LEAD IN PLAYGROUND EQUIPMENT IN THE PHILIPPINES

October 2019

EcoWaste Coalition

Sweden
Sverige

IPEN
for a toxics-free future

ACKNOWLEDGMENTS

We take this opportunity to thank all those who were instrumental in compiling and shaping this study, particularly our colleagues Thony Dizon, Jover Larion, George Catague, Jr. and Manny Calonzo who did the field investigation, and the Interfacing Development Interventions for Sustainability and the Nagkakaisang Lakas ng mga Mangangalakal sa Longos for the information on some of the playgrounds visited.

This report presents new data on the total lead content of painted playground equipment found in facilities managed and maintained by local government agencies. The report also recommends action steps by different stakeholders to protect children from exposure to lead.

This report was undertaken as part of 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 Government. Responsibility for the content lies entirely with IPEN and the EcoWaste Coalition, and the Swedish Government does not necessarily share the expressed views and interpretations.

Established in 1998, IPEN is an international NGO network of over 500 health and environmental organizations from 121 countries, mostly developing and transition countries of which the EcoWaste Coalition participates to establish and implement safe chemicals policies and practices that protect human health and the environment. IPEN's mission is a toxics-free future for all. IPEN helps build the capacity of its member organizations to implement on-the-ground activities, learn from each other's work, and work at the international level to set priorities and achieve new policies. Additional information materials about IPEN's Global Lead Paint Elimination Campaign can be accessed at **https://ipen.org/projects/eliminating-lead-paint**.

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." Founded in 2000, the EcoWaste Coalition strives to attain such a vision by fostering and supporting activism around priority issues and concerns in line with the Filipino people's constitutional rights to health and to a balanced and healthful ecology.

EcoWaste Coalition
Unit 336, Eagle Court, 26 Matalino St., 1100 Quezon City, Philippines
www.ecowastecoalition.org

CONTENTS

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.[1] This is then ingested through normal hand-to-mouth behavior by children.[2] 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.[3] Playground equipment can also be a direct source of exposure since children will get lead paint on their hands when playing.

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.[4] Lead is also categorized as an endocrine-disrupting chemical (EDC).[5]

According to the World Health Organization (WHO): "There is no level of exposure to lead that is known to be without harmful effects."[6]

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.[7] 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.[2] 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.[8] 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 used in solvent-based paint due to their chemical properties, and solvent-based paints sold for home use have been found to contain high levels of lead in many countries.[9-11]

Reports from around the world highlight lead paint as a hazard in places frequented by children such as public parks, recreational areas, and playground facilities, as well as in children's articles such as toys and play equipment. Scientific studies conducted in Australia, Brazil, England, India, Israel, Japan and South Africa all detected high lead levels in playground equipment, and where analyzed, high levels of lead in the surrounding soil, dust and sand.[12-18] Equipment with high lead levels were commonly coated with yellow or red paint, indicating the use of lead pigments for both decorative and anti-corrosive purposes. Studies of dust collected from playground equipment in Australia, France and China attributed the lead content to lead paint on the structure.[12, 19-20] The geographical spread of these results suggests that use of lead paint on playground equipment is of global concern.

In the Philippines, some studies have shown monkey bars, slides, swings, and other typical outdoor playthings to be coated with lead paint.[21-23]

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

* 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.

low—less than 90 parts per million (ppm) lead by dry weight, and frequently down to 10 ppm or less.

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 limit for decorative paints in e.g., the U.S., the Philippines, and India 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 limit is also recommended for all paints, including paints for industrial applications, in the *Model Law and Guidance for Regulating Lead Paint*,[21] which was developed by the Global Alliance to Eliminate Lead Paint (GAELP) and published by the UN Environment Programme.

In the USA, outdoor playground products designed or intended primarily for use by children 12 years or under are required to comply with the total lead limit of 90 ppm for paint or any similar surface coatings as per the Consumer Product Safety Improvement Act.[25]

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.[26]

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.

Environmental Management Bureau (EMB) Memorandum Circular 2016-010 reiterated the prohibition on paints with lead in excess of the 90 ppm limit for decorating children's toys and related products, including indoor and outdoor playground equipment such as playhouses, play pens, seesaws, slides and swings.[27]

Complementary directives issued by the Department of Education (DepEd) and the Department of Interior and Local Government (DILG) 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.[28]

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.[29]

2. RESULTS

From September to October 2019, 14 playgrounds located in 10 cities and one municipality in Luzon, Visayas, Mindanao and the National Capital Region, Philippines were visited. In each playground, painted play equipment (e.g., climbing bars and frames, posts, railings, ramps, rockers, seesaws, slides, swings, etc.) were examined and physical details, e.g., color of painted surface, substrate type (metallic, wooden, plastic, fiberglass, etc.), and the condition of painted surface (new, old, visible chipping off or flaking) were documented.

In situ lead content analysis was performed on painted surfaces using portable Olympus Innov-X Delta and SciAps X-Ray Fluorescence (XRF) spectrometers. For a complete description of the materials and methods, please see Appendix A.

This study shows that:

- 50 out of 55 analyzed pieces of playground equipment contained total lead concentrations above 90 parts per million (ppm), dry weight. In addition, 41 analyzed pieces of playground equipment contained dangerously high lead levels above 10,000 ppm.
- Multi-layered painted surfaces were the most hazardous with 77 out of 102 screened painted surfaces containing lead levels greater than 10,000 ppm. Thirty-one yellow-painted surfaces also contained dangerously high lead levels above 10,000 ppm.
- The highest lead concentration detected was 663,000 ppm on a yellow-painted surface of a multi-coated play equipment in Burnham Park, Baguio City, Philippines.

3. CONCLUSIONS AND RECOMMENDATIONS

The high lead levels found in painted playground facilities constitute a risk of lead exposure for children who spend time playing in these environments. The study results highlight the importance of urgent actions to prohibit the production, sale and use of lead paint for all purposes.

To address the problem of lead in paint, the EcoWaste Coalition and IPEN propose the following recommendations:

For local government units, in line with DILG M.C. 2018-26, to promote the procurement and use of lead-safe paints for painting and maintenance of playground equipment, facilities, structures, and toys offered to children. They must also ensure that proper lead paint abatement procedures are observed when repainting lead painted playground equipment to avoid the dispersal of lead dust.

For national government agencies to enforce DENR A.O. 2013-24 and related regulations and establish periodic maintenance inspection of parks and playground environments and restrict the use of lead paint in playground equipment, facilities, and other painted structures.

For paint companies that still produce lead paints to expeditiously stop the use of leaded paint ingredients in paint formulations. Paint companies that have shifted to non-lead paint production should get their products certified through independent, third party verification procedures to increase the customer's ability to choose paints with no added lead.

For parents and teachers to raise children and students' awareness on the dangers of children sucking on or biting painted surfaces and on the importance of handwashing after playing in parks and playground environments.

For public health groups, consumer organizations and other concerned entities to support the elimination of lead paint, and conduct activities to inform the public and protect children from lead exposure through lead paint, lead in dust and soil, and other sources of lead.

For all stakeholders to come together and unite in promoting strong enforcement of policies that will eliminate lead paint in the Philippines.

REFERENCES

[1] Clark, S., et al. (2004). Occurrence and determinants of increases in blood lead levels in children shortly after lead hazard control activities. Environmental Research, 96(2), 196-205.
[2] World Health Organization (2010). Childhood lead poisoning. Available from: https://www.who.int/ceh/publications/childhoodpoisoning/en/.
[3] Lanphear, B.P., et al. (1998). The contribution of lead-contaminated house dust and residential soil to children's blood lead levels. Environmental Research, 79(1), 51-68.
[4] Needleman, H. (2004). Lead Poisoning. Annual Review of Medicine. 55(1), 209-222.
[5] Iavicoli, I., et al. (2009). The effects of metals as endocrine disruptors. Journal of Toxicology and Environmental Health-Part B-Critical Reviews, 12(3), 206-223.
[6] World Health Organization (2015). Lead poisoning and health. Available from: https://www.who.int/en/news-room/fact-sheets/detail/lead-poisoning-and-health.
[7] Mielke, H.W., et al. (2012). The urban rise and fall of air lead (Pb) and the latent surge and retreat of societal violence. Environment International, 43, 48-55.
[8] Attina, T.M. et al. (2013). Economic Costs of Childhood Lead Exposure in Low- and Middle-Income Countries. Environmental Health Perspectives, 121(9), 1097-1102.
[9] Brosché, S., et al. (2014). Asia Regional Paint Report. Available from: https://ipen.org/documents/asia-regional-paint-report.
[10] Clark, C.S., et al. (2006). The lead content of currently available new residential paint in several Asian countries. Environmental Research, 102(1), 9-12.
[11] Clark, C.S., et al. (2009). Lead levels in new enamel household paints from Asia, Africa and South America. Environmental Research, 109(7), 930-936.
[12] Mostert, M. M. R., et al. (2012). Multi-criteria ranking and source identification of metals in public playgrounds in Queensland, Australia. Geoderma, 173, 173–183.
[13] Da Rocha Silva, J. P., et al. (2018). High blood lead levels are associated with lead concentrations in households and day care centers attended by Brazilian preschool children. Environmental Pollution, 239, 681–688.
[14] Turner, A., Kearl, et al. (2016). Lead and other toxic metals in playground paints from South West England. Science of the Total Environment, 544, 460–466.
[15] Clark, C. S., et al. (2005). Lead in paint and soil in Karnataka and Gujarat, India. Journal of Occupational and Environmental Hygiene, 2(1), 38–44.
[16] Berman, T., et al. (2018). Lead in spray paint and painted surfaces in playgrounds and public areas in Israel: Results of a pilot study. Science of the Total Environment, 637, 455–459.
[17] Takaoka, M., et al. (2006). Influence of paint chips on lead concentration in the soil of public playgrounds in Tokyo. Journal of Environmental Monitoring, 8(3), 393–398.
[18] Mathee, A., et al. (2009). Lead-based paint on playground equipment in public children's parks in Johannesburg, Tshwane and Ekurhuleni. South African Medical Journal, 99(11), 819–821.
[19] Glorennec, P., et al. (2012). French children's exposure to metals via ingestion of indoor dust, outdoor playground dust and soil: Contamination data. Environment International, 45, 129–134.
[20] Peng, T., et al. (2019). Spatial distribution of lead contamination in soil and equipment dust at children's playgrounds in Beijing, China. Environmental Pollution, 245, 363–370.
[21] EcoWaste Coalition. "Toxics Watchdog Raises Concern Over Lead Paint in Children's Playgrounds." EcoWaste Coalition Press Release, 30 November 2011. Available from: http://www.ecowastecoalition.org/toxics-watchdog-raises-concern-over/.
[22] EcoWaste Coalition. "EcoWaste Coalition Alerts QC Government on Health Risks from Lead in Fitness and Play Equipment at QMC." EcoWaste Coalition Press Release, 30 April 2012. Available from: http://www.ecowastecoalition.org/ecowaste-coalition-alerts-qc-governmen/.
[23] EcoWaste Coalition. "EcoWaste Coalition Alerts City and Barangay Officials about Lead-Tainted Play Equipment in San Andres, Manila." EcoWaste Coalition Press Release, 05 August 2012. Available from: http://www.ecowastecoalition.org/ecowaste-coalition-alerts-city-and/.
[24] UN Environment Programme (2017). Model Law and Guidance for Regulating Lead in Paint. Available from: https://www.unenvironment.org/resources/publication/model-law-and-guidance-regulating-lead-paint.
[25] US Consumer Product Consumer Safety Commission (2008). Consumer Product Safety Improvement Act of 2008. Avaialble from: https://www.cpsc.gov/s3fs-public/pdfs/blk_media_cpsia.pdf.

[26] Philippines' Department of Environment and Natural Resources (2013). Chemical Control Order (CCO) for Lead and Lead Compounds. Available from: https://server2.denr.gov.ph/uploads/rmdd/dao-2013-24.pdf.
[27] Philippines' Department of Environment and Natural Resources—Environmental Management Bureau (2016). Clarification on the Prohibition of Paints with Lead and Lead Compounds Used for Children's Toys and Related Products. Available from: http://chemical.emb.gov.ph/wp-content/uploads/2017/03/MC-2016-010.pdf.
[28] Philippines' Department of Education (2017). Mandatory Use of Lead-Safe Paints in Schools. Available from: https://www.deped.gov.ph/2017/01/18/do-4-s-2017-mandatory-use-of-lead-safe-paints-in-schools/.
[29] Philippines' Department of Interior and Local Government (2018). Mandatory Use of Lead-Safe Paints by LGUs. Available from: https://dilg.gov.ph/PDF_File/issuances/memo_circulars/dilg-memocircular-201831_7d43ec9eb7.pdf.

APPENDIX

MATERIALS AND METHODS

Fourteen playgrounds in 10 cities and one municipality were visited from September to October 2019. In each playground, painted play equipment (e.g., climbing bars and frames, posts, railings, ramps, rockers, see-saws, slides, swings, etc.) were examined and physical details, e.g., color of painted surface, substrate type (metallic, wooden, plastic, fiberglass, etc.), and the condition of painted surface (new, old, visible chipping off or flaking) were documented.

In situ lead content analysis was performed on painted surfaces using portable Olympus Innov-X Delta and SciAps X-Ray Fluorescence (XRF) spectrometers.

A smooth area of a painted surface at a height accessible to children was selected. The XRF nose was firmly positioned against the surface for a period of 10 seconds by pressing the trigger mechanism. For each playground facility, XRF screening was conducted in three different parts taking into account the difference in colors and substrate materials. The measurements were recorded, and the screening process was photo-documented as shown in Figure 1.

The limit of detection for lead using this method is 3 -7 ppm. To ensure accurate analyses, calibrations were performed when the XRF analyzer is started or restarted and is repeated when the instrument has been used more than four hours without interruption as indicated in the operating manual.*

The playground area was secured throughout the XRF screening process to ensure that no children were present as the XRF analyzer emits harmful radiations especially if pointed towards a body part or person.

* Da Rocha Silva, J. P., et al. (2018). High blood lead levels are associated with lead concentrations in households and day care centers attended by Brazilian preschool children. ENVIRONMENTAL POLLUTION, 239, 681–688. https://doi.org/10.1016/j.envpol.2018.04.080.

Figure 1. Photo of staff of the EcoWaste Coalition measuring lead content in playground facilities using portable XRF analyzer.

TABLE 1. LEAD CONCENTRATIONS (PPM) MEASURED IN PLAYGROUND ENVIRONMENTS IN THE PHILIPPINES.

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground A Serbisyong Bayan Park (Batasan Road, Quezon City)	Multi-purpose play equipment	Metallic	Yellow	10,000	Multi-layered coatings, rusty, worn-out
			Red	15,000	
			Blue	1,411	
	Climber	Metallic	Yellow (a)	11,500	Multi-layered coatings, rusty, worn-out
			Yellow (b)	2,772	
			Red	1,440	
	Seesaw	Metallic	Yellow	2,892	Multi-layered coatings, dilapidated, rusty, worn
			Red	69,100	
			Blue	10,400	
Playground B Krus na Ligas Public Park (C.P. Garcia Avenue, Quezon City)	Slide	Metallic	Yellow (a)	5,850	Multi-layered coatings, rusty, worn-out
			Green	11,700	
			Yellow (b)	4,936	
	Swing	Metallic	Yellow	ND*	Rusty, worn-out
			Green	11,800	
			Red	ND	
	Seesaw	Metallic	Yellow	11,400	Rusty, worn-out
			Green	1,881	
			Red	ND	
Playground C Caloocan City People's Park (9th Avenue, Caloocan City)	Seesaw	Metallic	Yellow	ND	New
			Orange	ND	
			Blue	ND	
	Multi-purpose play equipment	Metallic	Yellow	ND	New
			Orange	ND	
			Red	ND	
	Merry-go-round	Metallic	Gray (a)	ND	New
			Gray (b)	ND	
			Gray (c)	ND	

** ND: not detected*

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground D Baseco Playground (Manila City)	Slide 1	Metallic	Yellow	4,290	Multi-layered coatings, rusty, worn-out
			Orange	13,100	
			Blue	63,400	
	Slide 2	Metallic	Orange	27,200	Multi-layered coatings, rusty, worn-out
			Red	5,061	
			Green	26,800	
	Monkey bar	Metallic	Yellow	44,400	Multi-layered coatings, rusty, worn-out
			Red	45,800	
			Blue	7,400	
Playground E Catmon People's Park (Malabon City)	Climber	Metallic	Yellow (a)	122,000	Multi-layered coatings, rusty, worn-out
			Green	31,500	
			Yellow (b)	99,400	
	Swing	Metallic	Yellow	27,700	Multi-layered coatings, rusty, worn-out
			Green (a)	42,200	
			Green (b)	66,600	
	Multi-purpose play equipment	Metallic	Yellow	55,900	Multi-layered coatings, rusty, worn-out
			Blue	100,000	
			Green	43,800	
	Seesaw	Metallic	Yellow (a)	137,000	Multi-layered coatings, rusty, worn-out
			Blue	34,000	
			Yellow (b)	107,000	
	Multi-purpose play equipment	Metallic	Yellow	38,900	Multi-layered coatings, rusty, worn-out
			Blue	73,800	
			Green	1,780	

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground F Public Park (Navotas City)	Multi-purpose play equipment	Metallic	Yellow (a)	40,500	Multi-layered coatings, rusty, worn-out
			Blue	28,500	
			Yellow (b)	38,800	
Playground G Children's Playground (People's Park, Davao City)	Seesaw	Metallic	Yellow	823	
			Orange	ND*	
			Brown	ND	
	Seesaw (old playground)	Metallic	Yellow	746	Worn-out
			Red	530	
	Slide (old playground)	Metallic	Green	357	Worn-out
			Apple Green	468	
			Blue	10,500	Multi-layered coatings, worn-out
Playground H Magsaysay Park (Davao City)	Monkey bar	Metallic	Yellow	100,000	Multi-layered coatings, rusty, worn-out
	Merry-go-round	Metallic	Orange	4,400	Rusty, worn-out
			Blue	45,300	Multi-layered coatings, rusty, worn-out
			Green	12,100	
	Multi- purpose play equipment	Metallic	Yellow	23,000	Multi-layered coatings, worn-out
			Blue	10,000	
			Green	3,440	Worn-out
Playground I Osmeña Park (Davao City)	Seesaw	Metallic	Yellow	ND	
			Blue	ND	
	Multi-purpose play equipment	Metallic	Brown	ND	
			Red	ND	
			White	ND	

** ND: not detected*

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground J Colin's Park (Fort San Pedro, Cebu City)	Monkey bar 1	Metallic	Yellow	756	Worn-out
	Monkey bar 2	Metallic	Green	52,800	Multi-layered coatings, rusty, worn-out
	Multi-purpose play equipment 1	Metallic	Yellow	490	Rusty, worn-out
			Blue	261	
	Multi-purpose play equipment 2	Metallic	Yellow	501	Rusty, worn-out
	Seesaw	Metallic	Yellow	442	Rusty, worn-out
			Green	544	
			Pink	3,620	
	Climber	Metallic	Green	39,900	Multi-layered coatings, rusty, worn-out
Playground K D' Family Park (Barangay Talamban, Mandaue City)	Seesaw	Metallic	White	31,600	Multi-layered coatings, worn-out
			Blue	7,650	
Playground L People's Park (Barangay Poblacion, Lapu-Lapu City)	Seesaw	Metallic	Yellow	10,100	Multi-layered coatings, dilapidated, rusty, worn-out
			Orange	2,130	
	Slide	Metallic	Yellow	100,000	Multi-layered coatings, rusty, worn-out
			Pink	49,700	
	Swing	Metallic	Yellow	176,000	Multi-layered coatings, dilapidated, rusty, worn-out
			Orange	62,600	
			Blue	1,860	Dilapidated, rusty, worn-out

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground M Children's Park (Barangay Tayud, Consolacion, Cebu)	Seesaw	Metallic	Red	3,560	Multi-layered coatings, rusty, worn-out
	Seesaw	Wooden	Blue	360	Rusty, worn-out
			Green	382	
	Multi-purpose play equipment	Metallic	Red	66,700	Multi-layered coatings, rusty, worn-out
			Blue	9,270	
			Orange	8,720	
			Yellow	7,900	
Playground N Burnham Park (Children's Park, Baguio City)	Swing 1	Metallic	Yellow	101,000	Multi-layered coatings, worn-out, chipping
			Red	219,000	
			Blue	8,240	
	Swing 2	Metallic	Yellow	5,140	Multi-layered coatings, worn-out, chipping
			Pink	158,000	
			Blue	68,400	
	Swing 3	Metallic	Yellow	1,490	Multi-layered coatings, worn-out, chipping
			Red	15,100	
			Blue	1,900	
	Swing 4	Metallic	Yellow	38,000	Multi-layered coatings, worn-out, chipping
			Pink	11,700	
			Blue	39	
	Swing 5	Metallic	Yellow	160,000	Multi-layered coatings, worn-out, chipping
			Pink	62,500	
			Blue	34,500	
	Swing 6	Metallic	Yellow	74,300	Multi-layered coatings, worn-out, chipping
			Red	40,000	
			Blue	82,000	
	Swing 7	Metallic	Yellow	21,300	Multi-layered coatings, worn-out, chipping
			Pink	131,000	
			Blue	256,000	

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground N Burnham Park (Children's Park, Baguio City) *continued*	Tire Crocodile	Rubber	Yellow	1,790	Chipping
			Red	579	
			Green	1,520	
	Multi-purpose play equipment 1	Metallic	Yellow	570,000	Chipping
			Red	40	Multi-layered coatings, rusty, worn-out, chipping
			Blue	8,060	Multi-layered coatings, worn-out, chipping
	Multi-purpose play equipment 2	Metallic	Yellow	80,100	Multi-layered coatings, worn-out, chipping
			Red	224,000	
			Blue	981	
	Slide 1	Fiberglass	Yellow	20,300	Multi-layered coatings, chipping
			Pink	1,040	
			Blue	1,260	
	Multi-purpose play equipment 3	Metallic	Yellow	472,000	Multi-layered coatings, worn-out, chipping
			Red	59,400	
			Blue	537,000	
	Multi-purpose play equipment 4	Metallic	Yellow	573,000	Multi-layered coatings, worn-out chipping
			Red	394,000	
			Blue	130,000	
	Swing 8	Metallic	Yellow	442,000	Multi-layered coatings, chipping
			Red	502,000	
			Blue	3,230	
	Slide 2	Fiberglass	Yellow	2,840	Multi-layered coatings, chipping
			Red	3,740	
			Blue	3,590	

Playground Name and Location	Playground Facilities	Part (includes type of material)	Color	Lead Content (ppm)	Other Remarks
Playground N Burnham Park (Children's Park, Baguio City) *continued*	Monkey bar	Metallic	Yellow	359,000	Multi-layered coatings, chipping
			Red	136,000	
			Blue	141,000	
	Multi-purpose play equipment 5	Metallic	Yellow	663,000	Multi-layered coatings, chipping
			Brown	148,000	
			Green	45,400	

** ND: not detected*

TABLE 2. DISTRIBUTION OF LEAD CONCENTRATION BY COLOR OF PAINTED SURFACES.

Color	No. of Painted Surfaces Sampled	No. of Samples Above 90 ppm	No. of Samples Above 10,000 ppm	Minimum Lead Content (ppm)	Maximum Lead Content (ppm)
Yellow	51	47	31	ND*	663,000§
Blue	33	30	16	ND	537,000
Red	23	18	12	ND	502,000
Green	19	19	11	357	66,600
Orange	9	6	3	ND	62,600
Pink	7	7	5	1,040	158,000
Brown	3	1	1	ND	148,000
Gray	3	0	0	ND	ND
White	2	1	1	ND	31,600
Multi-layered Coatings	102	100	77	39	663,000

** ND: not detected*

§ Multi-layered coatings

FIGURE 2. PHOTOS OF ANALYZED PLAYGROUND FACILITIES

Burnham Park, Baguio City

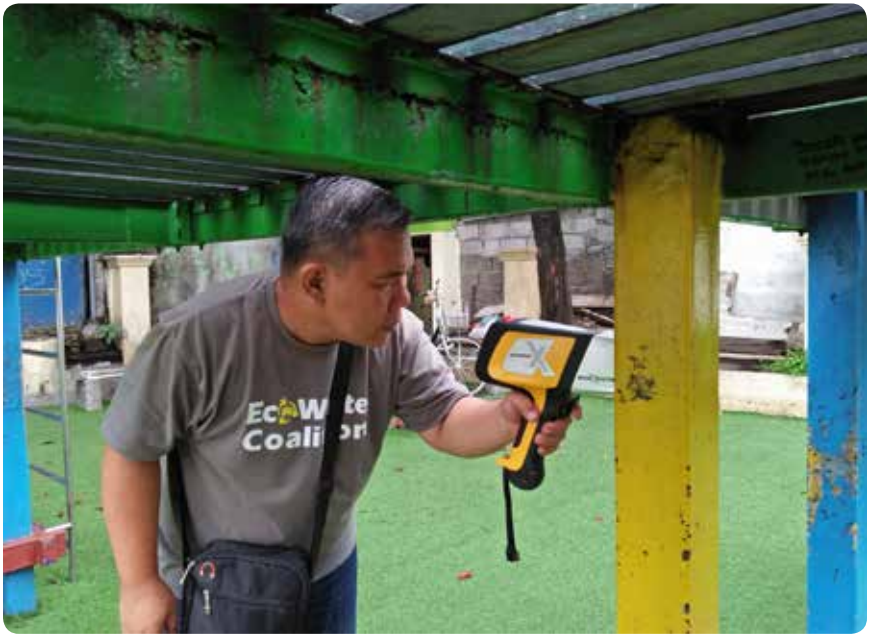
Serbisyong Bayan Park, Batasan Road, Quezon City

Krus na Ligas Public Park, C.P. Garcia Ave., Quezon City

Baseco Playground, Manila City

Caloocan City People's Park, 9th Avenue, Caloocan City

Catmon People's Park, Malabon City



People's Park, Navotas City

Colin's Playground Area, Fort San Pedro, Cebu City

Children's Park, Barangay Tayud, Consolacion, Cebu

D' Family Park, Barangay Talamban, Mandaue City

Barangay Poblacion, Lapu-Lapu City

Magsaysay Park, Davao City

Children's Park, Peoples Park, Davao City

Osmeña Park, Davao City

www.ipen.org

ipen@ipen.org

@ToxicsFree