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Implementation of the Strategic Approach to International Chemicals Management: Emerging policy issues

Submission by the International POPs Elimination Network – Global Lead Paint Elimination by 2020: A Test of the Effectiveness of the Strategic Approach to International Chemicals Management

Note by the secretariat

1. The secretariat has the honour to circulate, for the information of participants, in the annex to the present note a report of the International POPs Elimination Network (IPEN) entitled *Global Lead Paint Elimination by 2020: A Test of the Effectiveness of the Strategic Approach to International Chemicals Management.*

2. The information is presented as submitted and has not formally been edited.

* SAICM/ICCM.3/1

Annex

GLOBAL LEAD PAINT ELIMINATION BY 2020:

A TEST OF THE EFFECTIVENESS OF THE STRATEGIC APPROACH TO INTERNATIONAL CHEMICALS MANAGEMENT

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IPEN
a toxics-free future

LIST OF ACRONYMS

ANOR	Cameroon Agency of Standard and Quality
BLL	Blood Lead Level
CCO	Chemical Control Order
CDC	U.S. Centers for Disease Control and Prevention
FAO	United Nations Food and Agricultural Organization
GAELP	Global Alliance to Eliminate Lead Paint: A partnership of the United Nations Environment Program and the World Health Organization
ICCM	International Conference on Chemicals Management
IPEN	A global network of non-governmental organizations working to establish and implement safe chemicals policies and practices that protect human health and the environment (formerly International POPs Elimination Network)
IPPIC	International Paint and Printers Ink Council
IQ	Intelligence quotient
µg/dL	Micrograms of lead per deciliter of blood
mg/kg	Milligrams per kilogram (parts per million)
NGO	Non-governmental organization
Pb	Chemical symbol for lead
PCFV	Partnership for Clean Fuels and Vehicles
ppm	Parts per million
PTWI	Provisional tolerable weekly intake
REACH	Registration, Evaluation, Authorization and Restriction of Chemical Substances: The European Community Regulation on chemicals and their safe use
SAICM	Strategic Approach to International Chemicals Management
TPMA	Thai Paint Manufacturers Association
UNEP	United Nations Environmental Program
WHO	World Health Organization

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IPEN

IPEN is a leading global organization working to establish and implement safe chemicals policies and practices that protect human health and the environment around the world. IPEN's mission is a toxics-free future for all.

IPEN brings together leading public interest groups working on environmental and public health issues in developing countries and countries in transition. It 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.

IPEN's global network is comprised of more than 700 public-interest organizations in 116 countries. Working in the international policy arena and in developing countries, with international offices in the US and in Sweden, IPEN is coordinated via eight IPEN Regional Offices in Africa, Asia, Central/Eastern Europe, Latin America, and the Middle East.

FOREWORD

This report on global lead paint elimination was prepared by the global non-governmental organization (NGO) network, IPEN, for distribution at the third meeting of the International Conference on Chemicals Management (ICCM3) taking place in Nairobi, Kenya, September 17-21, 2012. It makes the case that lead paints are still widely manufactured, sold and used in developing countries and countries with economies in transition for applications likely to contribute to childhood lead exposure, and that the elimination of such paints should be considered a global priority objective for the Sound Management of Chemicals.

The report argues that the global elimination of all manufacture and sale of lead decorative paints in countries of all regions by 2020 is an achievable objective, and is one against which both the Global Alliance to Eliminate Lead Paint and the Strategic Approach to International Chemicals Management can and should be evaluated.

The report was co-authored for IPEN by Jack Weinberg, IPEN Senior Policy Advisor, and Dr. Scott Clark, IPEN Public Health Advisor for Lead Paint and Professor Emeritus, Environmental Health, University of Cincinnati. Review and suggestions were provided by Perry Gottesfeld, Executive Director, Occupational Knowledge International and Valerie Denney, IPEN Lead Communications Advisor.

IPEN thanks the numerous donors that support its work on lead paint elimination. These include the European Union's SWITCH-Asia Program, which granted IPEN €1.4 million to support NGO lead paint elimination activities by IPEN partner organizations in seven Asian counties; the governments of Sweden and Switzerland; the United Nations Environment Programme; the Swedish Society for the Conservation of Nature; several charitable foundations; and others. The content of this report, however, reflects the views of the report's authors and IPEN and not necessarily those of IPEN's donors.

August 28, 2012
Jack Weinberg
Dr. Scott Clark

INTRODUCTION

Beginning in the 1970s and 1980s, most highly industrial countries adopted laws or regulations to control lead paints. Most banned the manufacture, sale, and use of lead decorative paints – the paints used on the interiors and exteriors of homes, schools, and commercial buildings. Most highly industrial countries also imposed controls on other lead paints, especially paints and coatings used in the applications most likely to contribute 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's developing brains and nervous systems.

In those years, most developing countries had very weak chemicals management capabilities. Also, much less paint was manufactured and sold in the developing world at that time compared to today. As a result, few developing countries adopted their own laws or regulations to control lead paint. Nevertheless, until recently, it was widely assumed that paint manufacturing companies had, on their own initiative, discontinued adding lead pigments and other lead compounds to the household paints they produce for sale in all countries of the world.

Large paint companies are certainly aware that lead paint harms children. Transnational companies that also produce paints for sale in Western Europe, North America, and other highly industrial countries do not add lead compounds to the paints that they sell in those markets. Larger national companies producing paints only for sale in the developing world also have full access to all the information that they would need to recognize the hazards associated with lead paint and to produce high quality non-lead paints that they could sell at competitive prices. Based on fundamental principles of brand stewardship, it was logical to assume that the larger paint manufacturing companies, at least, would have discontinued adding lead to the household paints that they sell in all marketsif for no other reason than to protect their brands' reputations. However, it has not happened that way.

In 1999 and 2003, academic researchers reported high levels of lead in major brands of decorative paints being sold on the market in India and some other countries in Asia. Then, starting in 2007, NGOs associated with IPEN – the global network of organizations working to protect human health and the environment from harms caused by toxic chemical exposure – began to purchase and test the lead content of paints for sale in the developing world. To date, academic experts associated with IPEN and others have tested samples of decorative paints being sold in approximately 25 developing countries and countries with economies in transition. In almost all cases, the water-based decorative paints (sometimes called latex, acrylic, or plastic paints) did not contain hazardous lead additives. However, in every single country where testing was done and where no national law or regulation prohibited it, the majority of the oil-based (enamel) decorative paints for sale on the market contained dangerous levels of lead. And in virtually all cases, the consumer had no way to tell which of the enamel paints contained added lead and which did not.

THE GLOBAL ELIMINATION OF ALL MANUFACTURE AND USE OF LEAD DECORATIVE PAINTS IN COUNTRIES OF ALL REGIONS BY THE YEAR 2020 IS AN ACHIEVABLE OBJECTIVE AGAINST WHICH BOTH THE GLOBAL ALLIANCE TO ELIMINATE LEAD PAINT AND THE STRATEGIC APPROACH TO INTERNATIONAL CHEMICALS MANAGEMENT CAN AND SHOULD BE EVALUATED.

Based on the efforts of IPEN and others, a resolution was introduced and adopted at the 2009 second meeting of the International Conference on Chemicals Management (ICCM2) that identified lead in paint as an emerging policy issue and invited the United Nations Environment Programme (UNEP) and the World Health Organization (WHO) to establish a global partnership to promote phasing out the use of lead in paints and serve as its secretariat.[1] UNEP and WHO agreed and jointly initiated this partnership under the name Global Alliance to Eliminate Lead Paint (GAELP).[2] GAELP's broad objective is to phase out the manufacture and sale of paints containing lead and eventually to eliminate the risks from such paint.[3]

1 ICCM2 omnibus resolution II/4 on emerging policy issues, http://www.saicm.org/documents/iccm/ICCM2/emerging%20issues/ICCM2%20Outcomes/Emerging%20issues/Omnibus%20resolution%20II_4.doc

2 GAELP Homepage, http://www.unep.org/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/tabid/6176/Default.aspx

3 See GAELP Objectives, http://www.unep.org/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/GAELPObjectives/tabid/6331/Default.aspx

GAELP defines the term paint to also include varnishes, lacquers,stains, enamels, glazes, primers, and coatings. GAELP's definition of the term *lead paint* states: "Lead paint" is paint to which one or more lead compounds have been added."[4]

This report will provide background information that may be of use to those who wish to initiate lead paint elimination programs, projects, or campaigns in their own countries. It will review progress that has been made since 2009. It will propose strategies to achieve global elimination by 2020 of leaded household paints and other lead paints used for the applications most likely to contribute to childhood lead exposure. It will make the case that success or failure to achieve global lead paint elimination by 2020 should be one of the criteria used in evaluating the effectiveness of the Strategic Approach to International Chemicals Management (SAICM).

4 See GAELP Operational Framework, March 2011, http://www.unep.org/hazardoussubstances/Portals/9/Lead_Cadmium/docs/GAELP/Final_operational_framework_GAELP.pdf

LEAD

Lead is a metallic element whose chemical symbol is Pb from the Latin word *plumbum*. It is a heavy metal that is bluish-grey in color when freshly cut. Pure lead is soft and malleable, but lead is also often combined with other metals to form alloys.[5] Many chemical compounds contain lead including lead oxides, lead salts, and organic lead compounds. Metallic lead, lead alloys, and lead chemical compounds continue to be used for many purposes. Lead in all its forms is highly toxic, especially to young children.

LEAD AS AN ENVIRONMENTAL POLLUTANT

Lead was one of the first metals that people smelted and used. Archeologists have found lead objects and pigments dating from the early Bronze Age. Extensive evidence of ancient lead mining and smelting exists in both Asia and the Mediterranean region.[6] The Greek physician, Hippocrates, who lived in the 4th century BCE, already accurately described the symptoms of lead poisoning.[7] During Greco-Roman times, syrups and alcoholic beverages were often cooked in vessels that contained lead. This resulted in widespread lead poisoning among the affluent and some suggest this was one of the causes of the downfall of the Roman Empire.[8] Investigations of human skeletal remains indicate that the lead body burden of people today is between 500 and 1,000 times greater than in pre-industrial times.[9] Once lead is introduced into the environment, it persists.

LEAD IN AUTOMOTIVE FUELS

One of the largest and most harmful historical uses of lead was the addition of tetraethyl lead to automotive fuels to improve engine performance. This practice was widespread until recently, but has now been largely eliminated. It ended in most highly industrial countries by the 1970s, but leaded automotive fuels remained a predominant automotive fuel in most developing countries until 2002 and beyond. The Partnership for Clean Fuels and Vehicles (PCFV) was established by the UNEP in 2002 to eliminate leaded automotive fuel with participation from governments, industry groups, international organizations, and civil society. This initiative was a success. By January 2012, leaded automotive fuels were eliminated in all but six countries. Leaded automotive fuels remain the predominant automotive fuel in only three countries: Afghanistan, Myanmar, and North Korea. It is still available as an automotive fuel in three additional countries: Algeria, Iraq, and Yemen.[10]

LEAD USES TODAY

Lead remains in widespread use today. In addition to lead pigments and other lead compounds used in paints and glazes, other major current uses of lead include lead storage batteries, lead pipes, lead solder, lead ammunition, and lead used as a stabilizer in vinyl (PVC) plastic.

LEAD IN ALL ITS FORMS IS HIGHLY TOXIC, ESPECIALLY TO YOUNG CHILDREN.

Lead batteries presently account for approximately 80 percent of the lead that is used worldwide. Today, most of the lead in global commerce is obtained from recycling lead-acid batteries. Ninety-seven percent of lead batteries are reported to be recycled, including in low-income countries where the recycling takes place mostly in informal, largely uncontrolled settings.[11] Global consumption of lead is increasing and is expected to exceed 10 million tons per year. The primary reason is that demand for lead batteries is growing rapidly for use in conventional vehicles, hybrid and electric vehicles, backup power, and cell phone towers. Batteries are a major source of both occupational and environmental lead exposure, especially from poorly controlled battery recycling facilities.[12]

5 The Unified Numbering System (UNS) designations for various pure lead grades and lead-base alloys: pure leads L50000-L50099; lead - silver alloys L50100-L50199; lead - arsenic alloys L50300-L50399; lead - barium alloys L50500-L50599; lead - calcium alloys L50700-L50899; lead - cadmium alloys L50900-L50999; lead - copper alloys L51100-L51199; lead - indium alloys L51500-L51599; lead - lithium alloys L51700-L51799; lead - antimony alloys L52500-L53799; lead - tin alloys L54000-L55099; and lead - strontium alloys L55200-L55299. Source: Lead and Lead Alloys, http://www.keytometals.com/Article10.htm

6 *Lead and Lead Poisoning from Antiquity to Modern Times*, Milton A. Lessler, Ohio J. Sci. 88 (3): 78-84, 1988, http://kb.osu.edu/dspace/bitstream/handle/1811/23252/V088N3-078.pdf?sequence=1

7 *Lead and Lead Poisoning from Antiquity to Modern Times*, Milton A. Lessler, Ohio J. Sci. 88 (3): 78-84, 1988, http://kb.osu.edu/dspace/bitstream/handle/1811/23252/V088N3-078.pdf?sequence=1

8 *Lead and Lead Poisoning from Antiquity to Modern Times* (cited above).

9 *Childhood Lead Poisoning*; World Health Organization, 2010, http://www.who.int/ceh/publications/leadguidance.pdf

10 UNEP Partnership for Clean Fuels and Vehicles, http://www.unep.org/transport/pcfv/PDF/Maps_Matrices/world/lead/MapWorldLead_January2012.pdf

11 *Childhood Lead Poisoning*, World Health Organization, 2010, http://www.who.int/ceh/publications/leadguidance.pdf

12 *Lead Battery Background*, Occupational Knowledge International, http://www.okinternational.org/lead-batteries/Background

LEAD EXPOSURE SOURCES

Environmental lead pollution of air and soils can cause acute lead exposure in communities near mining areas and near inadequately controlled lead smelting, refining, and recycling facilities, including battery recycling facilities. Lead contamination is also often a legacy of historical contamination from former industrial sites. Parents working in lead-related industries can bring lead home on their clothing – and this can expose their children. For example, one study found that children whose parents are engaged in lead-related occupations have higher blood lead levels than their schoolmates of the same age.[13]

Lead can be present in toys, cosmetics, and other products. It has been reported that in China, children who habitually chew on pencils often have high blood lead levels because the paint used in the manufacture of the pencils contained lead.[14] Lead exposure can occur from eating foods contaminated with lead, although circumstances vary greatly from country to country and from region to region. In some countries, popcorn may be an important source of childhood lead exposure because some popcorn machines are made from a lead alloy that releases lead into the popcorn.[15] Food prepared in utensils that contain lead can be a significant source of lead exposure in many countries and regions. So is food stored or prepared in cans or utensils that have been soldered with lead solder. Eating from dinnerware made from pewter (a tin alloy that sometimes contains lead) or from glazed ceramics where lead pigments were used can also cause lead exposure.[16] In some Asian countries, traditional preserved eggs are made using lead oxide as a food additive.[17] Lead can enter the food chain through contaminated soils, and it also has been reported that lead is sometimes present in herbal and traditional medicines and folk remedies.[18]

Other major sources of exposure to lead include incineration of lead-containing waste, burning painted materials in fireplaces or cook stoves, processing electronic waste (e-waste), and drinking water from water systems that use lead pipes or lead solder.

13 *Lead poisoning in Chinese children: risk factors and preventive measures*, Yao-Hua Dai and Zhao-Yang Fan, World Journal of Pediatrics, May 2007, http://www.wjpch.com/UploadFile/001.pdf

14 same

15 same

16 *Childhood Lead Poisoning*, World Health Organization, 2010, http://www.who.int/ceh/publications/leadguidance.pdf

17 *Lead poisoning in Chinese children*

18 *Childhood Lead Poisoning*, World Health Organization, 2010, http://www.who.int/ceh/publications/leadguidance.pdf

LEAD PAINT

Lead paint is one of many serious sources of childhood lead exposure. Following the successes in removing lead additives from the automotive fuels sold in almost all countries, lead paints have replaced leaded fuels as the source of significant childhood lead exposure that affects the largest number of the world's children. And with the rising middle class and the very rapid growth of paint sales for home uses in most developing countries, exposure from lead paints will continue to grow unless meaningful control measures are taken.

Lead paint and its toxicity received recent worldwide news media attention in 2007 when it was widely reported that many wooden toys exported from Asia to Western Europe, North America, and other highly industrial countries were coated with lead paint and were therefore hazardous to children. Many brand holders and vendors recalled these toys, and the governments of many toy importing and exporting countries put controls in place to prevent reoccurrence. Much less attention was given at the time to lead paints manufactured for domestic consumption in the developing world.

NGOs associated with the IPEN network, however, did respond to the news reports and began to investigate whether decorative (household) and other paints for sale on their national markets contained lead. Between 2007 and 2009, these NGOs tested paints on the market in 11 developing countries and countries with economies in transition. The results were presented in a 2009 report *Lead in New Decorative Paints*,[19] which found that in all countries where testing was carried out, many of the oil-based (enamel) decorative paints on the market had hazardous lead content. Another 2009 publication revealed similar findings in nine additional countries as well as in three of the countries covered by the NGO report.[20] Based on these studies and more recent testing, it appears that leaded enamel decorative paints are widely available for sale on the market in virtually all countries that do not have an effectively enforced national law or binding regulation that prohibits the manufacture, import, sale, and use of these paints.

The continuing use of lead compounds in the formulation of decorative paints provides very little, if any, benefit to the paint manufacturer or consumer. Non-toxic or less toxic substitutes for lead pigments, lead dryers, and other lead compounds that may be used in paints have been well-known for a half-century and longer. When these substitutes are used, the differences in the paint's cost, color, performance, and quality are marginal at best. On the other hand, the harms to children and to society as a whole that are associated with lead paint-related childhood lead exposure is very great and has been well-studied and well-documented. There is, therefore, no valid justification for any paint company to continue using lead compounds in the formulation of the decorative paints that they produce and sell anywhere in the world.

LEAD PAINTS HAVE NOW LIKELY REPLACED LEADED FUELS AS THE SOURCE OF SIGNIFICANT CHILDHOOD LEAD EXPOSURE THAT AFFECTS THE LARGEST NUMBER OF THE WORLD'S CHILDREN.

The challenges associated with replacing lead compounds with less hazardous substitutes in the formulation of paints and coatings for use in any and all applications are modest at best. Because of the serious and widespread harms associated with lead exposure, all non-essential uses of lead – including all lead paints—should be phased out and eliminated as rapidly as practical.

WHAT IS LEAD PAINT?

The term *paint* is used to also include varnishes, lacquers, stains, enamels, glazes, primers, and coatings. Paint is typically a formulated mixture of resins, pigments, fillers, solvents, and other additives. The term *lead paint* is defined as paint to which one or more lead compounds have been added.[21]

Lead compounds may be added to paint for a number of purposes including:

- **Pigments** Certain lead compounds have long been used as pigments to give paints their color. These include lead chromates, lead oxides, lead molybdates, and lead sulfates.
- **Drying Agents and Catalysts** Certain lead compounds are sometimes added to oil-based (enamel) paints to make the paint dry faster and more evenly and/or to promote the uniform polymerization of the drying oils and resins. These may include lead naphthenate, lead acetate, and lead octoate.

19 http://www.ipen.org/ipenweb/documents/work%20documents/global_paintstudy.pdf

20 Clark, C.S., Rampal, K.G., Thuppil, V., Roda, S.M., Succop, P., Menrath, W., Chen, C.K., Adebamowo, E.O., Agbede, O.A., Sridhar, M.K.C., Adebamowo, C.A., Zakaria, Y., El-Safty, A., Shinde, R. M., and Yu, J. (2009) Lead levels in new enamel household paints from Asia, Africa and South America, Environmental Research 109:930-936. An earlier version of this study was published in 2006. Clark CS, Rampal K, Thuppil V, Chen C, Clark R, Roda S (2006) The lead content of currently available new residential paint in several Asian countries, Environmental Research 102: 9-12.

21 See GAELP *Operational Framework*, March 2011, http://www.unep.org/hazardoussubstances/Portals/9/Lead_Cadmium/docs/GAELP/Final_operational_framework_GAELP.pdf

- **Corrosion Resistance Agents** Lead oxides and other lead compounds are sometimes added to paints that are used on metal surfaces to inhibit rust or corrosion and to increase durability. One of the most common of these is lead tetroxide, which is also called *red lead* or *minium*.
- **Unintentional Ingredients** Trace quantities of lead may sometimes be present in the fillers and other earth-based ingredients that are used in paint formulation. The lead compound is not intentionally added to the paint formulation for a functional purpose but rather enters the paint as an unwanted contaminant in one of its ingredients.

Pigments and drying agents that do not contain lead are available and can be substituted for those that contain lead. Corrosion resistant paints that do not contain added lead compounds are also available.

EXPOSURE TO LEAD FROM PAINT REMAINS A PROBLEM FOR MANY DECADES AFTER THE LEAD PAINT IS APPLIED TO A SURFACE.

Paints can be formulated to contain very low concentrations of lead. If the manufacturer is careful in the selection of their paint ingredients, and if the manufacturer tests the ingredients to ensure they do not contain added lead compounds or excessive levels of lead contaminants, the lead content of the paint is generally less than 10 parts per million lead (dry weight).

When paint is tested and is found to contain more than 90 parts per million (ppm) of lead (measured as the total lead content of the dry paint film), it can be taken as an indicator that one or more lead compound was intentionally used in the paint's formulation for an intentional and functional purpose (such as a pigment or drying agent).

LEAD DECORATIVE PAINTS

Decorative paints (also sometimes called architectural paints, home paints, or residential paints) are paints that are produced to be used on the exteriors of homes, schools, commercial buildings, and similar applications and on interior surfaces such as walls, ceilings, floors, doors, windows and trim. These paints are also sometimes used by the consumer to repaint old furniture, cribs, toys, and other household products that children may chew on. Lead decorative paints are recognized as a significant source of childhood lead exposure, and they have been prioritized by GAELP, IPEN, and others for elimination (along with other paint categories likely to contribute to childhood lead exposure).

New lead decorative paints are generally not an important source of lead exposure when they are still in the can or when they are being applied.

However, surfaces that have been painted with lead paint will, over time, age, weather, and chip. As a result, the lead that was present in the paint accumulates in indoor dust and outdoor soils. Children playing indoors or outdoors get dust and soil on their hands, and then ingest it through typical hand-to-mouth behavior. This is especially true for children in the six years and under age group, the group most easily harmed by exposure to lead. Paint chips can be especially harmful because their lead content can be much higher than what is typically found in dust and soils. In some cases, children may directly chew on painted objects or paint chips.

Children and workers are especially at risk when surfaces that were painted in the past with lead paint are repainted or disturbed by construction or other activities. Workmen may sand, dry scrape, grind, or in other ways disturb the old painted surface and produce large quantities of dust with very high lead content. Painters, carpenters, and construction personnel should wear proper safety apparel; avoid sanding, dry scraping, or grinding old painted surfaces that may contain lead paint; and take care to control and contain any dust or debris they may create. Instructional materials and training programs have been established to instruct these personnel on proper ways to prepare surfaces for repainting.

Exposure to lead from paint remains a problem for many decades after the lead paint is applied to a surface; old homes, schools, and other locations that were painted with lead paint as long as 50 to 75 years ago or more, continue to be sources of lead exposure in children. And once a surface is painted with lead paint, the costs associated with lead abatement can be very high. This makes it all the more urgent to stop producing, selling, and using new lead paints, especially in countries where the sale and use of decorative paints is rapidly growing.

Based on the limited data available, the water-based decorative paints (sometimes called plastic paints or latex paints) that are currently sold in developing countries, with a few exceptions, do not generally appear to contain added lead compounds. On the other hand, oil-based (enamel) decorative paints frequently contain high concentrations of lead. For example, in a sample of 232 cans of enamel decorative paint purchased in 2008 and 2009 in 11 regionally diverse developing countries and countries with economies in transition, two-thirds had lead concentrations greater than 600 ppm of lead. The average lead concentration of these paints was 23,707 ppm. One paint sample had a lead concentration of more than 500,000 ppm.[22]

22 The full data set can be found in *Lead in New Decorative Paints*, IPEN 2009, http://www.ipen.org/ipenweb/documents/work%20documents/global_paintstudy.pdf

For most tested paint of a single brand and type, the white paint often had the least lead; the bright yellows, reds, and greens often had the highest lead content. It appears that white lead pigments are not now commonly used, but that lead pigments are still commonly used in the brightly colored enamel paints.

In some cases, both the white paint and the brightly colored paints of a particular brand and type both were found to contain substantial amounts of lead, but with the brightly colored paints having a much higher lead content. This is an indicator that these brands and types of paint may use lead drying agents or other added lead compounds in addition to using lead pigments for the bright colors.

The United States banned all lead paints for residential use in 1978 and most highly industrial countries have also banned the sale and use of lead decorative paints. It appears that at least one and possibly more of the large international paint manufacturing companies may not add lead pigments and other lead compounds to the decorative paints they sell in any market. For example, no more than trace or very low lead content has been found in any tested decorative paints branded Dulux or ICI, both subsidiaries of the world's largest manufacturer of decorative paints, AkzoNobel.

OTHER LEAD PAINTS

Decorative paints are not the only category of lead paint that is likely to contribute to childhood lead exposure. Significant lead exposure is likely to occur when paints are used as coatings in the manufacture of toys, pencils, cribs and playpens, furniture, and other household items, especially ones children may chew on. Specialized rust and corrosion-resistant paints for use on metal surfaces are often sold for home use and are also often used on school playground equipment and similar applications. These are all applications for which the use of lead paint should be controlled and eliminated, and they should be addressed specifically in national laws, regulations, and procedures adopted with the aim of eliminating lead paints most likely to contribute to childhood exposure.

Industrial paints generally have not been subject to strict controls on their lead content even in most highly industrial countries. Lead industrial paints are often used as coatings for automobiles and many other industrial applications; painting bridges and other structural applications; painting yellow lines on roads; and many other purposes. In some cases, these applications are less likely to contribute to childhood lead exposure than decorative paints. Nonetheless, these paints still represent a significant lead hazard to workers and, in some cases, also to children. Bridges and structures painted with lead paint are typically scraped and sanded before repainting. Products that contain leaded industrial coatings create lead hazards when recycled or incinerated. In virtually every application in which it is used, lead paint represents a potential exposure hazard to workers and children. Substitutes for lead in industrial paints and in paints for structures, bridges, street markings and other uses have been available and widely used for many years.

In recent years, some countries have begun imposing bans and restrictions on lead pigments and other lead compounds used in industrial paints – most prominently, the European Union as it progressively implements REACH (the European Community's regulation on chemicals and their safe use). In response, some paint companies have started to eliminate the use of lead pigments in their industrial paints and some pigment manufacturers are ending their production of lead pigments. In February 2012, BASF, one of the world's largest pigment makers, announced that it would stop producing and selling lead chromate pigments by the end of 2014.[23] DuPont, the world's leading producer of automotive paints, has already removed lead pigments from the formulation of all the paints and coatings for new passenger cars, and it announced in June 2012 that it has plans to discontinue adding lead pigments to its other automotive coatings. DuPont stated that by the end of 2012, lead pigments will have been removed from all its automotive refinish paint products and that it is in the process of phasing out the use of lead pigments in all its commercial vehicle coatings.[24] International Paint, the marine coatings subsidiary of AkzoNobel, announced in August 2012 that it has become "the first producer in the heavy duty coatings sector to completely phase out of the use of lead chromates."[25] And even where lead compounds in industrial and paints are permitted, they are falling into disfavor due to costs associated with occupational health law compliance and hazardous waste liabilities.

Global lead paint elimination should include phasing out lead compounds from all categories of paints and coatings worldwide with very few, if any, exceptions. The global elimination of added lead compounds from all industrial, structural, and certain other categories of lead paint may present more challenges and require more time than will the global elimination of lead decorative paints. Nonetheless, these challenges are not great, and the goal of the total global elimination of all lead paints is realistic and can be achieved.

23 BASF concentrates on alternatives to lead chromate pigments, http://www.basf.com/group/pressrelease/P-12-160

24 Press Releases, DuPont Refinish to discontinue leaded pigments, June 2012, http://www.dupontrefinish.eu/portal/en?page=GU-1.3.1_Current_Press_Release&category=PressReleaseCategoryOne&catid=48&catid2=5256

25 Beyond Compliance - Improving The Sustainability Of Our Product Offer, August 8 2012, http://www.international-pc.com/resource-centre/news.aspx, http://www.international-pc.com/resource-centre/news/phasing-out-lead-chromates.aspx

HEALTH EFFECTS OF LEAD EXPOSURE

Exposure to lead causes significant and widespread injury to human health**.** Lead poisoning sometimes is also called lead intoxication, plumbism, or painter's colic. *Of all toxic environmental pollutants, harms from lead exposure are probably better understood and better documented than the effects of any other toxic environmental pollutant.*

LEAD EXPOSURE AND ITS EFFECTS

Lead serves no useful biological function in humans,[26] and exposure to lead can affect many different parts of the human body. A single high dose of lead can cause severe symptoms, although most people are affected from cumulative exposure over time. High lead exposure may cause vomiting, staggering walk, muscle weakness, seizures, and coma. Other symptoms of lead exposure can include abdominal pain and cramping (usually the first sign of a high, toxic dose of lead poisoning); aggressive behavior; anemia; constipation; difficulty sleeping; headaches; irritability, loss of previous developmental skills (in young children); low appetite and energy; and reduced sensations.[27] Lead exposure is a particularly insidious hazard since it has the potential for causing irreversible health effects before the exposure is clinically recognized. These effects include hypertension, central nervous system problems, anemia, and diminished hearing acuity.[28]

The two most common routes of human lead exposure are respiratory (breathing lead fumes or lead dust into the lungs) and gastrointestinal (ingesting lead through the mouth into the stomach and intestines). The respiratory route is the most common route for occupational exposure; the gastrointestinal route is the predominant route of childhood exposure.

Metallic lead and inorganic lead compounds are not easily absorbed through the skin. Once it is in the body, lead is generally excreted slowly with a biological half-life ranging up to 30 years. Since excretion is slow, lead accumulates in the body, primarily in the bones.

Lead in the body is distributed though the blood stream and reaches its highest concentrations in bone, teeth, liver, lungs, kidneys, brain, and spleen. Lead in blood has an estimated half-life of 35 days, in soft tissue 40 days and in bone 20 to 30 years. Most absorbed lead ends up in bone and is not known to cause deleterious effect on the bone itself. The lead, however, does not necessarily remain in the bones, and it can be remobilized and cause continued toxicity after exposure ceases.[29] The lead that has accumulated in a mother's bones, when mobilized during pregnancy, can cross the placenta and reach the developing fetus.

While acute lead poisoning is very serious, repeated exposure to small quantities of lead is more common and can cause detrimental lifelong impacts. The effects of lead poisoning build up slowly over time, and the individual's health problems get worse as the level of lead in the blood gets higher. And even low levels of lead exposure not easily associated with any obvious symptoms can still harm a child's mental development.[30]

LEAD EXPOSURE IN CHILDREN

Until the 20th century, lead poisoning was viewed almost exclusively as an occupational disease of workers in certain industries. Medical practitioners working with children focused almost all of their attention on the treatment and prevention of infectious diseases. With rising prosperity in highly industrial countries in the early 20th century, however, much of the population began to receive better nutrition, clean water, functioning sewage systems, and access to healthcare. As a result, deaths and disabilities caused by infectious agents started to decline and health workers began to reconsider the dominant paradigm that automatically assumed infectious agents were the cause of all the childhood diseases they observed.[31]

Starting in the early 1900's, published reports linked lead paint exposure to childhood lead poisoning. By the 1920s, many articles on childhood lead poisoning began to appear in the medical and public health literature. These articles documented that convulsions, mental retardation, and some other diseases of infancy and childhood that previously had been ascribed to infectious causes were actually symptoms of lead poisoning. The 1926 article Lead Poisoning in Children, which appeared in the American Journal of Diseases of Children, concluded that lead poisoning was a relatively frequent occurrence in children and was usually associated with the ingestion of lead paint.[32]

26 http://www.aafp.org/afp/1998/0215/p719.html

27 U.S. National Library of Medicine, from the U.S. National Institutes of Health, http://www.nlm.nih.gov/medlineplus/ency/article/002473.htm)

28 http://www.aafp.org/afp/1998/0215/p719.html (cited above)

29 same

30 U.S. National Library of Medicine, from the U.S. National Institutes of Health cited above

31 *Deceit and Denial: The Deadly Politics of Industrial Pollution*, Gerald Markowitz and David Rosner, University of California Press, 2003

32 *Deceit and Denial: The Deadly Politics of Industrial Pollution*, Gerald Markowitz and David Rosner, University of California Press, 2003

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.

Children are often at a higher risk for lead exposure than adults. When a woman of childbearing age has been exposed to lead, her fetus can be exposed throughout pregnancy. Children eat more food, drink more water, and breathe more air per unit of body weight than do adults. Children have an innate curiosity to explore their world and engage in developmentally appropriate hand-to-mouth behavior. For example, a typical one to six year old child ingests approximately 100 milligrams of house dust and soil each day. Wherever house dust and soils are contaminated with lead, children ingest lead along with the dust and soil. In those children who suffer from nutritional deficiencies, ingested lead is absorbed at an increased rate.[33]

Some children exhibit a condition called pica, that is, they intentionally eat abnormal quantities of paint, clay, chalk, or other nonfood materials. Causes of pica are not well understood, but it is thought to be caused by such factors as cultural tradition, acquired taste, or a neurological mechanism such as an iron deficiency or chemical imbalance. According to one study in the United States, children with pica may eat as much as 10 grams of nonfood materials per day. When children with pica eat lead contaminated soils or paint chips, they are likely to suffer high lead exposure.

Children are more biologically susceptible to lead than adults:[34]

- A child's brain undergoes very rapid growth, development and differentiation and lead interferes with this process. Brain damage caused by chronic, low-level exposure to lead is irreversible and untreatable.
- Exposure to lead early in life can re-program genes, which can lead to altered gene expression and an associated increased risk of disease later in life.
- Gastrointestinal absorption of lead is enhanced in childhood. Up to 50 percent of ingested lead is absorbed by children, as compared with 10 percent in adults. (Pregnant women may also absorb more ingested lead than other adults).

The recognized clinical symptoms of lead exposure in children include abdominal pain and arthralgia (pain in the joints). Clumsiness and staggering may also be seen, followed by headache and behavioral change.[35]

SUBCLINICAL LEAD EXPOSURE IN CHILDREN

Clinically observable symptoms of lead exposure in children do not generally appear until a high level of lead exposure has been reached: symptoms often begin to appear when a child's blood lead level (BLL) reaches 60 micrograms per deciliter (µg/dL). Until the 1980s, most medical practitioners did not consider lead exposure in children to be a problem until and unless clinical symptoms were observed.

Some researchers, however, disagreed. Starting in the 1940s, some researchers began finding suggestive evidence that children were being harmed by exposure to lead even though they exhibited no clinically observable lead poisoning symptoms. These researchers began to speculate that a proportion of school failure and behavioral disorder was caused by unrecognized lead toxicity, and that, therefore, subclinical lead exposure in children is also a serious concern. This conjecture was controversial at first and was vigorously challenged by lead industry interests.

In 1979, a well-designed study by pediatrician and psychiatrist Herbert Needleman resolved the issue. His study collected children's baby teeth and tested them for lead. Needleman found that the children with higher lead content in their teeth, on average, performed worse in school, scored lower on intelligence quotient tests (lower IQs), and had higher incidents of bad classroom behavior. Follow-up studies on these same children 12 years later found that those who had the highest lead levels in their teeth as children continued to have school problems through their last year of high school. Other researchers reached similar conclusions and also found correlations between childhood lead exposure and higher rates of attention deficit, aggression, delinquency, and crime.[36]

Needleman's findings and other studies convinced both the medical community and also authorities in many countries to recognize that children suffer significant neurological harm from relatively low-level exposure to lead even when they exhibit no clinically-observable symptoms. Widespread subclinical childhood lead exposure, by itself, came to be recognized as a very serious public health concern. As a result, many jurisdictions began revising downward what they considered an acceptable threshold limit of blood lead in children.[37]

By the 1990s, the WHO and the international medical community were in general agreement that a blood lead level in children of 10 µg/dL was the threshold for concern for public health interventions.

33 *Childhood Lead Poisoning*, World Health Organization, 2010

34 same

35 Lead Poisoning, by Herbert Needleman, Annual Review of Medicine 2004, http://www.rachel.org/files/document/Lead_Poisoning.pdf

36 Lead Poisoning, by Herbert Needleman, Annual Review of Medicine 2004, http://www.rachel.org/files/document/Lead_Poisoning.pdf

37 Lead Poisoning, by Herbert Needleman, Annual Review of Medicine 2004, http://www.rachel.org/files/document/Lead_Poisoning.pdf

Based on the evidence of reduced intelligence caused by childhood exposure to lead, the WHO has listed "lead-caused mental retardation" as a recognized disease and classifies it as one of the world's most serious diseases caused in whole or in part by environmental factors.

NEEDLEMAN FOUND THAT CHILDREN WITH HIGHER LEAD CONTENT IN THEIR TEETH, ON AVERAGE, PERFORMED WORSE IN SCHOOL, SCORED LOWER ON INTELLIGENCE QUOTIENT TESTS (LOWER IQS), AND HAD HIGHER INCIDENTS OF BAD CLASSROOM BEHAVIOR

A 2006 WHO report, *Preventing Disease through Healthy Environments: Towards an estimate of the environmental burden of disease,* states that approximately one-quarter of the global disease burden and more than one third of the burden among children is due to modifiable environmental factors, and it lists the 24 diseases that have the largest environmental contribution. These include diarrhea, lower respiratory infections, malaria, road traffic injuries, and chronic obstructive pulmonary disease. The report ranks these diseases by a weighted measure of death, illness, and disability. Of the top 24 diseases associated with environmental causation listed by WHO, lead-caused mental retardation is ranked number 10.[38]

NO SAFE LEVEL OF LEAD EXPOSURE IN CHILDREN

Children's overall blood lead levels in highly industrial countries began to drop after lead was removed from automotive fuels in those countries. This allowed researchers to more easily study the effects of childhood lead exposure at levels below 10 ug/dL. They found that children with blood lead levels well below 10 μg/dL were still exhibiting mental deficits and behavioral effects. For example, a 2002 study by Bruce Lanphear found that children's math and reading scores showed reductions that correlate to blood lead levels as low as 2.5 μg/dL. One conclusion that health researchers have drawn from this and similar studies is that no threshold level for safe lead exposure has yet been demonstrated.[39]

In response, a Joint Expert Committee of the United Nations Food and Agricultural Organization (FAO) and the WHO in 2010 withdrew its previous reference standard for provisional tolerable weekly intake (PTWI) of lead and determined that it is not possible to establish a new PTWI that is health protective. Recent WHO lead guidelines now indicate that they can establish no tolerable weekly intake for lead.[40]

In 2010, the European Food Safety Authority Panel on Contaminants in the Food Chain reviewed the work of the Joint FAO/WHO Expert Committee and concluded that the EU's previous provisional tolerable weekly intake of lead is no longer valid since "there is no evidence for a threshold for critical lead-induced effects."[41]

In 2012, the U.S. Centers for Disease Control and Prevention (CDC) concluded that there is no known acceptable lead exposure level for children. It therefore eliminated the use of terminology that identifies any blood lead "level of concern." CDC instead adopted a reference value approach that compares an individual child's blood lead level to that of the average blood lead level of the U.S. population of children. The CDC also adopted a new policy guidance that emphasizes primary prevention: preventing lead exposure rather than responding after the exposure has taken place.[42]

Since children appear to have no safe level of lead exposure, all exposures should be avoided.

ECONOMIC AND SOCIAL IMPACT OF WIDESPREAD CHILDHOOD LEAD EXPOSURE

Lead exposure in children is associated with a lifelong, irreversible decrease in their intelligence. Studies on animals have found an association between lead exposure during development and aggressive behavior.[43] Human health studies have found associations between blood lead concentrations in children and arrests for offenses involving violence later in their lives.[44] Other neurological effects of childhood lead exposure may include problems maintaining attention in school or home; hyperactivity; problems with learning and remembering new information; rigid, inflexible

38 http://www.who.int/quantifying_ehimpacts/publications/preventingdisease.pdf

39 Lead Poisoning, by Herbert Needleman, Annual Review of Medicine 2004, http://www.rachel.org/files/document/Lead_Poisoning.pdf

40 *Preventing Disease through Healthy Environments, Exposure to Lead: A Major Public Health Concern*, WHO 2010, http://www.who.int/ipcs/features/lead.pdf

41 Scientific Opinion on Lead in Food, EFSA Panel on Contaminants in the Food Chain (CONTAM), EFSA Journal 2010, http://www.efsa.europa.eu/fr/scdocs/doc/1570.pdf

42 CDC Response to Advisory Committee on Childhood Lead Poisoning Prevention Recommendations in "Low Level Lead Exposure Harms Children: A Renewed Call of Primary Prevention" June 2012 http://www.cdc.gov/nceh/lead/ACCLPP/CDC_Response_Lead_Exposure_Recs.pdf

43 *Exposure to lead during development alters aggressive behavior in golden hamsters,* http://www.ncbi.nlm.nih.gov/pubmed/10440488

44 *Association of Prenatal and Childhood Blood Lead Concentrations with Criminal Arrests in Early Adulthood*, http://www.plosmedicine.org/article/info:doi/10.1371/journal.pmed.0050101

problem-solving abilities; problems controlling aggressive or impulsive behavior; problems paying attention; poor work completion; and others.[45]

On the basis of multiple studies in several countries, it is estimated that about a quarter to half of an IQ point is lost for each microgram per deciliter increase in a preschool child's blood lead level (for children with blood lead levels in the range of 10 to 20 μg/dL). For children with blood lead levels lower than 10 μg/dL, the dose/response relationship is stronger: an increase in a child's blood lead level from less than 1 μg/dL to 10 μg/dL is associated with a six point decrease in IQ.[46]

When national childhood lead exposure is sufficiently widespread to cause a decrease in average intelligence and school performance, this can have a nationwide impact on the country as a whole. These mental deficits continue to adulthood and affect the average intelligence and learning ability of the country's population as a whole. Widespread childhood lead exposure in a country causes a shift in the distribution of intelligence and learning performance in a country's population. At the low end of the intelligence spectrum, the total number of a country's citizens exhibiting symptoms of mental retardation is substantially increased; at the high end, the number with truly superior intelligence is substantially decreased.

One result can be a large increase in the number of children who do poorly in school and who may not contribute fully to society when they become adults. Another result can be a reduction in a country's future intellectual, business and political leadership potential and a widening gap in socioeconomic attainment between countries with high and low levels of lead exposure in their children.[47]

Blood lead levels in children vary widely from country to country and region to region. The highest blood lead levels are generally seen in low-income countries. In 2004, 16 percent of all children worldwide were estimated to have blood lead levels above 10 μg/dL. Ninety percent of these children were in low-income regions.[48]

A 2002 study by Philip Landrigan and others investigated the socio-economic impacts of lead exposure in U. S. children. (The U.S. is a country with low childhood lead exposure compared to most developing countries and countries with economies in transition.) The study estimated the cumulative reduction in childhood intelligence associated with 1997 levels of lead exposure in children, and it correlated this to a child's lifetime earning potential. The study concluded that the decreased adult earning potential that results from this childhood lead exposure costs the U.S. economy $43.4 billion (thousand million or milliard) per year.[49] This finding has been used to justify government programs to reduce lead exposure in U.S. children, such as lead abatement in homes that had been painted with lead paints 35 years ago and longer.

Circumstances in different countries, of course, vary widely. The Landrigan study, nonetheless, provides an indication of the magnitude of the economic impact of widespread childhood lead exposure in one highly industrial country. And the full costs are likely to be higher than those documented by Landrigan's study since it does not attempt to capture several other costs to society associated with lead exposure such as increases in violence and criminal behavior or added cost burdens on the national education system.

While it would be difficult to accurately quantify the national socio-economic impact of widespread childhood lead exposure on any particular developing country or country with an economy in transition, it is reasonable to assume that, in relative terms, national socio-economic costs associated with childhood lead exposure in the developing world is generally greater than the costs documented by Landrigan for the U.S. In part, this is because average childhood lead exposure in the U.S., where systematic efforts have been made for years to address this problem, is much lower than childhood lead exposure in most developing countries and countries with economies in transition. Additionally, issues associated with increasing national labor productivity and improving national education systems are among the most important challenges facing most developing countries. Lead-caused diminished intelligence and mental retardation together with other lead-caused neurological effects such as increased violent behavior are major barriers toward meeting and overcoming this challenge.

45 *Neuropsychological Effects of Lead Poisoning on Child Development,* Mt. Washington Pediatric Hospital, http://www.mwph.org/services/effects_lead_poisoning.htm

46 Childhood Lead Poisoning; World Health Organization, 2010

47 same

48 same

49 Philip Landrigan and others, Environmental Pollutants and Disease in American Children, http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240919/pdf/ehp0110-000721.pdf

LEAD PAINT AND THE SOUND MANAGEMENT OF CHEMICALS

At the 1992 Rio World Environmental Summit and at subsequent World Environmental Summits in 2002 and 2012, governments pledged to work toward achievement of the Sound Management of Chemicals. In 2002, the World Summit on Sustainable Development in Johannesburg set a goal that was reiterated at the 2012 Rio+20 Summit: *the achievement of the sound management of chemicals throughout their life cycle so that by 2020, chemicals are produced and used in ways that minimize significant adverse impacts on human health and the environment.*

This goal is of direct relevance to the lead paint issue: exposure to lead causes serious adverse impacts on human health, especially children's health; lead paints are a widespread and significant source of childhood lead exposure; and the economic and social costs associated with effectively prohibiting the use of lead additives in those paints most likely to contribute to childhood lead exposure are very low. Of all the chemicals whose production and use cause significant adverse impacts on human health, the use of lead compounds in the formulation of paints is among those that cause the greatest harm, and it is also a use that can be eliminated with a modest effort and at minimal cost. This suggests that progress toward the global elimination of lead paints by 2020, especially lead decorative paints and lead paints for other applications most likely to contribute to childhood lead exposure, can be considered one very good indicator of how well the world's governments are performing in relationship to the sound chemicals management goals that they agreed to the 2002 and 2012 World Environmental Summits.

SAICM

In 2006, environment ministers, health ministers, and other government delegates from more than 100 countries met in Dubai along with representatives of United Nations specialized agencies, NGOs, industry trade associations, and others for the first International Conference on Chemicals Management (ICCM1). The ICCM1 adopted the SAICM, a policy framework and program of action whose goal is to achieve sound chemicals management in all countries by 2020.[50]

At the time that SAICM was being prepared and adopted, it appears that most participating government and NGO experts were unaware that lead paints remain widely available in the developing world. For example, the word "paint" does not appear in the 120-plus pages of SAICM's founding documents. Soon afterwards, however, NGOs began testing decorative paints on the market in their home countries. In every country where testing was conducted, most brands of oil-based decorative paints tested had hazardous lead content. IPEN and others concluded that the elimination of lead paint should be considered a critical SAICM issue and a necessary part of the implementation of sound chemicals management in any country.

Two of SAICM's founding principles, as expressed in the high-level declaration adopted by Environment Ministers and others at SAICM's founding meeting, are:

> *The sound management of chemicals is essential if we are to achieve sustainable development, including the eradication of poverty and disease, the improvement of human health and the environment and the elevation and maintenance of the standard of living in countries at all levels of development;* and ...
>
> *We are determined to protect children and the unborn child from chemical exposures that impair their future lives.*[51]

These principles speak directly to the continuing widespread sale and use of lead paints. Childhood lead exposures associated with lead paints harm human health, undermine the eradication of poverty and disease, and create barriers to the elevation and maintenance of standards of living. Lead paint elimination is necessary to protect children and the unborn child from chemical exposures that impair their future lives.

One of the agreed pillars of the SAICM Policy and Strategy is the SAICM Risk Reduction Objective:

> *To ensure, by 2020 that chemicals or chemical uses that pose an unreasonable and otherwise unmanageable risk to human health and the environment based on a science-based risk assessment and taking into account the costs and benefits as well as the availability of safer substitutes and their efficacy, are no longer produced or used for such uses.*[52]

This SAICM objective speaks very clearly and precisely to the continued use of lead compounds in the formulation of paints. Lead compounds used in decorative and other paints pose an unreasonable and otherwise unmanageable risk to human health and the environment. They impose very high costs on society, provide very little if any benefits, and should no longer be produced and used. Safer substitutes for the lead pigments, lead drying agents, and other lead compounds used in the manufacture of paints have long been used, are widely

50 SAICM, http://www.saicm.org/index.php?menuid=2&pageid=256

51 *Dubai Declaration on International Chemicals Management*, http://www.saicm.org/documents/saicm%20texts/SAICM_publication_ENG.pdf

52 *SAICM Overarching Policy Strategy*, http://www.saicm.org/documents/saicm%20texts/SAICM_publication_ENG.pdf

available, have well-demonstrated efficacy, and have at most marginal impact on the wholesale price of the paint product.

For the following reasons, national lead paint elimination should be relatively easy to achieve in every country if government officials and stakeholders work together:

- The significant harms associated with childhood lead exposure, including low-dose subclinical exposure, are now well-documented and not likely to become a subject of serious national controversy.
- The barriers that national paint manufacturers and importers will need to overcome to eliminate the use of lead pigments, lead dryers, and other lead compounds in their decorative and other paint formulations are minimal, not costly, and not technically difficult to implement.
- The drafting of an appropriate national legal instrument to prohibit the manufacture, import, sale, and use of lead decorative paints is not a difficult exercise.
- Modalities can be found for compliance monitoring and enforcement of a well-crafted national lead paint control instrument that are neither costly nor technically challenging to implement.

Any country with the will to do so can relatively easily eliminate the manufacture, import, sale, and use of lead decorative paints and the other categories of paint most likely to contribute to childhood lead exposure. Additionally, the largely transnational character of the global paint and coatings industry and its supply chain suggests that the industry itself, with leadership from the large companies that dominate it, could easily decide to eliminate these lead paints. Therefore:

- If SAICM is to be considered to be a meaningful international initiative
- If governments and stakeholders take seriously the SAICM goals and objectives they adopted
- If purely voluntary international agreements such as SAICM are to be viewed as having any utility

Then the global elimination of lead decorative paints should be undertaken as a SAICM target objective that can be realistically achieved by 2020 in virtually all countries.

GLOBAL ALLIANCE TO ELIMINATE LEAD PAINT

In 2009, a second meeting of the International Conference on Chemicals Management (ICCM2) was held in Nairobi. IPEN and others presented evidence to the ICCM2 that lead paints continue to be widely manufactured, sold, and used in many developing countries and countries with economies in transition. Delegates from government ministries and stakeholder organizations responded by adopting a resolution that identified Lead in Paints as an emerging SAICM policy issue and that invited the UNEP and the WHO to establish a global partnership to promote phasing out the use of lead in paints and to serve as its secretariat.[53]

UNEP and WHO jointly initiated this partnership at an organizational meeting held in May 2010 under the name *Global Alliance to Eliminate Lead Paint* (GAELP).[54] GAELP's agreed broad objective is to phase out the manufacture and sale of paints containing lead and eventually to eliminate the risks from such paint.[55] Using the ICCM2 resolution as its point of departure, GAELP has defined the term "paint" to also include varnishes, lacquers, stains, enamels, glazes, primers, and coatings. GAELP defines the term "lead paint" as paint to which one or more lead compounds has been added.[56]

ANY COUNTRY WITH THE WILL TO DO SO CAN RELATIVELY EASILY ELIMINATE THE MANUFACTURE, IMPORT, SALE AND USE OF LEAD DECORATIVE PAINTS AND THE OTHER CATEGORIES OF PAINT MOST LIKELY TO CONTRIBUTE TO CHILDHOOD LEAD EXPOSURE.

GAELP's overall goal is to prevent children's exposure to lead via paints containing lead and to minimize occupational exposures to lead in paint. GAELP's broad objective is to phase out the manufacture and sale of paints containing lead and, eventually, to eliminate the risks from such paint.[57]

GAELP's specific objectives are to:[58]

> (a) Raise the awareness of government authorities and regulators, the private sector, manufacturers, consumers, workers, trade unions, and health-care providers about the toxicity of lead in paints and the availability of technically superior and safer alternatives

53 ICCM2 omnibus resolution II/4 on emerging policy issues, http://www.saicm.org/documents/iccm/ICCM2/emerging%20issues/ICCM2%20Outcomes/Emerging%20issues/Omnibus%20resolution%20II_4.doc

54 See GAELP Home Page, http://www.unep.org/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/tabid/6176/Default.aspx

55 See GAELP Objectives, http://www.unep.org/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/GAELPObjectives/tabid/6331/Default.aspx

56 See GAELP *Operational Framework*, March 2011, http://www.unep.org/hazardoussubstances/Portals/9/Lead_Cadmium/docs/GAELP/Final_operational_framework_GAELP.pdf

57 *Global Alliance to Eliminate Lead Paint: Objectives*, http://www.unep.org/hazardoussubstances/LeadCadmium/PrioritiesforAction/GAELP/GAELPObjectives/tabid/6331/Default.aspx

58 same

(b) Catalyze the design and implementation of appropriate prevention-based programs to reduce and eliminate risks from the use of lead in paints and products coated with lead paints

(c) Help identify paint manufacturers and formulators that continue to produce and market paints containing lead so as to foster actions to phase out lead from their products

(d) Promote the establishment of appropriate national regulatory frameworks to stop the manufacture, import, export, sale, and use of lead paints and products coated with lead paints

(e) Promote, as appropriate, international third-party certification of new paint products to help consumers to recognize paint and coatings without added lead

(f) Share guidance and promote assistance to identify and reduce potential lead exposure in and around housing, childcare facilities, and schools in which paint containing lead and paint dust is present and in industrial facilities producing or using paint containing lead to reduce workers' lead exposure

GAELP'S OVERALL GOAL IS TO PREVENT CHILDREN'S EXPOSURE TO LEAD VIA PAINTS CONTAINING LEAD AND TO MINIMIZE OCCUPATIONAL EXPOSURES TO LEAD IN PAINT. GAELP'S BROAD OBJECTIVE IS TO PHASE OUT THE MANUFACTURE AND SALE OF PAINTS CONTAINING LEAD AND, EVENTUALLY, TO ELIMINATE THE RISKS FROM SUCH PAINT.

The WHO and the UNEP devote resources, staff time, and their organizational influence to GAELP and the achievement of its objectives. Several academics in the fields of medicine and public health, and NGO representatives associated with IPEN, Occupational Knowledge International, and others are active GAELP participants and contributors. The leading paint industry international trade association, International Paint and Printers Ink Council (IPPIC), has also been an active participant in GAELP meetings. Until recently, government participation in GAELP activities was sparse. However, a second general meeting of GAELP was held in Bangkok in July 2012, hosted by the Thai Government, with 22 government representatives in attendance together with participants from UNEP, WHO, NGOs, academics, and the Thai paint industry trade association.

Following the ICCM2 decision, strong resolutions in support of GAELP's lead paint elimination objectives were adopted at the *Fourth African regional meeting on SAICM* in Nairobi in April 2011 and at the *Third Latin American and Caribbean regional meeting on SAICM* in Panama City in June 2011.[59] The SAICM regional Group of Asian and Pacific countries announced at a global SAICM meeting in Belgrade, in November 2011, that it also "accorded high priority to work on lead in paint, urging the world community to phase out the use of lead forthwith."[60]

Despite these statements of support, only a small handful of developing world governments have so far adopted meaningful measures to actually prohibit or strictly control lead paint manufacture, import, sale, and use in their countries. Additionally, while paint industry trade association representatives have indicated international paint industry support for GAELP and its objectives, this has not yet translated into meaningful industry engagement in lead paint elimination efforts of a kind or on a scale comparable to the initiatives of petroleum companies and their trade associations during the successful global campaign to eliminate leaded automotive fuels. Nor have donor governments provided UNEP and WHO with sufficient resources to employ dedicated full-time staff to GAELP or to fund concerted GAELP-led initiatives.

Nonetheless, GAELP provides a useful framework for lead paint elimination initiatives and dialogue with paint manufacturing companies and their trade associations. It can potentially serve as a vehicle through which UNEP can influence national environment ministries and WHO can influence national health ministries in support of national regulatory actions to control lead paints. GAELP can also serve as a useful framework for cooperation between health professionals, academics, NGOs, and others who have an interest in launching their own national or global initiatives in support of lead paint elimination objectives.

As a participant in GAELP, IPEN has had some initial successes in mobilizing resources for NGO lead paint elimination efforts from governmental, intergovernmental, and non-governmental donors. For example, participation in GAELP has helped IPEN secure a grant of €1.4 million from a European Commission Development and Cooperation program to support NGO initiated lead paint elimination activities in seven Asian countries. GAELP has also provided

59 http://www.saicm.org/images/saicm_documents/OEWG/Meeting%20documents/OEWG%201%20INF%2011%20Compilation%20of%20reg%20mtgs.pdf

60 Report of the work of the Open-ended Working Group of the International Conference on Chemicals Management, http://www.saicm.org/images/saicm_documents/OEWG/Meeting%20documents/OEWG1%2019_OEWG1%20Report%20E.pdf

a framework for discussions between IPEN, UNEP, and the Global Environment Facility about a possible $1 million grant for a global NGO lead paint elimination project with focal activities in five regionally diverse countries. These projects may be used as models by both governmental entities and other NGOs who may wish to seek their own funding from environmental or development assistance donors for lead paint elimination programs and projects.

INTERNATIONAL LEAD POISONING PREVENTION DAY OF ACTION

One decision GAELP has taken is to sponsor an *International Lead Poisoning Prevention Day of Action* that will take place in October 2013 with lead paint elimination as its theme. This decision was proposed by agencies of the U.S. Government, which have sponsored national Lead Poisoning Preventions Days of Action for many years and have offered GAELP to provide technical and in-kind support for this global initiative. At ICCM3 (September 2012), a resolution to support the Day of Action will be proposed.

One objective of organizing a national Lead Poisoning Prevention Day of Action with lead paint elimination as its theme can be to send a clear signal of the intent to take further action aimed at the elimination of lead paint production, import, sale, and use. The Day of Action can be used to raise public and political awareness on the issue. It can provide an opportunity for direct outreach to paint companies and vendors and to national paint industry trade associations. It can also be useful in identifying national allies for lead paint elimination objectives. The costs associated with organizing a Day of Action should be minimal and would mostly be of an in-kind character. And documenting a successful effort might be helpful in approaches to potential donors with requests to support more substantive national initiatives.

Utilizing the Day of Action to mobilize support for national lead paint elimination efforts will be most effective if one or more government ministry or agency such as health, environment and/or others provides national sponsorship for the event. In becoming a sponsor, the ministry or agency takes a meaningful step toward national lead paint elimination, which will help create a foundation upon which more substantive follow-up activity can be built. However, where government agencies are not in a position to sponsor or organize the Day of Action, NGOs, health professional organizations, and/or others in a country may take the initiative on their own.

Once the date is firmly set and initial sponsors or organizers have been identified, an effort should be made to identify additional participants and supporters. These might include agencies of state, provincial, and/or municipal governmental entities; national or regional political, intellectual, cultural, or social leaders; the WHO national office; organizations of medical and health professionals; hospitals and medical schools; paint manufacturers and/or their trade associations; NGOs and other organizations of civil society working on issues such as health and/or environmental protection, consumer rights, and children's advocacy; and others.

Additional activities could include posters, brochures, and similar materials promoting lead poisoning prevention; public meetings and seminars on this theme; promotion coverage in print and electronic media; etc. Presumably, GAELP will be able to provide useful and appropriate poster and brochure templates, informational materials, and other forms of support.

A NATIONAL LEAD PAINT CONTROL INSTRUMENT

One of GAELP's most important objectives is to promote the establishment of appropriate national regulatory frameworks to eliminate lead paints. Governments can do this by passing laws or by issuing regulations, directives, mandatory procedures, or standards, or by other means. The instrument may impose different controls and/or different timelines for entry into force for different paint categories. Priority should be given to those paint categories most likely to contribute to childhood lead exposure. These include decorative paints; paints applied to toys, pencils, children's furniture, and other articles that children might chew on; and anti-rust or anti-corrosive paints that are sold on the consumer market or used on playground equipment. Consideration should also be given workers' occupational exposure to lead.

Although it is appropriate to define lead paint as paint to which one or more lead compounds have been added, as a practical matter, an effective national control instrument needs to also establish a quantitative standard that can be easily tested for and measured. The proper standard is a limit on the total lead content of the non-volatile portion of the dried paint film. The standard adopted by the United States imposes an upper limit of 90 ppm on total lead (dry weight) for decorative and many other paint categories. Other countries have adopted standards in the range of 90 to 600 ppm total lead (dry weight). NGOs associated with IPEN generally promote the 90 ppm standard as one that is fully achievable and maximally protective. However, the difference in practical effect between a 90 ppm standard and a 600 ppm standard is not very great. If the paint manufacturer adds lead compounds to paint to serve as a pigment, as a drying agent, or for some other intentional purpose, the lead content

of the paint is almost always substantially greater than 600 ppm; if no lead compound is intentionally added, the lead content is generally well below 90 ppm.

An appropriate national lead paint control instrument should prohibit production, import, export, sale, and use of any controlled paint product that fails to meet the national standard. It should use a broad definition of paint to include varnishes, lacquers, stains, enamels, glazes, primers, and coatings. It should specify a uniform analytical method or methods that are appropriate for measuring total lead in the non-volatile portion of the dried paint film. The approved methods should specify procedures for sample collection and drying; sample preparation and digestion; and chemical analysis. The instrument should establish the date when it enters into force, and it should address requirements for paints that are sitting in warehouses or on store shelves at the time of entry into force. An effective instrument must also contain provisions specifying enforcement mechanisms including monitoring as well as fines or other consequences for non-compliance that are sufficient to induce paint producers, importers, and venders to comply.

AN APPROPRIATE NATIONAL LEAD PAINT CONTROL INSTRUMENT SHOULD PROHIBIT PRODUCTION, IMPORT, EXPORT, SALE AND USE OF ANY CONTROLLED PAINT PRODUCT THAT FAILS TO MEET THE NATIONAL STANDARD.

It is also advisable for a national paint control instrument to include provisions aimed at minimizing lead exposure from lead paint that was applied to surfaces prior to the instrument taking effect. For example, it may require labels on all decorative paint cans with warnings that sanding or scraping a previously painted surface in preparation for repainting can produce hazardous lead dust, and it may specify procedures for preparing surfaces for repainting that minimize this lead dust hazard.

If a national lead paint control instrument includes exemptions or delayed implementation for the control of certain categories of lead paint, it is advisable that the instrument require labels on the lead paints that state: "Hazard: Contains Lead."

A lead paint control instrument may enumerate a non-exclusive list of lead compounds whose intentional use in paint formulations is explicitly prohibited. If this were to be done, the list should include, at a minimum, all the lead paint additives that have been identified by GAELP: lead monoxide, lead octanoate, lead chromate, lead 2-ethylhexanoate, lead sulfate, lead oxide, lead molybdate, lead nitrate, lead sulfochromate yellow, lead naphthenate, lead chromate molybdate sulfate red, lead peroxide, lead carbonate (white lead), lead chromate oxide and trilead bis(carbonate) dihydroxide.[61]

A few countries have recently adopted lead paint control instruments with standards for decorative and other paints that are not based on the total lead content of the paint. These standards, rather, are based on what has been called "soluble lead" defined as the amount of lead in the dry paint film that is dissolved by a dilute acid solution. Pigment venders have responded to soluble lead standards by offering paint manufacturers yellow and red pigments of lead chromate and lead molybdate that have been engineered not to easily dissolve in dilute hydrochloric acid. When such engineered lead pigments are used in the formulation of decorative or other paints, the paints will likely comply with the soluble lead standard but would still be considered to be "lead paint" according to the internationally agreed definition of lead paint. Therefore, the adoption of a national lead paint control instrument that uses a soluble lead standard for decorative or other paints is not advised.

A probable rationale for the adoption of soluble lead standards is the assumption that when a child ingests paint residues, only lead pigments or other lead compounds that are easily dissolved by gastric acid in the child's stomach (dilute hydrochloric acid) will enter the blood stream and cause harm. The scientific basis for such an assumption, however, is dubious. These engineered lead compounds are likely to behave very differently upon entry into a child's gastrointestinal tract than they do in the test laboratory. The testing laboratory measures how much lead in a sample of the new paint dissolves in dilute acid. Paint residues that a child may ingest, on the other hand, are not likely to come from new paint. Usually these residues come from paints that have been painted onto surfaces, aged, weathered, exposed to sunlight, pounded and grinded, and so on. There is no good reason to expect that these engineered lead pigments will continue to remain non-soluble.

61 Global Alliance to Eliminate Lead Paint, Operational Framework, paragraph 7, http://www.unep.org/hazardoussubstances/Portals/9/Lead_Cadmium/docs/GAELP/SecondMeeting/GAELP_operational-framework-full-JM120706_r.pdf

PROGRESS

Limited progress toward global lead paint elimination has been made since 2007.

PROGRESS AS MEASURED BY PAINT SAMPLING AND TESTING

In some of the countries where IPEN and others tested paints between 2007 and 2009, it appears that many of the paint brands whose oil-based decorative paints were found to contain high quantities of lead have since reduced or completely eliminated their use of lead pigments, lead drying agents, and other lead compounds in the decorative paints that they produce for sale in those markets. This progress is difficult to quantify and the information is incomplete because IPEN and others have had access to only very modest resources for paint sampling and testing. Nonetheless, based on the limited data available, it appears that in some of the countries of South Asia and Southeast Asia, and also in Cameroon (and possibly other countries where NGOs and others have carried out active public information campaigns on lead paint elimination), a number of the large paint brands have stopped or reduced their use of lead pigments and other lead compounds in the decorative paints that they sell in those markets.

IPEN currently has knowledge of paint sampling and testing results from approximately 25 developing countries and countries with economies in transition. This means that for most countries, there still appears to be no publicly available data on the lead content of paints for sale on the national market. As a result, for most countries, there is not even baseline information against which progress could be measured. And the data that is currently available is incomplete. It does not cover all the brands for sale on any market and usually covers only a small number of the paint colors or textures of any single brand. Additionally, in most cases, the available data comes from sampling and testing undertaken only one time, which makes it difficult to evaluate progress over time.

The best measure of real progress toward global lead paint elimination would be based on extensive, periodic paint sampling and testing in countries of all regions. This is because even after a country adopts a national law or regulation to prohibit lead decorative paints, these paints might remain widely available for sale on the national market if compliance is lax. Hopefully, as a growing number of governments of developing countries and countries with economies in transition take an interest in lead paint and its elimination, many are likely to initiate their own national lead paint sampling and testing activities or programs. Some may do so to help them evaluate the scale of the national problem; some may do so as part of the compliance regime associated with a national lead paint control instrument. As governments collect such data, it would be extremely useful if they would agree to be transparent and share the data that they collect with the international community; and it would also be useful for GAELP to maintain a global publicly available database of paint sampling and testing results.

While extensive paint sampling and testing would provide, in principle, the best measure of progress toward global lead paint elimination, other useful measures include: the number (and the paint market size) of countries that have adopted meaningful lead paint control measures; and the number (and paint market share) of the paint manufacturers that do not add lead pigments, lead drying agents, and other lead compounds to paints that they produce or who have made a meaningful public commitment to stop by a an announced date.

THE BEST MEASURE OF REAL PROGRESS TOWARD GLOBAL LEAD PAINT ELIMINATION WOULD BE BASED ON EXTENSIVE, PERIODIC PAINT SAMPLING AND TESTING IN COUNTRIES OF ALL REGIONS.

Examples of progress include:

BRAZIL ADOPTS LEAD PAINT CONTROL LAW

In August 2008, Brazil adopted an administrative lead paint control law which establishes the maximum allowable limit for lead in paints, varnishes, and similar surface coating products for use on buildings and schools. The law entered into force in August 2009.[62]

The Brazilian law prohibits the manufacture, sale, distribution, and import of surface coating products for use on buildings and schools with total lead content greater than or equal to 600 ppm (0.06%) of the non-volatile portion of the dried paint as determined by laboratory testing in accordance with national or international technical standards. Paint companies and vendors were given one year to comply and remove lead paints from their supply chains. Following the law's entry into force in August 2009, it became impermissible to sell lead paints even if stocks remained.

62 Presidência da República, Casa Civil, Subchefia para Assuntos Jurídicos, Lei No, 11.762, de 1º de Agosto de 2008, http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2008/lei/l11762.htm

The law requires paint importers to provide documentation of laboratory tests that demonstrate that imported paints comply with the standard before being granted permission to import. Paint manufacturers or importers that fail to comply with the lead paint control administrative law may receive penalties including notification, seizure of the product, and a fine equal to the value of goods seized. The law does not specifically indicate any other monitoring or enforcement mechanisms.

The listed categories of paints which are exempted from the Brazilian law are paint and coating materials for use on agricultural and industrial equipment, steel structures, industrial, agricultural and commercial applications, motor vehicles, aircraft, ships, railway carriages, appliances, and metal furniture. The law additionally exempts paints used on traffic signs, anticorrosive paints, or any paint, ink or similar material used exclusively in graphic arts.

The Brazilian NGO Environmental Protection Association, in collaboration with IPEN, initially sampled and tested paints on the market in Brazil after the law was adopted but before it had entered into force.[63] Of the six brands of enamel paints on the market in Brazil that were sampled and tested, paints from two of the brands contained only trace or low quantities of lead. Tested paints from the other four brands, however, included some with very high lead content: the highest contained 170,000 ppm of lead and one or more of the samples of each of the four brands contained 5,000 ppm of lead or more.

Paints on the market in Brazil were sampled and tested again after the new law entered into force. The results were not available by the time this report went to press. However, based on informal communications, it appears that very significant progress has been made. All of the Brazilian enamel decorative paints that were tested before the law entered into force were tested again in December 2011. The tested samples from all six were found to contain no lead at the level of detection. However, two brands that were not previously tested did contain significant amounts of lead. One tested sample from each of these brands contained more than 45,000 ppm of lead – 75 times the allowable limit under Brazil's new law. Since the new law has only recently entered into force, compliance should continue to improve.

SRI LANKA ADOPTS LEAD PAINT CONTROL DIRECTIVE

Sri Lanka is another country where progress toward lead paint elimination is being made. In 2009, the Sri Lankan NGO Centre for Environmental Justice released a report prepared in cooperation with IPEN and the Indian NGO Toxics Link which included the first data ever made publicly available on the lead content of decorative paints for sale on the Sri Lankan market. All the decorative paints tested from one of the brands in the national market (ICI Dulux) contained only trace amounts of lead. However, paints from the three other brands tested had very high lead content.

The release of these results set off a fierce debate between the paint companies themselves and also in the Sri Lankan press and society. The Centre for Environmental Justice then successfully petitioned the Sri Lankan Supreme Court requesting it order the Consumer Affairs Authority to formulate a suitable lead paint control regulation taking into consideration the serious health impacts that result from adding lead compounds to decorative paints.

In September 2011, the Sri Lankan national Consumer Affairs Authority, using powers granted to it by the Consumer Affairs Authority Act, published a lead paint control directive which states:

> *"... no Manufacturer, Importer, Packer, Distributor or Trader shall manufacture, import and use or distribute, pack, store or sell or display for sale, expose for sale or offer for sale, wholesale or retail any paints unless such paints shall conform to the corresponding Total Lead Content specified by the Sri Lanka Standard Institution for such paints."*

The specified permissible maximum total lead content, as stated in the directive is 600 ppm (mg/kg) for enamel paints and floor paints and 90 ppm (mg/kg) for emulsion paints both for exterior and interior use. The directive additionally establishes a permissible maximum soluble lead content for "Paints used on Toys and Accessories for Children" of 90 ppm (mg/kg). The directive does not specify the test methods to be used for monitoring compliance with its standards nor a specific lead paint monitoring and enforcement regime. However, the enforcement provisions and penalties for non-compliance specified in the Consumer Affairs Authority Act will apply.

The Sri Lankan lead paint control directive will enter force and become effective on January 1, 2013.

Many decorative paint brands that are sold on the Sri Lanka market appear to have already begun to comply with this directive even though it has not yet entered into force. Several major brands, including Asian Paints, ICI Dulux, and Multilac, have placed statements on their labels saying "no added lead."

63 http://www.ipen.org/ipenweb/documents/work%20documents/global_paintstudy.pdf

THAILAND MAY SOON ADOPT A NEW PAINT CONTROL INSTRUMENT

In 2009 the Thai NGO Campaign for Alternative Industry Network (since renamed Ecological Alert and Recovery – Thailand or *EARTH*) released a report prepared in cooperation with IPEN and the Indian NGO Toxics Link that included data on the lead content of decorative paints for sale on the Thai market. This report and subsequent activities by EARTH and other Thai stakeholders stimulated renewed national interest in the issue.

Several major paint brands on the Thai market have participated for years in a green labeling program, a voluntary program for water-based and solvent-based paints. Participating companies many years ago appear to have decided not to use lead pigments and other lead compounds in the decorative paints that they sell in Thailand. Some of these paints were sampled and tested for the 2009 report and contained no more than trace amounts of lead. On the other hand, paints from some of the same brands as well as other brands of oil-based paints on the Thai market sampled and tested for the report were found to contain extremely high lead: a yellow Nippon enamel paint was found to contain more than 500,000 ppm of lead and a Rust-Oleum enamel paint was found to contain more than 300,000 ppm of lead.

Thai Government agencies, paint industry representatives, NGOs, and others entered into a stakeholder dialogue on the issue. In 2012, the Thai Ministry of Environment agreed to host the second meeting of the GAELP held on July 12, 2012, in Bangkok.

The President of the Thai Paint Manufacturers Association (TPMA), who is also the Managing Directory of one of Thailand's largest paint manufacturing companies, gave a presentation to the GAELP meeting. She stated that more than 80 percent of all paint sold on the Thai market is produced by TPMA member companies. Because TPMA understood that the Thai Government agencies might be considering the adoption of a national lead paint control instrument, it polled its members to ask them whether any had an objection to the Thai government initiating a ban on the use of lead compounds in the formulation of decorative paints. When no objections were received, TPMA forwarded an official letter to the Thai Ministry of Industry giving its consent to such a ban.

The interest shown by the Thai Government in its agreement to host a GAELP meeting and the letter from TPMA stating its consent to a ban on lead compounds in decorative paints are good reasons for optimism that Thailand will soon adopt a binding regulation or directive banning the use of lead compounds in decorative paints.

LEAD PAINT CONTROL ORDER PROPOSED IN THE PHILIPPINES

The Philippine NGO EcoWaste Coalition sampled paints on the national market in 2009 as part of the IPEN/Toxics Link Global study and also tested paints again in a 2010 follow-up study. In both of the studies, some but not all of the oil-based decorative paints contained high added lead content. Paint testing results were released to the news media in both Manila and Cebu City and received extensive newspaper and television coverage. Resolutions in support of a prohibition on lead decorative paints were introduced into both the Philippine Senate and House of Representatives. The Philippine Health Secretary issued a statement in support of EcoWaste's advocacy for the immediate phasing out of lead in paints in the country. The Philippine Environment Secretary called for stricter controls on lead, especially in paints. In response, the Philippine paint industry trade association has indicated it could accept a phase-out of the use of lead drying agents over a two-year period and a phase-out of the use of lead pigments over a six-year period.

The Philippine Department of Environment and Natural Resources has released a draft Chemical Control Order (CCO) which defines lead paints as "any paints containing total lead on dry basis that is above the specific limit of 90 parts per million (ppm)." The draft CCO states that, "All lead compounds in paints for architectural and industrial paints, coatings, pigments, varnishes, lacquers, stains, enamels, glazes, topcoats and primers shall be gradually reduced up to the allowable limit of 90 ppm in concentration within the period of six (6) years from the approval and signature of this CCO." The draft CCO also requires that a warning label be placed on paint and coatings containers indicating that lead dust is hazardous and it can be created when preparing previously painted surfaces for repainting.

This draft Control Order is still under discussion and has not yet been adopted. NGOs and stakeholders, among other issues, are pressing for the provisions of the Control Order to be phased-in more rapidly than the six-year period currently called for in the draft.

APPARENT PROGRESS BY THREE OF INDIA'S FOUR LARGEST PAINT BRANDS

Four major paint brands dominate the Indian paint industry: Asian Paints, Berger Paints, Dulux ICI (India), and Goodlass Nerolac Paints. In 2007, when the Indian NGO Toxics Link first sampled and tested paints on the Indian market, none of the samples of Dulux ICI brand paints tested contained more than trace quantities of lead. Samples of oil-based decorative paints from each of the other three major brands contained more than 600 ppm of lead.

Toxics Link released these results to the news media and initiated contacts with several paint companies. When Toxics Link again tested paints on the Indian market in 2009, neither the Dulux ICI nor the Nerolac Paints tested contained more than trace quantities of lead.[64] The NGO campaign continued, and in 2011 Toxics Link once more tested paints on the Indian market. This time none of the tested paints from three of the four major brands contained more than 90 ppm of lead. Of the market leaders, only Berger paints still contained high lead content: as high as 34,700 ppm.[65] Based on these testing results and other indications, it appears that three of India's four largest paint manufacturing companies may have taken decisions to not use lead pigments, lead drying agents, and other lead compounds in the formulation of their decorative paints.

This good news, however, comes with qualifications. The Indian paint industry contains a very large number of small and mid-size paint companies that may comprise as much as 40 percent of the Indian paint market. There is still little information about what progress, if any, these companies are making toward lead paint elimination and the Government of India has not yet decided to establish any mandatory lead paint standard.

Additionally, India's four largest brands also command large market shares in neighboring countries such as Bangladesh and Nepal. According to testing results from 2011, both the Berger and Asian Paints oil-based decorative paints purchased in Bangladesh and Nepal contained extremely high concentrations of lead. A Berger yellow paint purchased in Nepal contained 212,700 ppm of lead; a Berger yellow paint purchased in Bangladesh contained 121,900 ppm; an Asian Paint orange paint purchased in Nepal contained 64,400 ppm; and an Asian Paint yellow paint purchased in Bangladesh contained 43,600 ppm.[66]

CAMEROON PLANS LEAD PAINT STANDARD

In 2011, the Cameroon NGO Research and Education Centre for Development sampled and tested paints on the national market with financial support from the SAICM Quick Start Program Trust Fund and UNEP Chemicals. CREPD tested 60 paint samples that were purchased in retail stores in seven of the country's ten regions. Thirty-nine of the samples (65 percent) contained more than 600 ppm of lead; the highest contained 500,000 ppm of lead. CREPD also surveyed paints on the market and estimated that 80 percent of the paint products available on the market are manufactured in Cameroon, although the market shares of the different paint brands could not be determined.

Several Cameroon Ministries cooperated with CREPD in its work on lead paint including the Ministries of Environment and Protection of Nature; Public Health; Mine, Industry and Technological Development; Trade; and Labor and Social Welfare. The results of the tests were presented to two national workshops and ten regional workshops with participation from ministries and stakeholders. In response, the Cameroon Agency of Standard and Quality (ANOR) announced plans to move forward with a standard to regulate the manufacture, import, and sale of lead paint. The Prime Minister approved taking action on this issue. Stakeholders and civil society have been invited to participate in the development of the national standard.

64 Lead in New Decorative Paints: A Global Study, Toxics Link and IPEN, August 2009, Dr. Abhay Kumar, http://www.ipen.org/ipenweb/documents/work%20documents/global_paintstudy.pdf

65 Double Standard: Investigating Lead Content In Leading Enamel Paint Brands In South Asia, by Toxics Link, India, Environment and Social Development Organization, Bangladesh, and Center for Public Health and Environmental Development, Nepal, June 2011, http://toxicslink.org/docs/Double_Standard_Lead_Paint_29_June_2011.pdf

66 Same

LEAD PAINT ELIMINATION STRATEGIES

Effective lead paint elimination strategies will generally include two complementary components: 1) efforts aimed at achieving binding national laws, regulations, standards, and procedures to control the manufacture, import, sale, and use of lead paints; and 2) market-based and other initiatives aimed at influencing paint manufacturers, brand holders, and vendors to take their own voluntary actions to stop manufacturing and selling lead paints. These two components are closely linked. Neither can be effectively initiated without already having data on the lead content of paints being sold on the national market; and public and consumer awareness and demand are often important drivers for both. The two components are also linked because, on the one hand, many governments are likely to be more willing to promulgate binding lead paint control measures when they see that leaders within their national paint industry have already begun moving toward eliminating lead from their paints or have expressed their willingness to do so; and on the other hand, many paint companies will likely be more willing to voluntarily stop manufacturing lead paints when they perceive that binding laws or regulations are coming.

While global and regional initiatives can make important contributions to achieving global lead paint elimination, their main role will be to support and complement country-by-country efforts. There is no prospect that any global or regional legally-binding instrument to control lead paint will be considered or adopted any time in the foreseeable future. Meaningful national laws or regulations to prohibit or control lead paints therefore must be individually adopted by each national government. Market-based lead paint elimination strategies must largely be carried out on a country-by-country basis, but the transnational character of many larger paint companies means that global and regional initiatives can make important contributions. Paints are marketed nationally, sometimes with local or regional variations. Therefore, both the nationally-owned paint companies and the national subsidiaries of international companies will be responsive mainly to consumer and public pressures coming from inside the country.

ROLES IN GLOBAL LEAD PAINT ELIMINATION FOR INTERNATIONAL ACTORS

While the roles of international and regional actors are complementary to country-by-country efforts, they nonetheless make critically important contributions in achieving lead paint elimination.

Non-Governmental Organizations. Very little international expert or institutional attention was being given to the production, sale, and use of lead paints in the developing world until IPEN, an international NGO network, first brought this issue to the 2008 meeting of the Intergovernmental Forum on Chemical Safety in Dakar and then to the second meeting of the International Conference on Chemicals Management in Geneva in 2009. International NGO networks like IPEN have an important continuing role. IPEN conducts outreach to NGOs and organizations of civil society in countries of all regions to keep them updated on global lead paint elimination efforts and stimulates NGOs to take up the issue in their own countries. IPEN provides interested NGOs with information, materials, advice, and assistance and, as appropriate, helps coordinate NGO lead paint elimination efforts between countries. IPEN helps NGOs share their experiences and the lessons learned in the different national campaigns. Within budgetary constraints, IPEN also provides NGOs in all regions with technical assistance and works to mobilize resources that can be used to support national NGO campaigns and projects. IPEN additionally participates in the GAELP Advisory Committee and provides assistance to the GAELP Secretariat in carrying out the work of GAELP.

WHILE THE ROLES OF INTERNATIONAL AND REGIONAL ACTORS ARE COMPLEMENTARY TO COUNTRY-BY-COUNTRY EFFORTS, THEY NONETHELESS MAKE CRITICALLY IMPORTANT CONTRIBUTIONS.

Intergovernmental Organizations. After the lead paint elimination resolution was adopted at ICCM3, UNEP and WHO became more actively engaged in the issue and agreed to establish, support, and cooperatively manage the GAELP. WHO and its regional and national offices have close and important relationships with ministries of health in most countries. WHO's agreement to co-manage the GAELP Secretariat sends a signal of its support for national lead paint elimination. This signal could be greatly amplified through direct outreach to national health ministries by WHO regional and national offices. In a similar manner, UNEP has important influence over national environment ministries. WHO and UNEP working together through GAELP could greatly influence many national governments to start giving serious consideration to the adoption of a

national lead paint control instrument. Strong statements of support for lead paint elimination objectives that SAICM regional groups adopted following ICCM2 has also helped to create a climate that encourages relevant national authorities in many countries to begin their own lead paint elimination initiatives. The challenge following ICCM3 is to continue efforts aimed at encouraging national authorities to take up the issue of lead paint elimination, and to make available to them the informational materials and other kinds of support and assistance that they will need to go forward.

GAELP and other international actors have been slow, so far, in preparing and disseminating informational and awareness-raising materials and templates for use or adaption by those engaged in national lead paint elimination efforts. Guidance materials on the elements of effective national lead paint elimination laws or regulations should have already been made available to government officials and others considering possible adoption of a national lead paint control instrument. Some small and mid-size paint manufacturers apparently lack the technical and supply chain information that they would need to cost-effectively reformulate their lead paints —information that should be relatively easy to compile and disseminate. Instructional information would be useful for government agencies, NGOs, and others on how to sample paints on the national market, prepare them for testing, select an appropriate testing laboratory, and interpret and disseminate results.

Progress also needs to be made to establish an internationally agreed framework for third-party paint certification of paint brands that have voluntarily agreed to remove lead compounds from their paint formulations. Such a framework could make it relatively easy to create national paint certification and labeling programs in countries where some, but not all, of the paint brands on the national market contain added lead compounds, and consumers are not able to identify with confidence which paint brands contain added lead and which do not. Third-party paint certification, based on an internationally agreed framework, might also be usefully incorporated as a component of a national lead paint control regime, especially in countries that might otherwise have difficulties establishing effective monitoring and enforcement measures.

Trade Associations. International and regional paint industry trade associations have the potential to become very important and constructive contributors toward achieving global lead paint elimination. The International Paint and Printers Ink Council (IPPIC) formally adopted a resolution in 2008 that supports the restrictions on the use of lead in paints that are already in place and that recommends their widespread adoption by authorities in countries not currently regulating the use of lead in paint. IPPIC has participated in the GAELP Interim Advisory Committee and has also apparently engaged in discussions with regional paint industry associations on issues related to lead paint. IPPIC has additionally expressed a possible interest in cooperating with other GAELP participants in the creation of a framework for third-party paint certification and labeling, and in the preparation and dissemination of technical and supply chain information for small and mid-size paint companies. However, there has so far been little, if any, forward motion on these matters.

The most useful role international and regional paint industry trade associations might play is to inform national paint industry trade associations that they will not be able to ignore growing international and national pressures on their member companies to discontinue the use of lead pigments, lead drying agents, and other added lead compounds in paints that they produce and sell. Since these pressures are expected to continue and are not likely to stop, national associations might be advised to take a number of actions including proactively discussing this issue among their members; encouraging members to discontinue using lead compounds in their paint formulations; providing relevant technical and supply chain information to those member companies who may need it; and, eventually, being able to inform their national governments that their members have no objection to the adoption of a national lead paint control instrument. National paint industry trade associations in at least two countries, Thailand and the Philippines, have already indicated to their national government that they support, or at least do not oppose, the adoption of a national lead paint control instrument.

Health Professionals. International associations of health professionals (e.g., International Pediatric Association, the World Federation of Public Health Associations) can play important roles by helping to mobilize interest and engagement by health professionals in national lead paint elimination initiatives. Charitable foundations and large international service organizations might also consider mobilizing support for global lead paint elimination. Of all significant international interventions to reduce the global burden of disease, the achievement of the global elimination of the manufacture and use of lead paints is probably the easiest to fully achieve; and it probably has a higher ratio of potential health benefit to cost than other global public health interventions.

Donors. Governmental and intergovernmental donors can also make important contributions. The European Union's SWITCH Asia Program has already awarded a €1.4 million grant to IPEN in support of NGO lead paint elimination activities in seven Asian countries The SAICM Quick Start Program Trust Fund has given support to two national NGO lead paint elimination projects. The Swedish Government, the Swedish Society for Nature Conservation, and the Swiss

Government have funded NGO lead paint elimination efforts. The Global Environment Facility has signaled an interest in providing at least one $1 million grant in support of a lead paint-related project. In addition, the U.S. and a few other governments have provided funds to GAELP. This funding, taken together, is a good start. However, GAELP is still woefully underfunded. It does not employ even one full-time dedicated staff person and has virtually no budget for direct interventions. Funding made available for country interventions by NGOs and/or governments has been sufficient to support ongoing work in less than a dozen countries. Hopefully, contributions in support of the goal of global lead paint initiative will increase in the near future.

AWARENESS RAISING

In many countries, public awareness-raising efforts are a key component of any national lead paint elimination strategy. This, however, need not be the case in all countries. Relevant government officials and/or political leaders in a country might see the need to take action to protect their public's health and the environment from lead in paint prior to the public demanding it. In such cases, an effective lead paint control law or regulation might be adopted and enforced without much of the public even being aware that lead paint ever was a national issue or concern.

In most countries, however, at least some public awareness-raising efforts will be needed. The government officials in health and environment ministries who best understand why it is important to eliminate lead from paint often do not have the high-level political or institutional support that they need to adopt and enforce an effective, legally-binding national lead control instrument. And in many countries, political leaders and higher-level officials may be more willing to support adoption of a national lead paint control instrument if they perceive that sectors of the public and key stakeholder groups in society are concerned about the issue and are expecting the government to act. Awareness-raising efforts may additionally serve to convince consumers to avoid the purchase of lead paints and may convince paint manufacturers and vendors that continuing to produce and sell lead paints may be harmful to brand reputation and decrease brand equity.

Fortunately, public awareness-raising on issues relating to lead exposure and lead paint is relatively easy. In most countries, many people are already broadly aware that lead exposure is bad, especially when children are exposed. Additionally, the evidence of harm from lead exposure is so strong and well-documented that industry representatives have generally been unwilling to try to publicly argue the case that there is no good reason for the public to be concerned about lead house paints and other lead paints for children-related applications. It appears that lead decorative paints can only prosper in the marketplace when the public is kept unaware of them. Once the public becomes informed about them, lead decorative paints become an embarrassment to their producers, their vendors, and their brand holders.

Experience so far has shown that lead paint is an issue that often easily attracts the interest of the press: both the print and the electronic media. There is currently no data available in most countries on the lead content of decorative paints for sale on the national market. When new data is generated by sampling and testing, and when the results show that some or many of the paint brands on sale contain hazardous quantities of lead, the press is often willing to prominently report on the story. When doing so, it is generally also willing to report on the harms associated with lead exposure in children, on the contribution of lead paint to childhood lead exposure, and so on. And finally, after the national news media has already once widely reported on the issue of lead paints, it is often relatively open to possible follow-up stories.

IN MANY COUNTRIES, PUBLIC AWARENESS-RAISING EFFORTS ARE A KEY COMPONENT OF ANY NATIONAL LEAD PAINT ELIMINATION STRATEGY

News media need not be the only target for awareness-raising efforts. Posters warning about dangers associated with lead paints that are posted in health clinics and hospitals can, in some countries, be a useful awareness tool as can brochures distributed by doctors and hospitals to their patients. Other strategies could include public meetings on the issue and petition or sign-on campaigns. The size and ambition of a national lead paint awareness campaign sufficient to achieve the desired result will vary greatly from country to country. In many cases, however, even relatively modest efforts will get the attention of paint companies, paint vendors, political leaders, and relevant national authorities.

ELEMENTS OF A NATIONAL LEAD PAINT ELIMINATION STRATEGY

As already indicated, the starting point for any national lead paint elimination strategy is the collection and dissemination of data on the lead content of paints for sale on the national market. In almost all countries, another key element of the strategy is an ambitious and ongoing awareness-raising campaign to inform consumers and the public about the presence of lead paint on the national market, the contribution of lead paint to childhood lead exposure, and the significant health and societal harms this causes.

Elements of a national lead paint elimination strategy might include:

1) Organizing a National Alliance to Eliminate Lead Paint
2) Identifying the major lead paint brands for sale on the national market and the major national vendors of lead paint brands
3) Encouraging consumers to avoid those brands and vendors
4) Encouraging bulk paint purchases such as housing developers, housing agencies, school systems, large companies and others to specify in all paint purchase orders that they will only accept paints that are verified to contain no added lead compounds
5) Conducting direct outreach seeking discussions and dialogue with paint manufacturers, major paint vendors and national paint industry trade associations
6) Identifying barriers to lead paint elimination that small or mid-size paint companies may be facing and helping these companies get access to the information and advice they may need to overcome those barriers
7) Promoting the establishment of a national voluntary third-party paint certification and labeling program and encouraging paint companies to participate in it
8) Holding policy dialogues aimed at identifying and securing agreements on the elements of an effective national lead paint control instrument with participation from relevant government officials, political leaders, paint companies and their trade associations, relevant NGOs and representatives of civil society, and others

AT LEAST 59 OF THE WORLD'S LARGEST PAINT COMPANIES ALREADY HAVE ALL INFORMATION THEY WOULD NEED TO QUICKLY AND COST-EFFECTIVELY DISCONTINUE THE USE OF LEAD PIGMENTS, LEAD DRYING AGENTS AND OTHER LEAD COMPOUNDS IN ALL THE DECORATIVE PAINTS THAT THEY AND THEIR SUBSIDIARIES MANUFACTURE AND SELL.

AN APPROACH TO LARGE INTERNATIONAL PAINT MANUFACTURERS

The global paint and coatings industry had total sales of approximately USD $90 billion (thousand million or milliard) in 2011. Decorative paints were the largest single component with sales of more than USD $40 billion.[67]

The top 10 global companies control more than 50 percent of the global market. Certain national and regional companies, however, often out-compete these global brands in their own countries and regions. In the fiscal year 2010, there were 22 paint and coating companies with more than USD $1 billion in sales and 59 companies with sales of $200 million or more.[68] While we currently lack information on what fraction of paint sales in the developing world are controlled by these top 59 companies, one can reasonably assume that they command a significant share of the total.

All 59 of these largest paint companies certainly already have all information necessary to quickly and cost-effectively discontinue the use of lead pigments, lead drying agents, and other lead compounds in all the decorative paints that they and their subsidiaries manufacture and sell. Some appear to have already done so. For example, the world's largest paint company, AkzoNobel, whose decorative paint brands include Dulux and ICI paints, appears to have had in place a global policy of not adding lead to the decorative paints that they sell in any market. Other large paint companies may have similar policies; and all companies that sell decorative paints in markets of the highly industrial world are already producing non-lead decorative paints for those markets.

A reasonable international demand would be to call upon the world's 59 largest paint industry companies – those with annual sales of more than USD $200 million per year – to completely eliminate, before 2015, the use of lead pigments, lead drying agents, and other added lead compounds in all decorative paints that they or their subsidiaries manufacture for sale anywhere in the world.

ICCM4 is scheduled for 2015. If the largest paint companies in the world can be induced to discontinue manufacturing and selling decorative lead paints in all markets by ICCM4, this would be a major step toward achieving the global goal of eliminating the manufacture and sale of all lead decorative paints by 2020.

67 *Architectural Coatings Market*, Coatings World, January 2012, http://www.coatingsworld.com/issues/2012-01/view_features/architectural-coatings-market-608997/

68 *2011 Top Companies Report*, Coatings World, July 2011, http://www.coatingsworld.com/issues/2011-07/view_features/2011-top-companies-report/

CONCLUSIONS

There is a strong, robust and widely accepted body of evidence documenting the personal and social harms caused by childhood lead exposure. Numerous scientific and public agencies have concluded that there is no safe level of lead exposure, and lead in paint decorative paints has been banned in the industrial countries for more than 40 years.

The source of significant childhood lead exposure affecting the largest number of the world's children today is lead paint.

Exposure to lead causes a lifelong, irreversible decrease in children's intelligence. Childhood lead exposure sufficiently widespread to cause a decrease in average intelligence and school performance has an adverse impact on the entire country. One outcome is an increase in the number of children who do poorly in school and who may not contribute fully to society when they become adults. Another result can be a reduction in a country's future intellectual, business, and political leadership potential and a widening gap in socioeconomic attainment between countries with high and low levels of lead exposure in their children.

Early action to eliminate the manufacture, import, sale, and use of lead decorative paints is essential to a country's economic future and to minimize or avoid the large-scale legacy problems that many highly industrial countries must contend with.

The global elimination of all manufacture and use of lead decorative paints in countries of all regions by the year 2020 is an achievable objective and one against which both the GAELP and the SAICM can and should be evaluated. The harms from lead exposure are well documented and not subject to controversy. National measures to prohibit and eliminate the manufacture, import, sale, and use of lead decorative paints should entail only minimal national economic or social costs and can be expected to yield very great public health and economic development benefits. The paint industry itself has been aware of the hazards of lead exposure for many years and decades ago stopped adding lead compounds to the paints that it sells in highly industrial countries.

Moreover, positive steps to eliminate lead in paint are underway. The GAELP creates a very useful international framework for lead paint elimination initiatives, including fostering dialogue with paint manufacturing companies and their trade associations and providing information and support to government officials and others considering taking actions in their own countries to eliminate lead paint.

National actions to eliminate lead paints are needed in every country. In some of the countries where there have been lead paint public information campaigns, several paint manufacturers have taken voluntary action to stop adding lead compounds to their decorative paints. At least two countries have recently adopted binding lead paint control instruments and in some other countries, they are under active consideration. Nonetheless, much more progress is needed.

No government of a country in which lead decorative paints continue to be manufactured, imported, sold, and used can be said to have yet made significant progress toward implementing the sound management of chemicals.

The 59 largest paint manufacturing companies in the world should stop manufacturing and selling lead decorative paints in all markets by 2015, at the latest. There are 59 paint manufacturing companies in the world with annual sales of USD $200 million or more. These companies produce most of the decorative paints on sale in the world. It is reasonable to demand and expect that these top companies completely halt the manufacture and sales of all lead decorative paints, including by all of their subsidiaries, by 2015, at the latest. All of these companies have the knowledge and technical skills needed to eliminate the use of lead compounds in the formulation of all their decorative paints while still offering to consumers high-quality, cost-competitive products.

In addition to decorative paints, priority attention also should be given to the elimination of other categories of paints most likely to contribute to childhood lead exposure. These include paints used as coatings in the manufacture of toys, pencils, cribs and playpens, furniture, and other household items, especially ones that children may chew on. They also include rust and corrosion-resistant paints for use on metal surfaces that are sold for home use or use on school playground equipment and similar applications.

The phase out and elimination of leaded automotive fuels provides a good model to follow. The decision to launch a global partnership to eliminate leaded automotive fuels was taken in 2002. At the time, leaded automotive fuels were very common in most developing countries and countries with economies in transition. Now, 10 years later, the objective of the global elimination of leaded automotive fuels has been largely achieved. One important reason for this success is that the world's petroleum companies and their national, regional, and international trade associations played a very active and constructive role. If national, regional,

and international paint industry trade associations could be convinced to act similarly, the total global elimination of lead decorative paints could be easily achieved by 2020.

Lead paint legacy issues need to be addressed. In highly industrial countries, lead paints were very widely used thirty years ago and more. These paints remain a serious legacy problem in old homes and buildings, and their residues continue to contribute to significant childhood lead exposure. In most developing countries, on the other hand, the sale and use of lead decorative paints was relatively small until recently compared to their populations. But now, sales of decorative paints are growing very rapidly in the developing world as the middle class in many countries greatly expands. This means that early action to eliminate the manufacture, import, sale and use of lead decorative paints in these countries still has the potential to avoid legacy problems on the relative scale that many highly industrial countries must contend with. Nonetheless, legacy issues will remain in all countries where lead decorative paints have been used. It is therefore necessary to create increased awareness of the hazards of lead dust produced when surfaces coated with these legacy paints are re-painted, and also of the techniques that can be used to greatly reduce these hazards.

Industrial lead paints and coatings also need to be phased out. Progress also needs to be made toward the phase-out and elimination of lead paints produced for industrial, structural, and other applications. These paints often also contribute to childhood lead exposure. They represent serious occupational hazards and entail very high costs to users who comply with good occupational health and hazardous waste management practices. Lead industrial and structural paints are a source of worker and community health hazards when lead painted bridges and structures are prepared for repainting, and when lead paint coated products are recycled or disposed of.

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