



# LEAD IN SPRAY PAINTS FOR CONSUMER USE IN THE PHILIPPINES

July 2020



## NATIONAL REPORT

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## ACKNOWLEDGMENTS

We take this opportunity to thank all those who were instrumental in compiling and shaping this study, especially Manny Calonzo and Thony Dizon who purchased the spray paint samples from retailers in 20 cities and one municipality in Metro Manila and Luzon regions, and the Global Lead Paint Elimination Campaign Team of the International Pollutants Elimination Network (IPEN) for their strategic guidance and support. We also thank the Philippine Association of Paint Manufacturers (PAPM) for their invaluable feedback on the study findings and recommendations, and for their efforts to promote industrial compliance to the country's lead paint regulation.

This report presents the first publicly available data on the total lead concentrations of paints in aerosol cans, popularly referred to as spray paints, which are sold for consumer or general use by paint shops and various retail outlets in the Philippines. The report also recommends action steps by different stakeholders to protect children and other vulnerable groups from exposure to lead.

This report was undertaken as part of the EcoWaste Coalition's Campaign on Toxic Chemicals in Products and IPEN's Global Lead Paint Elimination Campaign. It was conducted in the Philippines by the EcoWaste Coalition in partnership with IPEN, and funded by the Swedish Society for Nature Conservation (SSNC). Responsibility for the content of this report lies entirely with the EcoWaste Coalition and IPEN.



for a toxics-free future

Established in 1998, IPEN is the global environmental network of nearly 600 public interest NGOs in over 125 countries working to eliminate and reduce the most hazardous substances to forge a toxics-free future for all. Additional information materials about IPEN's Global Lead Paint Elimination Campaign can be accessed at: <https://ipen.org/projects/eliminating-lead-paint>



Founded in 2000, the EcoWaste Coalition is a non-profit network of over 140 public interest groups in the Philippines that have coalesced to advance "a zero waste and toxics-free society where communities enjoy a safe and healthy environment."

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# 1. BACKGROUND

## 1.1 BRIEF OVERVIEW OF HEALTH AND ECONOMIC IMPACTS OF LEAD EXPOSURE

Children are exposed to lead from paint when surfaces painted with lead-containing paint begins to chip or deteriorate, since this causes lead to be released to dust and soil.<sup>[1]</sup> This is then ingested through normal hand-to-mouth behavior by children. They might also pick up paint chips and put them directly into their mouths, which can be especially harmful since the lead content is typically much higher than what is found in dust and soils. When toys, play equipment, or other articles are painted with lead paint, children may directly ingest the lead-contaminated, dried paint when chewing on them. Playground equipment can also be a direct source of exposure since children will get lead paint on their hands when playing. In addition, lead exposure can occur through inhalation.

Lead exposure is especially harmful to children, especially aged six and under. Once lead enters a child's body through ingestion, inhalation, or across the placenta, it has the potential to damage several biological systems and pathways. The primary target is the central nervous system and the brain, but lead can also affect the blood system, the kidneys, and the skeleton.<sup>[5]</sup> Lead is also categorized as an endocrine-disrupting chemical (EDC).<sup>[6]</sup>

According to the World Health Organization (WHO): “There is no known level of lead exposure that is considered safe.”<sup>[8]</sup>

When a young child is exposed to lead, the harm to her or his nervous system makes it more likely that the child will have difficulties in school and engage in impulsive and violent behavior.<sup>[9]</sup> Lead exposure in young children is also linked to increased rates of hyperactivity, inattentiveness, failure to graduate from high school, conduct disorder, juvenile delinquency, drug use, and incarceration.<sup>[2]</sup> Lead exposure impacts on children continue throughout life and have a long-term impact on a child's work performance, and—on average—are related to decreased economic success.

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 dol-

lars\* per year.<sup>[10]</sup> The study considered the neurodevelopmental effects on lead-exposed children, as measured by reduced IQ points, and it correlated lead exposure-related reductions in children's IQ scores to reductions in lifetime economic productivity, as expressed in lifelong earning power.

## 1.2 THE USE OF LEAD IN PAINT

Paints contain high levels of lead when the paint manufacturer intentionally adds one or more leaded compounds to the paint for some purpose. A paint product may also contain some amount of lead when paint ingredients contaminated with lead are used, or when there is cross-contamination from other product lines in the same factory. Leaded paint ingredients are most commonly intentionally used in solvent-based paint due to their chemical properties, and solvent-based paints have been found to have high lead content in many countries.<sup>[11-13]</sup>

The leaded compounds most commonly added to paints are pigments. Pigments are used to give the paint its color, make the paint opaque (so it covers well), and protect the paint and the underlying surface from degradation caused by exposure to sunlight. Lead-based pigments are sometimes used alone, and sometimes used in combination with other pigments.

Leaded compounds may also be added to enamel paints for use as driers (sometimes called drying agents or drying catalysts). Leaded compounds are also sometimes added to paints used on metal surfaces to inhibit rust or corrosion. The most common of these is lead tetroxide, sometimes called red lead or minium.

Paints without added lead have been widely available for decades and are used by manufacturers producing the highest quality paints. When a paint manufacturer does not intentionally add lead compounds in the formulation of its paints and takes care to avoid the use of paint ingredients that are contaminated with lead, the lead content of the paint will be very low—less than 90 parts per million (ppm) lead by dry weight, and frequently down to 10 ppm or less.

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\* 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.

Most highly industrial countries adopted laws or regulations to control the lead content of decorative paints beginning in the 1970s and 1980s. Many also imposed controls on the lead content of paints used on toys and for other applications such as in playground equipment which highly likely contributes to lead exposure in children. These regulatory actions were taken based on scientific and medical findings that lead paint is a major source of lead exposure in children, and that lead exposure in children causes serious harm, especially to children aged six years and under.

The current standard for decorative paints in e.g., the U.S., the Philippines, India, and China is a total maximum lead content of 90 ppm, and adherence to this ensures that a manufacturer can sell its paint anywhere in the world. This standard is also recommended for all paints, including paints for industrial applications, in the *Model Law and Guidance for Regulating Lead Paint*,\* which was developed by the Global Alliance to Eliminate Lead Paint (GAELP) and published by the UN Environment Programme.

### 1.3 REGULATORY FRAMEWORK IN THE PHILIPPINES

The Philippines through the Department of Environment and Natural Resources (DENR) Administrative Order 2013-24, also known as the Chemical Control Order for Lead and Lead Compounds (or the CCO), establishes a total lead content limit of 90 parts per million (ppm) for lead used as pigment, drying agent or for some other intentional purposes in paint formulations.

The CCO sets a phase-out deadline of three years (2013-2016) for lead-containing paints used for architectural, decorative and household applications, and six years (2013-2019) for lead-containing paints used for industrial applications. By 2020, the Philippines would have completed the phase-out of lead-containing paints covering all paint categories.

Complementary directives issued by the Department of Education (DepEd), the Department of Interior and Local Government (DILG) and the Department of Social Work and Development (DSWD) further reinforced the required use of lead-safe paints in line with DENR A.O. 2013-24. DepEd Order 4, Series of 2017 on the “Mandatory Use of Lead-Safe Paints in Schools” requires the use of independently certified lead-safe paints/coatings in the painting and repainting, among other things, of school facilities and amenities such as playground, covered court and the like.

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\* <https://www.unenvironment.org/resources/publication/model-law-and-guidance-regulating-lead-paint>

DILG Memorandum Circular 2018-26 on the “Mandatory Use of Lead-Safe Paints by Local Government Units (LGUs)” enjoins provincial governors, city mayors, municipal mayors and barangay chairpersons to adopt a “Lead-Safe Paint Procurement Policy” for painting jobs paid out of public funds. This circular further instructs local officials to ensure prohibited uses of lead, including their use in indoor and outdoor playground equipment, are duly observed.

The DSWD memorandum issued in 2017 requires the use of lead safe paints as a mandatory requirement in facilities catering to disadvantaged and vulnerable sectors. According to the memorandum, “the Standards Bureau/Unit shall ensure compliance by all social welfare and development agencies that their residential and non-residential facilities, including furniture, fixture and equipment, are using lead safe paints or coatings prior to licensing or re-accreditation.”

## 2. RESULTS

From November 2, 2019 to February 25, 2020, 87 cans of spray paints intended for consumer or general use were purchased by the EcoWaste Coalition from paint, home improvement, general merchandise and office and school supplies stores in 20 cities (12 in Metro Manila and eight other cities in Batangas, Benguet, Cavite, Laguna, Nueva Ecija, Pampanga, Rizal, and Zambales provinces) and one municipality (Baliuag, Bulacan).

The paints represented 37 different brands produced by 23 manufacturers in seven countries, including Canada, China, Indonesia, Malaysia, Taiwan, Thailand and the USA. However, 39 of the samples provided no information as to their manufacturers, importers or distributors, while 43 samples lacked information about their countries of manufacture. Among the lead spray paints detected were products imported from countries with existing legally-binding lead paint regulations such as China and Thailand.



**Figure 1: A customer examines a spray paint on sale in a general merchandise store.**

As confirmed by the Philippine Association of Paint Manufacturers (PAPM) with the EcoWaste Coalition and IPEN, none of the analyzed samples in this study was produced by companies affiliated with the PAPM.

In most cases, bright-colored paints such as yellow, orange, green or red were selected. The availability of these paints in retail establishments suggested that they were intended to be used within home and school environments.

Each spray paint was first applied onto individually numbered duplicates of labeled wood pieces and then screened for lead using





Figure 2: Photo of the analyzed spray paint samples.



Figure 3: A volunteer sprays the paint on a wood lath prior to XRF screening.



**Figure 4: Photos of King Sfon and PoweBon spray paints.**

a handheld Olympus Innov-X Delta X-Ray Fluorescence (XRF) analytical device after the sample had dried at room temperature.

The aerosol cans of samples that screened positive for lead in excess of 90 ppm were then sent to SGS Philippines for confirmatory analysis using US EPA Method 3052:1996 and performed through inductively coupled plasma - optical emission spectrometry (ICP-OES).

This study shows that:

- 37 out of 87 analyzed spray paints representing 19 brands were lead paints, i.e., they contained lead concentrations above 90 ppm, dry weight. In addition, 29 paints contained dangerously high lead concentrations above 10,000 ppm.
- 19 out of 37 analyzed brands sold at least one lead paint, i.e., a paint with lead concentration above 90 ppm. Also, 16 of the 37 analyzed brands sold at least one paint with dangerously high lead concentrations above 10,000 ppm.
- 35 of the 73 bright-colored paints were lead paints, i.e., they contained lead concentrations above 90 ppm. Yellow paints were the most hazardous with 14 paints containing lead concentrations greater

than 10,000 ppm, while 11 green paints also contained dangerously high lead concentrations above 10,000 ppm.

- The two samples with the highest lead concentrations detected were a green King Sfon spray paint (country of manufacture not indicated) with 82,100 ppm and a yellow PowerBon spray paint imported from Taiwan with 64,000 ppm.
- Only one of the 19 analyzed brands with lead paints provided information about lead on their labels and most paints carried little information about ingredients. Four samples with “No Pb” pictogram on their labels were found to have dangerously high lead concentrations ranging from 14,600 to 33,300 ppm.

# 3. CONCLUSIONS AND RECOMMENDATIONS

The results of this study provide a strong justification for the strict monitoring of compliance to the country's groundbreaking lead paint regulation that bans total lead content above 90 ppm in all types of paint products, including paints in aerosol cans. The fact that 37 of the 87 analyzed spray paints had total lead concentrations above the regulatory limit, of which 29 contained dangerous high lead levels exceeding 10,000 ppm, underscores this apparent need for effective compliance monitoring to ensure that only lead-safe paints are offered for sale to consumers. Ensuring that spray paints pose no lead-based hazards is absolutely required as these paints are marketed as ideal for almost all types of surfaces and painting applications - e.g., as a touch-up paint for cars and household appliances, as a material for school projects and as a convenient stuff for sprucing up accessories and decors - and are accessible to all consumers.

To promote full compliance to the country's phase-out of all lead-containing paints, the EcoWaste Coalition and IPEN recommend the following:

***For the Department of Environment and Natural Resources (DENR)*** to convene a multistakeholders' dialogue to recognize successes, determine gaps and identify steps toward a more effective enforcement of the regulation banning all lead paints.

***For paint manufacturers, importers and distributors*** to take back their remaining stocks of old lead-containing paints from all retail outlets.

***For paint manufacturers***, including those that export to the Philippines, to obtain third-party Lead Safe Paint® certification to assist consumers in making an informed choice when buying paints.

***For consumers*** to insist on their rights to product information and to product safety and to refrain from buying inadequately labeled and uncertified paint products.

***For all stakeholders*** to support policies and programs that will contribute to reduced children's, women's and workers' exposure to lead from lead-containing paint, dust and soil.

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# APPENDIX

## MATERIALS AND METHODS

For this study, the EcoWaste Coalition procured a total of 87 cans of spray paints intended for home or general use. The samples, costing P50 to P450 per unit, were obtained on November 2, 2019 to February 25, 2020 from diverse retail outlets, including hardware stores, home improvement centers, general merchandise vendors, and office and school supplies shops located in 20 cities in Metro Manila (Caloocan, Las Piñas, Makati, Mandaluyong, Manila, Marikina, Muntinlupa, Pasay, Quezon, San Juan, Taguig and Valenzuela Cities) and the provinces (Tanauan City, Batangas; Baguio City, Benguet; Imus City, Cavite; Sta. Rosa City, Laguna; Gapan City, Nueva Ecija; Angeles City, Pampanga; Antipolo City, Rizal; and Olongapo City, Zambales), and one municipality (Baliuag, Bulacan).



**Figure 5: Photo of the 15 spray paint samples with highest lead concentrations.**

Paints representing 37 different brands produced by 23 manufacturers based in Canada, China, Indonesia, Malaysia, Taiwan, Thailand and the USA were purchased. Thirty-nine of the 87 samples provided no information as to which companies manufactured, imported or distributed them, and 43 of the samples indicated no information as to their countries of manufacture.

In most cases, brightly-colored paints such as yellow, orange, green or red were selected. The availability of these paints in retail establishments

suggested that they were intended to be used within home and school environments.

The EcoWaste Coalition first screened the samples for lead using a hand-held Olympus Innov-X Delta X-Ray Fluorescence (XRF) analytical device. The samples were sprayed onto individually numbered duplicates of labeled wood pieces, dried at room temperature and then subjected to XRF screening. The gadget’s limit of detection for lead is 3 -7 ppm. To ensure accurate analyses, calibrations were performed when the XRF analyzer is started or restarted.

Spray paint samples that were found to contain total lead content above 90 ppm, as per XRF screening, were selected for confirmatory analysis by SGS Philippines, a government-accredited testing company with a network of offices and laboratories across the country. The analysis was carried out based on the US EPA Method 3052:1996, and performed by inductively coupled plasma - optical emission spectrometry (ICP-OES).

**TABLE 1. TOP FIFTEEN SPRAY PAINTS WITH THE HIGHEST LEAD CONTENT.**

Rank	Brand	Manufacturer (Country of Manufacture)	Color	Lead Content (ppm)
1	King Sfon	Not indicated	Green	82,100
2	PowerBon	PowerBon Co. Ltd. (Taiwan)	Yellow	64,000
3	Klomonkey	Not indicated	Green	58,800
4	Koby	Not indicated	Yellow	54,500
5	MR. D.I.Y.	Bricolage Distributor, Inc	Yellow	50,700
6	JM	Not indicated	Green	49,700
7	Yandy	Not indicated	Yellow	47,500
8	Standard	Not indicated	Yellow	39,300
9	Parlux	P.L. Chemical (UK) Co. Ltd	Green	34,500
10	SuperMova	Not indicated	Yellow	34,500
11	Sinag	Not indicated	Yellow	33,300
12	JM	Not indicated	Yellow	32,500
13	Koby	Not indicated	Green	32,400
14	Lotus	Lotus Tool Group-Philippines (China)	Yellow	29,400
15	Yao Dong Bang	Not indicated	Green	29,300

**TABLE 2.** SPRAY PAINTS INCLUDED IN THE STUDY.

Sample No.	Brand	Color	Volume	Price (PHP)	Batch No.	Purchase Date (d/m/y)	Is there website on label?
PHL-01	Bosny	Yellow	400 cc	100	0231-2-1#41	07/11/19	Yes
PHL-02	Champ	Yellow	400 ml	110	20180427	03/11/19	No
PHL-03	Koby	Yellow	450 ml	150	2019/04/04	02/11/19	No
PHL-04	Lotus	Yellow	400 ml	108.50	201905P019	07/11/19	Yes
PHL-05	Nikko	Yellow	400 cc	219.50	18080085	05/11/19	No
PHL-06	Pylox	Blue	400 cc	139.75	1106072896	09/11/19	No
PHL-07	Pylox	Yellow	400 cc	120	14 June 2018	XX/11/19	No
PHL-08	Ace	Blue	340 g	219.75	11196427A	08/11/19	Yes
PHL-09	Ace	Black	425 g	299.75	100005A07	08/11/19	Yes
PHL-10	RJ London	Red	400 cc	299.75	24AI21 SI	08/11/19	Yes
PHL-11	Rust-Oleum	Yellow	340 g	220	284987 NFFP	08/11/19	Yes
PHL-12	VHT	Orange	329 g	450	ESP123000	08/11/19	Yes
PHL-13	White Tiger	Black	450 ml	60	2018/11/17	20/11/19	No
PHL-14	Krylon	Yellow	340 g	220	K05353802	07/11/19	Yes
PHL-15	RJ London	Yellow	400 cc	220	332225 SLI	07/11/19	Yes
PHL-16	Sherlux	Yellow	400 cc	220	03-20-19	07/11/19	No
PHL-17	Abro	Black	227 g	191.80	12612 0192666	09/11/19	Yes
PHL-18	Premium Decor	Red	340 g	395	S-15635 18 211	09/11/19	No
PHL-19	Premium Decor	Orange	340 g	395	P-15467 15 348	09/11/19	No
PHL-20	Krylon	Orange	340 g	220	K05241107	09/11/19	Yes
PHL-21	Valspar	Black	340 g	110	B2KG005312	09/11/19	No
PHL-22	Valspar	Purple	340 g	110	B2KG003311	09/11/19	No
PHL-23	Spray Paint	Clear	400 ml	100	Not indicated	09/11/19	No



Sample No.	Brand	Color	Volume	Price (PHP)	Batch No.	Purchase Date (d/m/y)	Is there website on label?
PHL-24	Colorz	Yellow	400 ml	93	2021-05-23	10/11/19	No
PHL-25	Pylox	Green	400 cc	110.75	19 Nov 2012	10/11/19	No
PHL-26	Standard	Red	400 ml	120	Aug 01 2016	10/11/19	No
PHL-27	Standard	Yellow	400 ml	120	Apr 05, 2016	10/11/19	No
PHL-28	Bosny	Orange	400 cc	170	1312 985	11/11/19	Yes
PHL-29	JM	Red	400 ml	99	06/06/2019	11/11/19	No
PHL-30	JM	Yellow	400 ml	99.75	22/04/2018	11/11/19	No
PHL-31	RSTAR	Red	400 ml	99.75	2019/09/18	11/11/19	No
PHL-32	RSTAR	Yellow	400 ml	99.75	2017/11/29	11/11/19	No
PHL-33	Uni-Tech	Orange	400 ml	89.75	2019/06/24	11/11/19	No
PHL-34	Uni-Tech	Yellow	400 ml	89.75	2019/06/24	11/11/19	No
PHL-35	X-O Rust	Orange	340 g	295	S-15875 18 303	12/11/19	No
PHL-36	Klomonkey	Green	450 ml	57	2018/06/23	13/11/19	No
PHL-37	Klomonkey	Red	450 ml	53	2018/06/23	13/11/19	No
PHL-38	White Tiger	Red	450 ml	53	2018/10/27	13/11/19	No
PHL-39	White Tiger	Clear	450 ml	53	2018/11/17	13/11/19	No
PHL-40	Standard	Green	400 ml	53	Feb 01, 2019	13/11/19	No
PHL-41	Anton	Red	400 ml	84	2018/11/12	14/11/19	No
PHL-42	Pross	Green	400 g	50	20191230	14/11/19	No
PHL-43	Botny	Maroon	400 ml	111	26C18BP	14/11/19	No
PHL-44	White Tiger	Red	450 ml	53	2018/11/04	14/11/19	No
PHL-45	JM	Green	400 ml	90	08/08/018	14/11/19	No
PHL-46	Sinag (white body)	Yellow	400 ml	82	15/10/2017	14/11/19	No

Sample No.	Brand	Color	Volume	Price (PHP)	Batch No.	Purchase Date (d/m/y)	Is there website on label?
PHL-47	Sinag (green body)	Yellow	400 ml	82	Jul 02, 2016	14/11/19	No
PHL-48	SupeMova	Yellow	400 cc	82	18/06/2015	14/11/19	No
PHL-49	RSTAR	Green	400 ml	99.75	2019/03/23	16/11/19	No
PHL-50	Uni-Tech	Green	400 ml	99.75	2019/04/12	16/11/19	No
PHL-51	Koby	Red	450 ml	150	2019/04/01	16/11/19	No
PHL-52	Koby	Green	450 ml	150	2019/06/24	16/11/19	No
PHL-53	Lotus	Red	400 ml	109	Not indicated	17/11/19	No
PHL-54	PowerBon	Yellow	400 ml	199.75	2015.11.25	17/11/19	No
PHL-55	Colorz	Green	400 ml	160	2022/09/27	17/11/19	No
PHL-56	Colorz	Red	400 ml	160	2022/09/27	17/11/19	No
PHL-57	PowerBon	Green	400 ml	199.75	2011.08.29	17/11/19	No
PHL-58	Z-Spray	Red	400 cc	119.75	381822 OZU	17/11/19	Yes
PHL-59	Duwell	Yellow	400 ml	100	Not indicated	18/11/19	No
PHL-60	Yao Dong Bang	Blue	400 ml	60	24/03/2019	18/11/19	No
PHL-61	Yao Dong Bang	Green	400 ml	60	24/03/2019	18/11/19	No
PHL-62	Botny	Yellow	400 ml	105	15A19BP	18/11/19	No
PHL-63	Standard	Yellow	400 ml	111	Nov 12, 2018	18/11/19	No
PHL-64	Sinag	Green	400 ml	89.75	15/10/2017	19/11/19	No
PHL-65	Sinag	Orange	400 ml	89.75	15/10/2017	19/11/19	No
PHL-66	Champ	Green	400 ml	110	20181022	20/11/19	No
PHL-67	Bosny	Red	400 cc	112	13/06/2019	21/11/19	Yes
PHL-68	Klomonkey	White	450 ml	55	2018/06/23	21/11/19	No
PHL-69	Botny	Orange	400 ml	105	27F18BP	21/11/19	No
PHL-70	Botny	Green	400 ml	299	03042017	21/11/19	No
PHL-71	Bosny	Green	400 cc	120	16/07/2018	21/11/19	Yes

Sample No.	Brand	Color	Volume	Price (PHP)	Batch No.	Purchase Date (d/m/y)	Is there website on label?
PHL-72	SupeMova	Cream	400 cc	83	Not indicated	23/11/19	No
PHL-73	SupeMova	Purple	400 cc	83	21/07/2014	23/11/19	No
PHL-74	Bosny	Red	400 cc	108.95	25/05/2019	24/11/19	Yes
PHL-75	Posny	Yellow	400 g	120	02/07/2014	24/11/19	No
PHL-76	PowerBon	Red	400 ml	199.75	2015.04.13	25/11/19	No
PHL-77	MR. D.I.Y.	Green	400 ml	85	19/10/2019	21/2/20	No
PHL-78	MR. D.I.Y.	Red	400 ml	85	19/10/2019	21/2/20	No
PHL-79	MR. D.I.Y.	Yellow	400 ml	85	24/10/2019	21/2/20	No.
PHL-80	Yandy	Green	400 ml	120	2020/01/05	24/2/20	No
PHL-81	Yandy	Red	400 ml	120	2020/01/05	24/2/20	No
PHL-82	Yandy	Yellow	400 ml	120	2019/09/22	24/2/20	No
PHL-83	Parlux	Green	400 cc	100	2016/05/27	24/2/20	No
PHL-84	Parlux	Red	400 cc	100	2018/04/16	24/2/20	No
PHL-85	MR. D.I.Y.	Green	400 ml	95	20/10/2019	25/2/20	No
PHL-86	Yao Dong Bang	Red	400 ml	100	04/09/2019	25/2/20	No
PHL-87	King Sfon	Green	400 ml	100	2015/05/09	25/2/20	No

**TABLE 3.** RESULTS OF LABORATORY ANALYSIS OF SPRAY PAINTS.

Sample No.	Brand	Color	Lead Content, Dry Weight (ppm)	Country of Brand Headquarters	Country of Manufacture	Is there information on can about lead content of paint?
PHL-03	Koby	Yellow	54,500	Unknown	Not indicated	No
PHL-04	Lotus	Yellow	29,400	Unknown	China	No
PHL-06	Pylox	Blue	644	Japan	Malaysia	"Lead sulfochrome"
PHL-24	Colorz	Yellow	13,200	Thailand	Thailand	No
PHL-27	Standard	Yellow	18,500	Unknown	Not indicated	No
PHL-30	JM	Yellow	32,500	Unknown	Not indicated	No
PHL-32	RSTAR	Yellow	18,100	Unknown	China	No
PHL-33	Uni-Tech	Orange	11,700	Unknown	Not indicated	No
PHL-34	Uni-Tech	Yellow	14,700	Unknown	Not indicated	No
PHL-36	Klomon-key	Green	58,800	Unknown	Not indicated	No
PHL-38	White Tiger	Red	14,300	Unknown	China	No
PHL-40	Standard	Green	20,400	Unknown	Not indicated	No
PHL-41	Anton	Red	5,900	Unknown	China	No
PHL-45	JM	Green	49,700	Unknown	Not indicated	No
PHL-46	Sinag (white body)	Yellow	33,300	Unknown	Not indicated	"No Pb"
PHL-47	Sinag (green body)	Yellow	18,100	Unknown	Not indicated	"No Pb"
PHL-48	Supemova	Yellow	34,500	Unknown	Not indicated	No
PHL-49	RSTAR	Green	17,800	Unknown	China	No
PHL-50	Uni-Tech	Green	9,100	Unknown	Not indicated	No
PHL-51	Koby	Red	12,800	Unknown	Not indicated	No
PHL-52	Koby	Green	32,400	Unknown	Not Indicated	No
PHL-54	PowerBon	Yellow	64,000	Taiwan	Taiwan	No

<b>Sample No.</b>	<b>Brand</b>	<b>Color</b>	<b>Lead Content, Dry Weight (ppm)</b>	<b>Country of Brand Headquarters</b>	<b>Country of Manufacture</b>	<b>Is there information on can about lead content of paint?</b>
PHL-55	Colorz	Green	3,000	Thailand	Thailand	No
PHL-56	Colorz	Red	665	Thailand	Thailand	No
PHL-57	PowerBon	Green	21,200	Taiwan	Taiwan	No
PHL-61	Yao Dong Bang	Green	29,300	Unknown	Not indicated	No
PHL-63	Standard	Yellow	39,300	Unknown	Not indicated	No
PHL-64	Sinag	Green	14,600	Unknown	Not indicated	“No Pb”
PHL-65	Sinag	Orange	24,000	Unknown	Not indicated	“No Pb”
PHL-72	SupeMova	Cream	8,100	Unknown	Not indicated	No
PHL-76	PowerBon	Red	17,800	Taiwan	Taiwan	No
PHL-79	MR. D.I.Y.	Yellow	50,700	Unknown	China	No
PHL-80	Yandy	Green	26,500	Unknown	China	No
PHL-82	Yandy	Yellow	47,500	Unknown	China	No
PHL-83	Parlux	Green	34,500	Unknown	Not indicated	No
PHL-84	Parlux	Red	1,700	Unknown	Not indicated	No
PHL-87	King Sfon	Green	82,100	Unknown	Not indicated	No

**TABLE 4.** DISTRIBUTION OF LEAD CONCENTRATION BY COLOR.

Color	No. of Samples	No. of Samples Above 90 ppm	No. of Samples Above 10,000 ppm	Minimum Lead Content (ppm)	Maximum Lead Content (ppm)
Yellow	14	14	14	13,200	64,000
Green	13	13	11	3,000	82,100
Red	6	6	3	665	17,800
Orange	2	2	2	11,700	24,000
Blue	1	1	0	644	644
Cream	1	1	0	8,100	8,100

**TABLE 5.** LIST OF BRANDS WITH AT LEAST ONE PAINT EXCEEDING THE 90 PPM TOTAL LEAD CONTENT LIMIT.

Paint Brand	Color
Anton	Red
Colorz	Green, red, yellow
JM	Green, yellow
King Sfon	Green
Klomonkey	Green
Koby	Green, red, yellow
Lotus	Yellow
MR. D.I.Y.	Yellow
Parlux	Green, red
Pylox	Blue
PowerBon	Green, red, yellow
RSTAR	Green, yellow
Sinag	Green, orange, yellow
Standard	Green, yellow
SupeMova	Cream, yellow
Uni-Tech	Green, orange, yellow
White Tiger	Red
Yao Dong Bang	Green
Yandy	Green, yellow

**TABLE 6.** LIST OF BRANDS WITH AT LEAST ONE PAINT COMPLIANT WITH THE 90 PPM TOTAL LEAD CONTENT LIMIT.

<b>Paint Brand</b>	<b>Color</b>
Abro	Black
Ace	Black, blue
Bosny	Green, orange, red, yellow
Botny	Green, maroon, orange, yellow
Champ	Green, yellow
Duwell	Yellow
JM	Red
Krylon	Orange, yellow
Klomonkey	White, red
Lotus	Red
MR. D.I.Y.	Green, red
Nikko	Yellow
Pylox	Green, yellow
Posny	Yellow
Premium Décor	Red, orange
Pross	Green, red
RJ London	Red, yellow
RSTAR	Red
Rust-Oleum	Yellow
Sherlux	Yellow
Spray Paint	Clear
Standard	Red
SupeMova	Purple
Valspar	Black, purple
VHT	Orange
White Tiger	Black, clear, red
X-O Rust	Orange
Yao Dong Bang	Blue, red
Z-Spray	Red



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