EXPORTING LEAD POISONING: THE TOXIC TRADE IN LEAD CHROMATES

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Established in 1998, **IPEN** is currently comprised of over 600 Participating Organizations in over 125 countries, primarily developing and transition countries. IPEN brings together leading environmental and public health groups around the world to establish and implement safe chemicals policies and practices that protect human health and the environment. IPEN's mission is a toxics-free future for all.
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KEY TAKEAWAYS

Lead paint is a well-known source of lead exposure, with particular risks for children who face serious health threats from even very low levels of lead exposure.

Childhood lead exposure damages the developing brain, as well as the nervous, immune, reproductive and cardiovascular systems, with a range of adverse effects including loss of IQ, attention deficit disorder, hypertension, and other physical and behavioral problems. Often, these effects are permanent, irreversible, and untreatable.

Most wealthy nations banned lead paint decades ago, but lead paint is still used in most of the world's countries.

The main lead-containing ingredients in household and consumer paints used today are lead chromates, yellow, orange, and red pigments typically used to make bright paint colors. In countries where lead paints are banned, lead chromates cannot be added to paint. But some of these countries allow production and exports of lead chromates.

Alternatives for lead chromates (and other lead-containing ingredients) used in paint have been used for decades and are widely available, typically without increased paint prices.

To assess the trade in lead chromates, this study reviewed thousands of records from several data sources, including publicly available trade data and data on exports from India purchased from a company that collects detailed import-export information.

The data showed that significant quantities of lead chromates are exported to many countries, including countries that have banned or restricted lead paint. While the data are not always specific, the study found that:

- Between 2020-22, EU exports of lead chromates went to between 43-48 countries, including between 36-39 countries that have banned or restricted lead paint.
- Export data from India for the same period showed exports of lead chromates to 78 countries. This data shows that 44 countries import lead chromates despite having banned or restricted lead paint.
- 65 countries reported annual imports of around a total of 4,000 metric tonnes of chrome-based pigments from Canada between 2020-2022. However, Canada only reported exports to one country. It is likely that these are lead chromates, though the publicly available data does not allow certainty.
- The EU has essentially banned the use of lead chromates for use in paint and other purposes. Their exports of lead chromates represent a dangerous double-standard: lead paint is deemed unsafe for their citizens, yet they tolerate exports of lead chromates to other countries, putting the recipient countries' children and families at risk.

Since 2007, IPEN member groups have collected and analyzed more than 5,000 paints in 59 countries and conducted awareness raising using the testing data. This work has supported development and adoption of lead paint regulations in more than 30 countries, with nearly 40 more countries developing regulations. But more work needs to be done to end lead paint globally, including by regulating the trade in lead chromates.

The Rotterdam Convention requires countries that are Parties to the Convention to ensure that certain hazardous chemicals are only exported to a country that has given its explicit consent, through a so-called Prior Informed Consent (PIC) procedure. By listing lead chromates under the Convention's PIC procedure, countries that ban lead paint will be better equipped to enforce their ban, and countries without lead paint restrictions will be incentivized to adopt a ban.

In 2009, 120 countries called for a global phase out of lead paint. To reach a global elimination of lead paint most effectively and quickly, IPEN recommends:

- Countries that have adopted legally binding limits on lead paint should submit a notification to the Rotterdam Convention Secretariat that they have banned or severely restricted the use of lead chromates in paint, as this will assist them in controlling the entry of lead chromates and paint products containing them.
- High-income countries such as the EU-countries, Switzerland, Australia, and Canada that either have regulations specifically restricting the use of lead chromates, or have banned the use of lead in paint, should fulfill their obligations under the Rotterdam Convention and urgently submit notifications to the Rotterdam Convention Secretariat to enable a listing in 2027.
- The World Customs Organization should assign a specific HS code for trade of lead chromates to support the control of trade and the national and global elimination of lead paint.
- The European Union and any country that banned lead paint and /or the use of lead chromates should immediately stop exporting these to other countries.
- All countries should adopt regulations to ban lead paint and include an explicit prohibition against the importation of lead compounds for use in the manufacture of paint.
- Exporters should be required to provide clear information about the content and intended uses of their shipments.
- All countries should make detailed information about imported and exported goods publicly available in line with the public's right to know.

BACKGROUND

Lead is a highly toxic metal, and no levels of exposure can be considered safe.[1] The production, use, and disposal of lead paint makes it a significant source of lead exposure in children, workers, and the public in many countries.[2-5]

Lead causes a wide range of health impacts even at very low levels of exposure and is especially harmful to children since it interferes with their neurodevelopment.

Therefore, highly industrialized countries started banning the use of lead paint in the 1970s and 1980s, and the importance of phasing out lead-based paint globally was highlighted in 2002 at the World Summit on Sustainable Development.[6] In 2009, governments from over 120 countries endorsed a global partnership to promote phasing out the use of lead in paints and while much progress have been made, half of the countries in the world still need to adopt regulations to ban lead paint.[7]

Credit: WHO at https://cdn.who.int/media/images/default-source/infographics/lead-paint-and-health/fact-lead-is-toxic-en.jpg?sfvrsn=4760ce1d_43

Lead compounds are primarily used in solvent-based paints as pigments to provide color or prevent corrosion of metal surfaces, or as so-called drying agents that facilitate paint drying. Lead has been detected in water-based paint as well, although data on the prevalence is scarce.[8]

Lead paints are often categorized into decorative and industrial paints, or paint for consumer and non-consumer uses. However, there are no commonly agreed definitions for these categories and evidence shows that lead paint intended for industrial uses, such as corrosion inhibition in industrial applications or as car paints, are in many countries sold over counter and online for any type of use without any warning about their lead content or labeling indicating their toxicity.[9] This includes spray paints that are sold over counter for touching up paint on various types of surfaces such as bicycles, cars, household appliances, ornaments, and toys, as well as a material for school projects.[10]

THE ROLE OF LEAD CHROMATES

The main lead compounds still used in paint are lead oxides and lead chromate pigments. Lead oxides are most commonly used in paints for protecting metal surfaces, so-called anticorrosive paints and base paints. The two lead chromate pigments in use today are lead sulfochromate yellow and lead chromate molybdate sulfate red that provide bright yellow, orange, and red shades to paint.[11]

Lead chromates can also be used as pigments in plastics. The most common method is to use so-called masterbatches, that is, lead chromate pigments dispersed at high concentrations into a polymer, often together with other additives. Lead chromates are also used for yellow road markings in many countries. These can either be lines painted on the surface or tinted thermoplastics that are melted onto the road. Lead chromates were also historically used in printing inks, but this practice is now mostly discontinued.

Alternatives for all lead compounds used in paint have been in use for decades and are widely available. However, paint manufacturers need a specific reason to make changes in their formulas since it requires a certain level of investment in product development. Bans on lead paint have provided impetus for paint makers to end their use of lead in many countries.

While the cost of alternatives has sometimes been used as a justification for continued production of lead paint, the paint industry has acknowledged that the cost is manageable. In some cases, the lead-free paint formulation is even cheaper than continued use of lead compounds.[11] Evidence indicates that retail price is often more dependent on paint brand than lead content. More expensive paints are not necessarily free from lead, and paints free from added lead are not necessarily more expensive.[12] Many paint manufacturers of all sizes in all regions of the world have phased out lead from their paint production, indicating that this is feasible for all manufacturer of lead paint.[2]

In some cases, paint manufacturers are producing lead paint because they are unaware of the toxicity of lead and the impacts of exposure. Therefore, analyzing paint on the market is a key tool for awareness raising and has been shown to motivate paint manufacturers to phase-out lead from their paint production. Some manufacturers will only change when a country takes steps towards putting legal restrictions on lead paint in place or enforcing existing regulations.

Therefore, IPEN developed a strategy together with its country NGO partners that is centered around analyzing paint on the market and using this as a basis for awareness raising with policy makers, paint manufacturers, and consumers. Since 2007, IPEN-affiliated NGOs have collected and analyzed more than 5,000 paints in 59 countries and conducted awareness raising using the testing data. As a result, work by IPEN and its partners has supported lead paint regulations being adopted in more than 30 countries and close to 40 more countries are in advanced stages for adoption.

A DANGEROUS DOUBLE-STANDARD

Even with legally binding controls on lead paint in a country, many countries have challenges with monitoring and enforcement and lead paint remains on the market.[13] In some countries, a lack of analytical capacity is an additional obstacle for enforcement. Therefore, additional tools are needed to achieve national and global phase outs of lead paint.

One significant challenge facing countries that ban or want to ban lead paint is the unregulated trade in lead chromates. In countries where lead paints are banned, lead chromates cannot be added to paint. But some of these countries allow production and exports of lead chromates. This represents a dangerous double-standard: lead paint is banned as unsafe for their citizens, yet they tolerate exports of lead chromates to other countries, putting the recipient countries' children and families at risk.

INTERNATIONAL TRADE OF LEAD PAINT COMPOUNDS

Most countries do not have domestic production of lead compounds but receive them through imports. Therefore, one of the most effective additional measures to improve lead paint regulation compliance would be to control the trade and import of lead compounds that are used in paint.

International trade of products is tracked through various monitoring systems. One of the most commonly used is the Harmonized Commodity Description and Coding System (HS), developed by the World Customs Organization and used by more than 200 countries and economies as a basis for customs tariffs and trade statistics.

Lead oxide is still used in paint and is covered specifically by HS code 2824. However, it is used in a wide range of additional applications and controlling the end use of the imports would be very difficult and resource demanding. On the other hand, lead chromates are primarily used in paint and plastics and are a more effective target for import controls. Unfortunately, when traded, lead chromates are listed under the broader group of chromium-based pigments under HS code 320620. This designation also includes zinc chromate- and chrome oxide pigments, making it harder to track lead chromates specifically.

Lead chromates for use in plastics can be traded either as the powdered pigment or as masterbatches. Both can be covered by HS code 320620, but masterbatches can also be covered by other plastics-related HS codes.

CONTROLS ON INTERNATIONAL TRADE OF HAZARDOUS SUBSTANCES

The use of HS codes is a voluntary system to track products for international trade that comes with no legal obligations. Similarly, the Globally Harmonized System of Classification and Labelling of Chemicals (GHS) developed by the United Nations provides a non-legally binding worldwide system for classifying and communicating hazardous properties of chemicals.

The only legally binding international agreement providing controls on trade of hazardous substances in place today is the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The 166 Parties to the Convention are required to ensure that any chemical listed in its Annex III is only exported to a country that has given its explicit consent, through a so-called Prior Informed Consent (PIC) procedure. Once a chemical is listed, a process is initiated to assign it a specific HS code, facilitating tracking of the trade of the chemical (Article 13).

Parties to the Rotterdam Convention shall submit a notification to the Convention Secretariat when they have adopted a final regulatory action to ban or severely restrict a chemical. When notifications from two different PIC Regions have been received, a review process is triggered. If the chemical is found to meet the criteria under the Convention, it can be recommended for listing in Annex III under the Convention. The final decision to list a chemical is taken by the Conference of the Parties to the Convention.

In addition, when a Party plans to export a chemical that they have domestically banned or severely restricted, the Convention mandates that a notification shall be submitted to the importing Party, even if the chemical is not listed under the Convention (Article 12). That means that when a Party has domestically banned or severely restricted the use of lead chromates, it is obliged to submit a notification to any receiving country before they can export it. However, while the importing Party is obliged to acknowledge receipt, and there are provisions for follow-up by the exporting Party, an explicit consent is not required before export.

Most countries that have banned lead paint have done so by imposing a concentration limit on lead content of the paint that ensures that no lead compounds can be intentionally added to the paint. In some countries, the ban prohibits the use of specific lead compounds such as lead chromates. Whichever of these regulatory models are used in a country, they both constitute a ban or a severe restriction on all lead compounds used in paint, including lead chromates and lead oxides.

To date, among all the countries that have banned lead paint, only Cameroon and Morocco have fulfilled the obligation to submit a notification to the Rotterdam Secretariat.[14] More detailed information about why and how to prepare and submit notifications on final regulatory actions on lead chromates for countries that have adopted lead paint regulations can be found on IPEN's website.

That countries do not comply with their obligations to submit notifications has been a problem for many years, leading to a low number of notifications submitted overall to the Rotterdam Convention. In 2019, a Compliance Committee was finally established under the Convention, triggering a steep increase in submitted notifications. However, these have primarily been focused on the most recent regulatory actions and not addressing the many chemicals regulated previously.

It is likely that regulators in many countries that have banned lead paint using a lead content concentration limit have not realized that this means a severe restriction on the use of specific lead compounds and have therefore not submitted a notification. Also, many countries that recently banned lead paint have challenges when it comes to the capacity of preparing such notifications.

However, it is unclear why well-resourced countries that have restrictions on specific lead compounds used in paint have not submitted notifications. Below follows descriptions of the regulatory actions taken by some Parties to the Rotterdam Convention that have severely restricted the use of lead chromates in paint and have previous experience in submitting notifications.

NATIONAL AND REGIONAL CONTROLS ON LEAD CHROMATES AND TRADE

The European Union (EU)

In the EU in 2015, an authorization requirement came into force for lead chromates, which mandates that companies must receive authorization for use or import of lead chromates.[15] Since then, the only application for authorization was submitted by the Canadian company Dominion Colour Corporation (acquired by the U.S. private equity firm Blackstone in 2023).[16] While this application was initially approved, legal action spearheaded by Sweden led to the approval being deemed unlawful in 2019 by the Court of Justice of the European Union, since safer alternatives were widely available.[17]

In addition, lead chromates are covered by restrictions on the use of lead compounds for specific purposes.[18] However, the EU allows member states to export lead chromates to countries outside the EU.

The EU implements the Rotterdam Convention through its Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals, the so-called PIC Regulation. Since lead chromates are severely restricted in the EU, they are listed in Part 1 of Annex I, making them subject to notification before any export takes place to a Party of the Rotterdam Convention.[19]

Switzerland

Switzerland regulates lead paint in its Ordinance on the Reduction of Risks Relating to the Use of Certain Particularly Dangerous Substances, Preparations and Articles. Annex 2.8 contains provisions that prohibits sales of lead-containing paints and varnishes, or articles treated with such paints and varnishes. Lead-containing paints are defined by a 0.01% limit of lead content by mass. In addition, Annex 1.[17] contain a specific prohibition to sell or use preparations containing lead chromates.[20]

In Switzerland, lead chromates are included in Annex 2 of the Ordinance on the Rotterdam Convention.[21] This means that they are subject to stronger export restrictions than in the EU, since export is not allowed to a Party that has not transmitted an import decision, with some exceptions.

Canada

The Canadian Export Control List contains substances whose export is controlled because their use in Canada is prohibited or severely restricted or because Canada has agreed, through an international agreement such as the Rotterdam Convention, to control their export.[22] However, lead chromates are not on this list even though the Canadian Surface Coating Materials Regulations restricts the use of lead in paint through a 90 mg/kg (0.009%) total lead limit that prevents any intentional use of lead chromates in paint, with some exemptions.[23]

Australia

The implementation of the Rotterdam Convention in Australia includes the requirement to provide an export notification when exporting chemicals that are severely restricted or banned in Australia. While there is no single list of banned or restricted chemicals, lead chromates are explicitly prohibited for use in any industrial surface coating or ink at concentrations greater than 0.1%.[24]

In addition, the Australian Therapeutic Goods (Poisons Standard—June 2024) Instrument 2024 restricts lead levels in paint to 0.009% dry weight, except for antifouling paint where the limit is 0.1%.[25]

Figure 2 Notified lead chromate export from the EU.


ARCTIC OCEAN
RUSSIA
SWEDEN
FINLAND
NORWAY
ESTONIA
LATVIA
LITHUANIA
BELARUS
POLAND
GERMANY
UKRAINE
KAZAKHSTAN
MONGOLIA
CHINA
JAPAN
TURKEY
GEORGIA
ARMENIA
SYRIA
LEBANON
ISRAEL
JORDAN
IRAQ
IRAN
AFGHANISTAN
PAKISTAN
INDIA
LIBYA
EGYPT
SAUDI ARABIA
NIGER
CHAD
SUDAN
NIGERIA
CAMEROON
CENTRAL AFRICAN REPUBLIC
ETHIOPIA
SOMALIA
KENYA
UGANDA
CONGO
GABON
DEMOCRATIC REPUBLIC OF THE CONGO
TANZANIA
ANGOLA
ZAMBIA
MOZAMBIQUE
ZIMBABWE
NAMIBIA
BOTSWANA
SOUTH AFRICA REPUBLIC
MADAGASCAR
MAURITIUS
SEYCHELLES
YEMEN
OMAN
SRI LANKA
MYANMAR
LAOS
THAILAND
CAMBODIA
VIETNAM
HONG KONG
PHILIPPINES
MALAYSIA
INDONESIA
PAPUA NEW GUINEA
INDIAN OCEAN
PACIFIC OCEAN
AUSTRALIA
NEW ZEALAND

Figure 3 Countries importing lead chromate.


ARCTIC OCEAN
RUSSIA
SWEDEN
FINLAND
ESTONIA
LATVIA
LITHUANIA
BELARUS
POLAND
UKRAINE
KAZAKHSTAN
MONGOLIA
CHINA
TURKEY
SYRIA
LEBANON
ISRAEL
IRAQ
IRAN
AFGHANISTAN
PAKISTAN
INDIA
LIBYA
EGYPT
SAUDI ARABIA
CHAD
SUDAN
ETHIOPIA
SOMALIA
KENYA
UGANDA
TANZANIA
ANGOLA
ZAMBIA
NAMIBIA
BOTSWANA
MYANMAR
THAILAND
INDONESIA
PHILIPPINES
JAPAN
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
NEW ZEALAND

ASSESSING THE TRADE IN LEAD CHROMATES

AIM

This study was conducted to a) assess the scope of trade of lead chromates globally; b) to determine the extent of exports of lead chromates to countries with legally binding controls on lead paint; and c) to identify if current trade measures are enough to allow countries to control imports of lead chromates.

METHOD

Detailed information about trade and shipments of goods in general, as well as lead chromates specifically, is typically not publicly available. However, data can sometimes be purchased from companies specialized in providing this type of information.

Statistics on trade of the broader group of chrome-based pigments that includes lead chromates is available from the UN ComTrade database under code HS320620.[26] This includes data on trade volumes and values of all chrome-based pigments, including information about importing country and exporting country. However, this data has limitations since it does not provide any means to distinguish which chrome-based pigment is being exported and is dependent on reporting by the official national agencies mandated to disseminate trade statistics. It can, however, be used to assess broader trends of import and export, and can serve as a comparison to other trade data. Data on quantities and value of national imports and exports from all countries under HS320620 was downloaded from the ComTrade database for the years 2020, 2021, and 2022.

According to the trade statistics in the ComTrade database, four countries were consistently among the top five exporters of chrome-based pigments in 2020, 2021, and 2022: India, China, Colombia, and France. When assessing the companies providing trade data for purchase, no national providers of data from China, Colombia or France were found.

Therefore, we purchased detailed data on exports from India in 2020, 2021, and 2022 under HS code 320620 (chromium-based pigments) from Seair Exim Solutions, a company specializing in sourcing and providing detailed export-import data. This data is referred to as "purchased data" throughout the report. The purchased data included goods descriptions, enabling a detailed review of each shipment to verify exports of lead chromate (versus other) pigments. However, not all descriptions allowed for identification of the exported goods. The shipments where lead chromates could be verified from the goods description or inferred from almost identical goods descriptions is referred to as "confirmed" lead chromate exports in this report. Exports of other chrome-based pigments, or where the substance identity could not be verified or inferred, were excluded. The purchased data included 10,669 export entries of chrome-based pigments under HS320620 from India between 2020 and 2022. After review, 8,840 of these entries could be confirmed as exports of lead chromates. Since lead chromates can also be used in plastics, a detailed review was conducted of the import information to try to ascertain the end use of the lead chromates.

Exports of lead chromates from the EU were assessed using two free, publicly available sources of information deemed to be sufficient to provide evidence of lead chromate exports:

1. The publicly available information included in export notifications of lead compounds under the PIC Regulation for 2020, 2021, and 2022.[27]

This information does not include specific dates or volumes of the exports but does include a goods description allowing for review and confirmation that lead chromates were exported. It was not always possible to confirm what type of lead compounds were being shipped since some notifications only included a string of numbers or letters in the publicly available information. Still, where possible, this information was used to exclude notifications for exports of other lead compounds. Notifications where the goods identity was unclear were included in a separate category to allow for assessment of potential flows of lead chromates and comparison with other data sources.

2. Export data from the 27 EU countries from ComTrade for HS320620 during the years 2020, 2021, and 2022.

The ComTrade data was used to compare exports of chrome-based pigments with the data obtained from the PIC Regulation export notifications of export of lead compounds. Lead chromates are the only chemicals that are both lead compounds and chrome-based pigments and should therefore be captured in both datasets.

Finally, the list of countries where confirmed or potential lead chromate exports and imports were taking place was compared to the list of countries with legally binding controls on lead paint as of 16 January 2024, provided by WHO.[28]

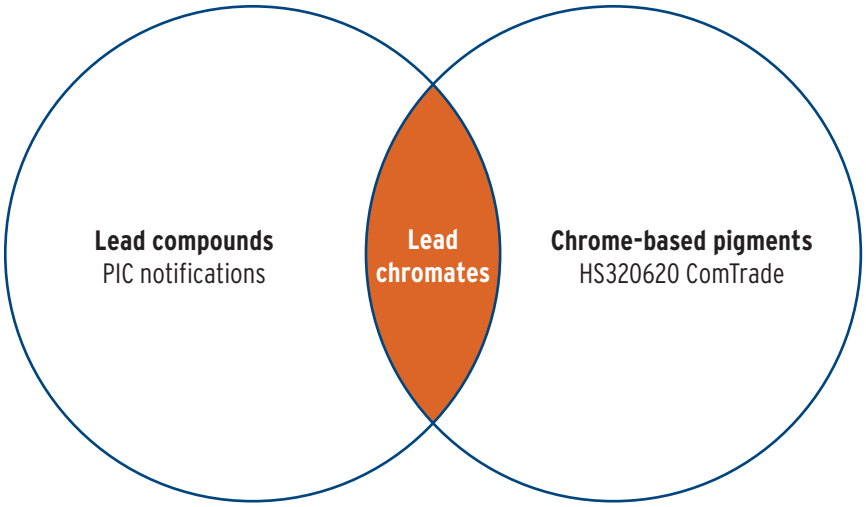

Figure 1 Lead chromates are both lead compounds and chrome-based pigments.

LIMITATION OF THE METHOD

Using trade data comes with some limitations. As explained above, the HS code 320620 for chrome-based pigments does not only target lead chromates. In addition, even when the data confirmed that lead chromates were exported, only a minority of the end uses could be determined. Therefore, the analysis focused primarily on importing and exporting countries rather than a detailed analysis of the trade volumes.

In addition, the study only included purchased detailed trade data from India. To provide a comprehensive overview of the trade flows of lead chromates, an analysis of detailed export data also from China, Colombia, and other countries contributing to significant trade flows of chrome-based pigments is needed.

Finally, statistics on the trade of paints containing lead chromates is not available and therefore not included in the report.

RESULTS

Lead chromate exports from India

The analysis of the purchased data from India showed that lead chromates were exported to a total of 78 countries in 2020, 2021, and 2022, with an approximate annual value of around 40 million USD (see Table 1). The ComTrade data for HS320620 for the same time period included exports of chrome-based pigments from India to 84 countries, 77 of which overlapped with the countries in the purchased data. The annual value of exports of chrome-based pigments recorded in the ComTrade database were in the same range, with only a few percents difference. Similar results were seen for the quantities exported. The results are provided in Table 1.

There is a high degree of similarity between the volumes exported and the destination countries between the purchased data and the ComTrade data, indicating that the majority of exports of chrome-based pigments registered in the ComTrade database are in fact lead chromates.

Table 1 Total quantities and value of lead chromates exported from India. The purchased data includes only confirmed trade of lead chromates, whereas the ComTrade data includes all trade of chromate-based pigments under HS320620.

	QUANTITY (METRIC TONNES)		VALUE (USD)	
YEAR	PURCHASED DATA	COMTRADE DATA	PURCHASED DATA	COMTRADE DATA
2020	12,709	12,311	39,890,000	38,288,000
2021	12,531	13,248	42,130,000	43,626,000
2022	9,849	11,146	40,855,000	43,879,000

The review of importers to assess the end use of the lead chromates showed that in most cases, this was not possible. In most cases, it was either not possible to identify the importer from the provided information or the importer was a trading company purchasing lead chromates for further sale and distribution in the importing countries. In addition, many importers supply both the paint and plastics industry. However, where the end use could be confirmed based on the business area of the importer, export for use in paint encompassed much higher volumes (see Table 2).

Export for use specifically in plastics was only recorded for 17 of the 78 countries where export of lead chromates was confirmed, whereas export for use in paint was recorded for 34 of the 78 countries. No other uses of the exported lead chromates could be confirmed in this analysis. This could either indicate that lead chromates are exported to a lesser degree for use in plastics than paint, or that the majority of lead chromate masterbatches are exported under a different HS Code. Therefore, while no definite conclusions can be drawn, the results indicate that the exported lead chromates are used in paint in many countries.

Table 2 Volumes (metric tonnes) and end use of confirmed lead chromate exports from India.

	YEAR		
USES	2020	2021	2022
Pigments for use in either paint or plastics	1,552	1,098	1,057
Paint manufacturing	1,115	713	378
Plastic coloring	360	182	49
Unknown	9,682	10,538	8,364
Grand Total	**12,709**	**12,531**	**9,848**

Lead chromate exports from the European Union

The analysis of export notification data from the EU showed that lead chromates were exported to 43 countries in total between 2020 and 2022 (see Figure 2). Export notifications to an additional five countries did not allow for determination of which lead compounds were exported since they only provided a string of numbers or letters as description. However, by cross-referencing the information of exporting and importing country in the PIC notification information with data from the ComTrade database on exports of chrome-based pigments, it seems highly likely that these exports were lead chromates. Since the notifications only specify countries and not importers, no assessment of end use was possible.

If all lead compounds exported from the EU between 2020 and 2022 were captured by the export notifications, the EU likely exported lead chromates to 48 countries. The confirmed export from the EU of lead chromates as verified by the export notifications, originated from Germany (to 35 countries) and Italy (to 18 countries). The additional likely lead chromate exports originated from France (to 8 countries) and Portugal (to 2 countries).

However, the ComTrade data on exports from the EU countries showed exports to a total of 79 countries and territories of chromate-based pigments under HS320620. It is not possible to confirm that these exports were not lead chromates since there is no notification requirement in the EU PIC Regulation for chrome-based pigments.

Chromate exports from other countries

No other publicly available detailed datasets on export of lead chromates from other countries were identified, and no company selling detailed national trade data from the additional top exporting countries was identified. Therefore, the ComTrade export and import data for 2020, 2021, and 2022 were used as an indication of potential lead chromate exports and imports. In total, 153 countries reported imports of chrome-based pigments during this time period. During the same time, exports were reported to 180 countries.

Ideally, import and export records should correlate, since an import reported by a country should be accompanied by an export report from the country of origin. However, noting the limitations in the ComTrade data, some discrepancies are expected. Still, the export records from Canada stand out. In 2020, 2021, and 2022, 65 countries in total reported that they imported a total of 4,600, 4,201, and 3,127 metric tonnes of chrome-based pigments originating from Canada. However, Canada only reported exports of chrome-based pigments to the United States of 450, 450, and 494 tonnes during the same time. The United States reported importing volumes of chrome-based pigments in the same range during these years. At the same time, the import data reported to ComTrade shows that the majority of these chrome-based pigments were dispatched from an unspecified place in the world (the so-called Partner 2 in the ComTrade database).

It is likely that a significant amount of these imports was lead chromates. The Canadian company Dominion Colour Corporation was for many years one of the largest manufacturers and suppliers of lead chromates (before it was purchased by Blackstone in 2023), with one of their major production facilities located in Canada.

Export of lead chromates to countries with lead paint regulations

The analysis of the purchased data from India confirmed that lead chromates were exported to a total of 78 countries. 44 of these countries have legally binding controls on lead paint according to the WHO database (see Figure 3).

Similarly, exports from the EU went to many countries with legally binding controls on lead paint. Looking only at the PIC notifications where a goods description allowed for identifying lead chromates, exports went to 36 countries with legally binding controls on lead paint. If the additional notifications where lead chromate export were very likely are included, 39 countries with legally binding controls on lead paint received these exports.

The detailed data on exports from India verified that a substantial amount of the chrome-based pigments exported from India as reported in the ComTrade database were lead chromates. Looking globally at data from the ComTrade database of exports and imports of chromate-based pigments, 86 countries with lead paint regulations report imports and 91 countries report exports to countries with regulations. However, while it can be reasonably assumed that a certain amount of the chrome-based pigments traded under HS320620 are lead chromates, no conclusion can be drawn without a detailed review and assessment.

CONCLUSIONS

The analysis of trade information shows that lead chromates are still exported to many countries, including countries that have legally binding controls on lead paint. The detailed analysis of goods descriptions also shows that it is in many cases very difficult to identify what the shipments contain and the intended use of the shipments.

The analysis of information provided in the EU export notifications in combination with data on EU trade of chrome-based pigments verifies that lead chromates are exported from the EU, despite strict regulations on its use for all purposes in the EU. In addition, the exports are in many cases going to countries that have banned the use of lead paint. It is clear that a notification without the requirement of explicit consent from the importing country is not enough to prevent lead chromates being exported to countries with legally binding controls on lead paint.

While a more detailed analysis of trade records is needed, the trade of chrome-based pigments from many other countries with domestic legal controls on lead paint suggest that additional countries follow the same double-standard.

No country can control everything that comes in across its borders, even when it comes to chemicals under regulatory controls, considering the amount of time and chemistry skills it would require from staff. In addition, even if the staff capacity was in place, it is clear from the review conducted in this report of goods descriptions that they do not always provide the required information. In countries that face challenges in monitoring and enforcing their lead paint regulations, better ability to control imports of lead chromates would contribute to better compliance.

Lead chromates can be listed under the Rotterdam Convention if countries that have adopted lead chromate controls or lead paint regulations submit notifications to the Rotterdam Secretariat. As of 16 January 2024, 94 countries had reported to WHO that they have legally-binding controls on lead in paint. Almost all of them are Parties to the Rotterdam Convention and should therefore submit a notification to the Convention Secretariat that they have banned or severely restricted the use of lead chromates.

RECOMMENDATIONS

- Countries that have adopted legally binding limits on lead paint should submit a notification to the Rotterdam Convention Secretariat that they have banned or severely restricted the use of lead chromates in paint, as this will assist them in controlling the entry of lead chromates and paint products containing them.
- High-income countries such as the EU-countries, Switzerland, Australia, and Canada that either have regulations specifically restricting the use of lead chromates, or have banned the use of lead in paint, should fulfill their obligations under the Rotterdam Convention and urgently submit notifications to the Rotterdam Convention Secretariat to enable a listing in 2027.
- The World Customs Organization should assign a specific HS code for trade of lead chromates to support the control of trade and the national and global elimination of lead paint.
- The European Union and any country that banned lead paint and /or the use of lead chromates should immediately stop exporting these to other countries.
- All countries should adopt regulations to ban lead paint and include an explicit prohibition against the importation of lead compounds for use in the manufacture of paint.
- Exporters should be required to provide clear information about the content and intended uses of their shipments.
- All countries should make detailed information about imported and exported goods publicly available in line with the public's right to know.

ANNEX I

Quantities of lead chromates exported from India.

	QUANTITY (KILO)		
COUNTRY	2020	2021	2022
Algeria	80,000	92,200	64,600
Angola	N.A.	21,002	21,000
Argentina	23,000	12,000	27,950
Australia	23,400	34,875	21,400
Bahrain	2,400	N.A.	1,000
Bangladesh	235,600	314,950	243,412
Belarus	1,000	42,400	15,800
Bhutan	90	N.A.	N.A.
Brazil	148,970	140,150	213,975
Cameroon	1,200	N.A.	N.A.
Canada	1,000	1,000	4,000
Chile	55,500	10,000	10,900
China	169,806	73,510	102,300
Colombia	84,750	157,350	110,800
Costa Rica	2,175	1,500	1,300
Cote d'Ivoire	95,200	136,800	34,100
Croatia	N.A.	N.A.	6,000
Dominican Republic	N.A.	3,000	N.A.
Djibouti	N.A.	N.A.	500
Egypt	403,425	451,962	214,050
El Salvador	15,600	20,000	12,000
Ethiopia	3,200	N.A.	N.A.
Germany	360,000	219,000	200,000
Ghana	26,000	2,400	N.A.
Guatemala	18,000	27,075	7,000
Haiti	550	N.A.	N.A.
Honduras	N.A.	4,000	350
Indonesia	759,000	885,306	542,964
Iran	576,030	47,000	100
Iraq	36,800	107,500	37,000
Israel	10,972	2,400	12,800
Jordan	167,200	197,650	104,300
Kenya	416,227	243,700	264,254
Democratic People's Republic of Korea	7,000	N.A.	N.A.

ANNEX I, CONTINUED

Quantities of lead chromates exported from India.

	QUANTITY (KILO)		
COUNTRY	2020	2021	2022
Republic of Korea	373,000	533,150	20,000
Kuwait	36,750	51,700	39,200
Latvia	N.A.	N.A.	1,800
Lebanon	85,650	115,300	26,000
Liberia	37,850	45,750	25,000
Lithuania	68,400	20,000	N.A.
Madagascar	460	1,900	1,000
Malaysia	565,025	451,450	336,672
Mauritius	650	725	0
Mexico	158,150	167,740	190,375
Morocco	144,150	180,100	128,800
Mozambique	N.A.	N.A.	2,400
Myanmar	78,700	118,400	69,800
Nepal	14,950	28,700	16,376
New Zealand	N.A.	1,350	200
Nigeria	564,576	544,550	482,150
Oman	17,000	17,000	21,800
Paraguay	7,000	2,000	N.A.
Peru	94,837	107,815	68,275
Philippines	44,500	61,100	N.A.
Qatar	22,440	21,615	8,800
PRC Taiwan	26,000	31,000	10,000
Russian Federation	353,925	613,700	661,300
Saudi Arabia	820,201	620,200	458,850
Seychelles	1,200	1,000	1,500
Singapore	120,950	64,425	76,012
Slovenia	N.A.	N.A.	8,000
South Africa	663,925	809,200	713,059
Sri Lanka	7,100	24,900	8,325
Sudan	50,600	42,400	32,000
Syrian Arab Republic	N.A.	3,000	N.A.
Tanzania	21,100	27,600	13,100
Thailand	200,526	216,650	185,504

ANNEX I, CONTINUED

Quantities of lead chromates exported from India.

	QUANTITY (KILO)		
COUNTRY	2020	2021	2022
Trinidad and Tobago	3,400	400	1,500
Tunisia	59,200	52,400	31,650
Turkey	1,814,861	1,504,727	1,428,810
Uganda	N.A.	8,000	21,750
Ukraine	125	12,375	N.A.
United Arab Emirates	1,699,736	2,066,540	1,893,212
United States	12,600	N.A.	1,650
Uzbekistan	3,000	10,025	23,000
Venezuela	9,975	13,200	6,300
Vietnam	789,553	666,160	557,000
Zambia	12,800	24,200	3,875

ANNEX II

Confirmed and likely exports of lead chromates from the EU.

CONFIRMED LEAD CHROMATE EXPORTS		LIKELY LEAD CHROMATE EXPORTS		
FROM GERMANY	FROM ITALY	FROM FRANCE	FROM GERMANY	FROM PORTUGAL
Albania	Albania	Brazil	United Kingdom (Great Britain)	Angola
Argentina	Algeria	India		Mozambique
Australia	Belarus	Indonesia		
Bangladesh	Canada	Pakistan		
Belarus	Dominican Republic	Russian Federation		
Brazil	Georgia	South Africa		
Chile	Israel	United Kingdom (Great Britain)		
China	Kazakhstan	United States		
Colombia	Lebanon			
Egypt	Moldova, Republic of			
Hong Kong, China	Morocco			
India	Russian Federation			
Indonesia	Serbia			
Israel	Tunisia			
Japan	Türkiye			
Korea, Republic of	Ukraine			
Lebanon	United Kingdom (Great Britain)			
Mexico	Uzbekistan			
Morocco				
New Zealand				
Panama				

ANNEX II, CONTINUED

Confirmed and likely exports of lead chromates from the EU.

CONFIRMED LEAD CHROMATE EXPORTS		LIKELY LEAD CHROMATE EXPORTS		
FROM GERMANY	FROM ITALY	FROM FRANCE	FROM GERMANY	FROM PORTUGAL
Peru				
Russian Federation				
Serbia				
South Africa				
Sri Lanka				
Switzerland				
Taiwan				
Thailand				
Tunisia				
Türkiye				
Ukraine				
United Arab Emirates				
United States				
Vietnam				

REFERENCES AND WEBLINKS

1. World Health Organization (2023). Exposure to lead: a major public health concern. Preventing disease through healthy environments. https://www.who.int/publications/i/item/9789240078130
2. IPEN (2020). Global Lead Paint Elimination Report. https://ipen.org/sites/default/files/documents/ipen-global-lead-report-2020-v1_3a-en.pdf
3. Ismawati, Y. *et al.*(2024) Health Risk Analysis of Lead Exposure in Selected Paint Industry Workers in Indonesia. http://dx.doi.org/10.13140/RG.2.2.24010.38080
4. World Health Organization (2020). Global elimination of lead paint: why and how countries should take action: technical brief. https://www.unep.org/resources/policy-and-strategy/global-elimination-lead-paint-why-and-how-countries-should-take
5. Exposure to lead in the world of work: Impacts for occupational safety and health, Geneva: International Labour Office, 2023 https://www.ilo.org/publications/exposure-lead-world-work-impacts-occupational-safety-and-health
6. Plan of Implementation of the World Summit on Sustainable Development (2002). https://www.un.org/esa/sustdev/documents/WSSD_POI_PD/English/WSSD_PlanImpl.pdf
7. World Health Organization (2022). Update on the global status of legal limits on lead in paint, December 2021.
8. Overview of IPEN analysis of water-based paint, https://ipen.org/documents/overview-ipen-analysis-water-based-paint%20
9. The EcoWaste Coalition (2021). Lead in Solvent-Based Industrial Paints Sold in the Philippines.
10. The EcoWaste Coalition (2022). Imported Lead-Containing Spray Paints Sold in the Philippine Market.
11. Davis, K., Paun, M., Lavanchy, N., Satric, V. & Dunjic, B. (2022). Lead Paint Reformulation Technical Guidelines-Global Environment Facility (GEF) Project 9771: Global Best Practices on Emerging Chemicals Policy Issues of Concern under the Strategic Approach to International Chemicals Management.
12. Brosché, S. *et al.* (2014). Asia Regional Paint Report.
13. The EcoWaste Coalition (2023). Lead in Decorative and Industrial Paints Sold in the Philippines.
14. FAO & UNEP. 2024. PIC Circular LIX (59) – June 2024. PIC Circular, No. 59. Rome and Geneva, Switzerland. https://doi.org/10.4060/cd0965en
15. Annex XIV of REACH ("Authorisation List") https://echa.europa.eu/authorisation-list
16. US private equity invests in chemical industry tied to global lead poisoning, worrying health experts, https://www.theexamination.org/articles/us-private-equity-invests-in-chemical-industry-tied-to-global-lead-poisoning-worrying-health-experts
17. *JUDGMENT OF THE COURT (First Chamber) 25 February 2021*, https://curia.europa.eu/juris/document/document.jsf?text=&docid=238162&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=1452930
18. Annex XVII to REACH https://echa.europa.eu/substances-restricted-under-reach/-/dislist/details/0b0236e1807e30a6
19. Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals (recast). https://eur-lex.europa.eu/eli/reg/2012/649/oj
20. Ordinance on the Reduction of Risks relating to the Use of Certain Particularly Dangerous Substances, Preparations and Articles https://www.fedlex.admin.ch/eli/cc/2005/478/en#annex_2_8
21. Ordinance on the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Chemicals in International Trade https://www.fedlex.admin.ch/eli/cc/2005/478/en#annex_2_8

22. Export of substances on the Export Control List for 2023 https://www.canada.ca/en/environment-climate-change/services/canadian-environmental-protection-act-registry/substances-list/export-control-list/year-2023.html
23. Surface Coating Materials Regulations SOR/2016-193 CANADA CONSUMER PRODUCT SAFETY ACT, https://laws-lois.justice.gc.ca/eng/regulations/SOR-2016-193/page-1.html#h-832934
24. Australian Inventory of Industrial Chemicals https://services.industrialchemicals.gov.au/chemical-details-page/?id=64f665c7-10b0-ec11-8108-005056a07365 https://services.industrialchemicals.gov.au/chemical-details-page/?id=8a31fe10-0fb0-ec11-8108-005056a07365
25. Therapeutic Goods (Poisons Standard—June 2024) Instrument 2024, https://www.legislation.gov.au/F2024L00589/latest/downloads
26. UN ComTrade Database. https://comtradeplus.un.org/
27. DISSEMINATION PLATFORM PIC - Prior Informed Consent Regulation - Export Notifications for Lead Compounds, https://echa.europa.eu/sv/information-on-chemicals/pic/export-notifications?p_p_id=pic_ExportNotificationsPortlet&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&_pic_ExportNotificationsPortlet_rmlId=100.239.18
28. World Health Organization. Legally-binding controls on lead paint. https://www.who.int/data/gho/data/themes/topics/indicator-groups/legally-binding-controls-on-lead-paint

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