和乌拉圭 - 所有被检测的搪瓷装饰涂料的总铅浓度都低。

最近，智利和乌拉圭都制定了行政法规，禁止生产、进口、分销、出售和使用铅浓度高于600 ppm的装饰涂料。

在其余七个国家中的每一个国家，有两个或两个以上被检测的搪瓷装饰涂料样品铅含量大于10,000 ppm。在这些国家中的四个国家，至少有一个被检测的装饰涂料的铅浓度为99,000 ppm 或大于99,000 ppm。在这九个国家中的五个国家，一半多被检测的装饰涂料样品的铅含量大于600ppm，这是许多其他国家的监管限值（见以下表A，该表归纳了本研究中九个国家新搪瓷装饰涂料的总铅含量资料）