

## **Consultation Report**

### **Towards a coordinated, multi-sectoral lead management approach in low- and middle-income countries: Consultations in Africa region (Part I)**

**Wednesday, 10 July 2024**

**2:00 – 4:00 p.m. CET (3:00 p.m. – 5:00 p.m. Nairobi Time)**

#### **1. Introduction**

The United Nations Environment Programme (UNEP), with the support of the United States Environmental Protection Agency (US EPA), facilitated the first of two consultations on lead sources and management in African countries on 10 July 2024. This consultation was conducted in English; a second consultation in English and French will be held during the fourth quarter of 2024.

This initiative comes at a crucial juncture, as previous international efforts around lead exposure reduction primarily targeted single sources of lead contamination, such as leaded petrol and paint. However, a growing body of research highlights that there are a wide variety of sources impacting lead exposure, particularly in low- and middle-income countries (LMICs), which encompass various industries and consumer products. Recognizing that policy and regulatory approaches to addressing sources of lead exposure may vary, adopting a comprehensive look at lead management policies in LMICs across sectors holds immense promise. By embracing a holistic perspective, it becomes feasible to discern the primary drivers of lead exposure with greater clarity, increase awareness of policymakers, and pave the way for the development of cohesive, enduring mitigation strategies, action plans, and other relevant instruments. Moreover, addressing lead management on a multi-sectoral basis empowers stakeholders to forge vital connections between lead mitigation efforts and broader development objectives or societal priorities, thereby enhancing the mobilization of resources towards this critical cause. Through promoting collaborative action and a multifaceted approach, these consultations aim to catalyze impactful change in safeguarding public health and environmental well-being across the African continent.

The aim of these consultations is to explore the feasibility of a coordinated, multi-sectoral approach by LMIC national governments to address sources of lead exposure.

The objectives of the consultations include:

- To facilitate the exchange of information among African countries on existing lead management activities and needs;
- To understand sources of lead exposure and applicable regulations at the country or regional level;
- To present examples of coordinated multi-sectoral lead management approaches, including country-level efforts, the UNICEF Lead Toolkit, the US Federal Lead Action Plan and the US EPA Lead Strategy and US EPA Local Lead Action Plan Guide;

- To discuss current barriers and opportunities for lead exposure reduction action, including coordinated and multi-sectoral lead management approaches at the national level among African countries.

The first consultation included two introductory presentations, two panel discussions, and two Question and Answer periods. The consultation was moderated by Ms. Angela Bandemehr, Senior International Environmental Protection Specialist, Office of International and Tribal Affairs, US EPA. Introductory presentations were given by UNEP and the US EPA. During the first panel session, government representatives from Ghana, Malawi, United Republic of Tanzania, Ethiopia, and Nigeria shared lead management approaches and challenges in their countries. The second panel provided representatives from international organizations and civil society an opportunity to share their experiences of addressing lead exposure sources and identifying areas for future work. This panel included representatives from the UNEP Regional Office for Africa, US EPA, the Lead Exposure Elimination Project (LEEP), and the United States Agency for International Development (US AID).

The following discussion questions were provided ahead of the consultation to the panelists and were shared with the audience during the event:

1. What strategies have been successful in identifying and addressing sources of lead exposure in African countries? This could be either high concentration sources (such as industrial hotspots), or more diffuse sources of exposure (that may be lower concentration, but more ubiquitous). What sort of monitoring mechanisms are required and what are the current challenges?
2. How can African countries leverage existing lead management activities to enhance collaboration and knowledge sharing nationally and across the region?
3. What practical steps can be taken to overcome barriers to implementing a coordinated, multi-sectoral approach to lead management, and how can stakeholders collaborate to address these challenges effectively? What are the roles of various stakeholder groups (government, NGOs, academia, industry, local communities)?
4. How can stakeholders in African countries align their efforts in lead management with broader development goals and societal priorities, and what strategies can be implemented to improve the mobilization of resources for this purpose?
5. How can the international community support African countries in developing and implementing comprehensive and multi-sectoral lead management strategies that align with broader development objectives and priorities?

## 2. Welcome Session

A welcome message was delivered by **Ms. Maria Cristina Zucca, Officer in Charge, on behalf of Ms. Jacqueline Alvarez, Chief of UNEP's Chemicals and Health Branch**. Ms. Zucca welcomed panelists and participants and expressed her gratitude for their contribution to this initiative. She also thanked the US EPA for their work to promote capacity building in LMICs for lead source reduction and their support of the two consultation webinars. She noted that this initiative comes at a crucial time. Past international cooperation efforts have dealt with specific sources of lead exposure in LMICs and significant progress has been made. There was a successful global phase out of lead in fuel in 2021, and there has been progress by the Global Alliance to Eliminate Lead Paint to promote elimination of this product through lead paint laws. There is evidence of a wide variety of sources of lead exposure, particularly in LMICs, including from industry and consumer

products. To date, these sources have largely not been sufficiently addressed and continue to pose serious risks to human health and the environment. Addressing lead exposure often requires different policy and regulatory approaches, and a comprehensive examination of lead management across sectors and countries can help identify effective actions. Adopting a holistic perspective across sources will help identify the primary drivers of exposure, increase awareness among policymakers, and allow for comprehensive and sustainable strategies. A multi-sectoral approach can also allow lead management to be linked with broader development objectives, to help leverage additional expertise and resources. This consultation aims to promote collaboration among African governments and relevant stakeholders, and Ms. Zucca encouraged active participation in the discussion, that could inspire innovative strategies and trigger continued communication and information exchange on the topic at the regional level to protect public health and the environment from the dangers of lead exposure.

**Mr. Mark Kasman, Director of Office of International Affairs, US EPA**, delivered welcoming remarks from the US EPA. Mr. Kasman thanked UNEP for hosting the consultations and for their leadership in addressing lead in gasoline and paint and expressed interest in hearing from the participants about their experiences and questions regarding lead pollution and exposure. Mr. Kasman noted that there is no known safe level of exposure to lead, especially for children. He also noted that exposure to lead can impair cognitive development and cause behavioral and learning difficulties. Lead exposure may account for up to 21% of the educational gap between high- and low-income countries. Lead also causes adverse health effects in adults and is estimated to be responsible for 1.6 million deaths annually from cardiovascular disease. In Africa, lead exposure has a significant economic impact, equal to 8.9% of the GDP in Sub-Saharan Africa (SSA), which is higher than the worldwide average of 6.9% of global GDP.

Mr. Kasman noted the importance of exploring effective strategies to raise awareness and to finding solutions to challenges specific to the African continent. The US and many countries have found it is important to take a multi-sectoral approach, and have found success in working across environment, health, development, and other sectors. He expressed interest in hearing about other models and noted that this consultation will help inform future discussions. The US EPA is spearheading a G20 lead expert webinar this winter to continue discussion on cross-sectoral collaboration.

Ms. Bandemehr provided an overview of the agenda and objectives of the consultation.

### **3. Setting the Scene**

**Ms. Emily Nash, Lead Management Consultant for UNEP**, provided an overview of lead exposure sources by sector based on current information available for the Africa Region. Presentation slides are available in **Appendix A**.

The average blood lead level (BLL) among children is estimated to be 5.1 micrograms per deciliter for SSA and 5.2 micrograms per deciliter for Middle East-North Africa (MENA), which are the highest regional averages after South Asia. While there is limited representative data over time in the region, available data indicates that BLLs have decreased after the phase-out of leaded petrol in 2006 in SSA and in 2021 in MENA. However, average BLLs remain elevated, indicating the presence of other sources of exposure, discussed below.

Pollution from active and legacy lead and zinc mining and processing in the region, as well as artisanal and small-scale gold mining, has been identified as a source of significant localized lead exposure.

An estimated 86% of the lead in the global economy is used for lead-acid batteries, for vehicles, telecommunications and data networks, and renewable energy systems. The improper recycling of lead-acid batteries has been found to produce high levels of lead contamination in a number of African countries.

Electronic waste (e-waste) management has been identified as an environmental health concern in the region, particularly in countries with major ports in East and West Africa. While the recycling of electronic goods yields valuable materials, if the necessary controls are not in place, these processes can release lead and a wide array of other chemicals of concern.

Within the infrastructure and construction sector, lead-based paint and drinking water have been identified as sources of lead exposure. As of January 2024, 9 countries in Africa have lead paint laws and more are currently in development. Several non-governmental organizations have conducted studies that indicate the widespread availability of lead-based paint. Regarding drinking water, data in the region is currently piecemeal but studies have identified incidences of elevated lead levels in drinking water and in components of plumbing systems.

Regarding food and agriculture, there is limited data in the region on lead content in food, although there is the potential for soil contamination from industrial releases or the application of lead-containing irrigation water, sludge or other soil amendments. Individual studies have highlighted concern over lead levels in specific food items. In other LMIC regions, spices have been found to be intentionally adulterated with lead compounds; the limited available data has not yet identified this practice in SSA and there is a need for further investigation in MENA.

Certain consumer products have also been identified as potential contributors to lead exposure, namely metal cookware, particularly inexpensive aluminum items made from scrap metal; ceramics, where lead may be present in glazes and decorative paints; and traditional eyeliner containing high levels of lead, which is common across MENA, West Africa and South Asia and may be applied to children.

Ms. Nash highlighted the complexity of lead exposure scenarios, which underscores the potential benefit of a coordinated approach. The sources may be highly diverse; some sources are geographically localized, while others may affect a larger proportion of the population; and populations may face multiple exposures simultaneously.

**Ms. Angela Bandemehr, Senior International Environmental Protection Specialist, Office of International Affairs, Office of International and Tribal Affairs, US EPA**, provided an overview of the United States' lead management strategy. Presentation slides are available in **Appendix B**.

The US has been taking action on lead since the 1970s and has reduced blood leads by 95% since then. In the 1990s, it was acknowledged that there needed to be a multi-sectoral approach to continue to progress in reducing lead exposure and a Lead Subcommittee was established under a new Presidential Task Force on Children's Environmental Health Risks and Safety Risks (Presidential Task Force or PTF) established in 1997. The PTF includes 17 Federal Departments and offices, and the Lead Subcommittee is guided by a [Federal Lead Action Plan](#). There are Lead Subcommittee working groups on particular sub-topics, including data mapping, international work, and occupational and take-home exposures. The [US EPA has a lead strategy](#) that mirrors the Federal Lead Action plan, as do other agencies. The PTF has developed a [public priorities document](#), which includes a commitment to identifying and leveraging existing federal efforts on lead to help LMICs establish, enhance, and implement targeted national and local prevention interventions to reduce and eliminate key lead sources and exposures.

The Federal Lead Action Plan has four main goals. Two of these, Source Reduction and Surveillance & Monitoring are carried out in parallel so that action can be taken while progress is continuously measured. The other two goals, Communications and Research & Data, are overarching and can be carried out across all activities.

Ms. Bandemehr shared how these four goals might inform discussions in the context of LMICs. She noted the importance of an overarching coordination function (like the PTF) to bring agencies together. She recommended looking in parallel at source reduction (regulation and policies), while also building capacity for surveillance and source assessment. Research activities to collect data can be used to prioritize sources and assess progress. An evaluation phase is important to assess impact and adjust activities as needed. Communication, outreach and education can be carried out throughout this process at the national and community level.

Ms. Bandemehr also shared information on a “lead toolkit” currently being developed by UNICEF. This and other tools can be used to support lead management across all stages of implementation. One of the tools will build off of the [US EPA’s Local Lead Action Plan Guide](#), which can be adapted for use at the local or national levels in LMICs. She aimed to foster conversation about how this model may be adapted for use in LMICs.

#### **4. Panel discussion – Country Representatives**

Ms. Bandemehr introduced the first of two panel discussions, where five country representatives shared their experiences with lead management approaches and challenges at the country level in the Africa region.

**Ms. Letitia Abra-Kom Nyaaba, Acting Director of the Ghana National Cleaner Production Center, Ghana Environmental Protection Agency**, responded to the question *“What practical steps can be taken to implement a coordinated, multi-sectoral approach to lead management, and how can the international community support this approach?”*.

Ms. Nyaaba spoke briefly on the sources identified in Ghana, including used lead-acid battery (ULAB) recycling, improper e-waste management, cooking pots, cosmetics, spices, and fuel, as well as the actions taken to date to address these sources of exposure. In 2004, Ghana banned lead in fuel, because emissions from vehicles were recognized as causing widespread lead pollution. Regarding ULABs, 131 sites contaminated with lead have been identified. Assessments have been carried out at eight of those sites, and one site is being remediated. Technical guidelines for the environmentally sound management (ESM) of ULAB have also been developed, which address the whole value chain from collection, transportation, storage, and recycling to final disposal, and provide a framework for how actors throughout this chain should manage their operations to reduce exposure to lead. The Ghana EPA is also reviewing the permit conditions for recyclers to ensure ESM. Regarding e-waste, there is an existing legislative instrument for managing hazardous components, including lead. Ghana also now has a standard for lead in paint, and regulations are being drafted to support implementation of the standard. In addition to legislation, a component of the Ghana EPA’s approach is advocacy. They have worked with partners including Pure Earth, to sensitize communities on the sources and impact of lead exposure.

Ms. Nyaaba also recognized that lead management is a multi-stakeholder issue and emphasized the role of stakeholder engagement. Engaging with authorities including Ghana Health Service, Ministries of Environment, Trade, Waste and Sanitation, Ghana Standards Authority, and Food and Drug Authority, as well as municipalities, is key. Engagement with industry players is also

important for regulation and management to ensure everyone is informed so that lead exposure levels can be reduced as much as possible.

**Mr. Lemesa Hirpe Wari, Head of the Environmental Pollution Monitoring and Study Desk, Ethiopia Environmental Protection Agency,** responded to the question *“What strategies have been successful in identifying and addressing sources of lead exposure in your country? What practical steps can be taken to overcome barriers to implementing a coordinated, multi-sectoral approach to lead management?”*

Mr. Hirpe presented about lead-acid battery (LAB) management in Ethiopia. Ethiopia is one of the fastest growing countries in East Africa. Mr. Hirpe noted that there is a growing demand for LABs in transportation, telecommunications, industry and energy sectors, along with a concurrent increase in waste LABs. Ethiopia has a legal framework to support the ESM of LABs, which follows international frameworks, including the Basel and Bamako Conventions. This approach includes a hazardous waste management law and environmental pollution control framework. In 2020, Ethiopia developed a baseline assessment for LABs to identify and map stakeholders. This study identified the transportation and telecommunication sectors as the main drivers of LAB demand in Ethiopia. For the period of 2024 and 2025, Ethiopia EPA plans to complete the legal framework that is currently under development, which addresses production of LABs and the collection, transportation, and recycling of ULABs. This will include technical guidelines and directives for LAB management. Following the stakeholder mapping, the Ethiopia EPA is committed to awareness raising and providing training to regulators, implementers, and the private sector, especially for recyclers and collectors.

Mr. Hirpe noted that they have faced some challenges including the slow process of adopting new legislation, lack of incentives for ESM for ULABs, lack of commitment among certain stakeholders, gaps in coordination and collaboration, and lack of financial support. The LAB sector also offers an opportunity to generate income and can be used as a model for a circular economy when managed correctly. Ethiopia EPA has a strong partnership with the German Corporation for International Cooperation (GIZ), and there are promising opportunities to engage at the global and regional level on this issue.

**Dr. Livinus Nnamdi Nwankwo, Basel Convention Desk Officer, Federal Ministry of Environment, Nigeria,** responded to the question, *“What practical steps can be taken to overcome barriers to a coordinated, multi-sectoral approach and how can stakeholders collaborate to overcome challenges? What are the roles of different stakeholders?”*

Dr. Nwankwo identified the stakeholder groups involved in LABs at the regional, national and community level for Nigeria and more broadly for Africa. He highlighted the potential for the Economic Commission of West African States (ECOWAS) to act as a coordinating stakeholder for the region for all activities around lead, especially LABs, due to its internationally recognized status. At the national level, he highlighted the role of government agencies, industry, including manufacturers of LABs and trade unions, and non-governmental organizations (NGOs). At the community level, local councils and consumers, and NGOs can play a role. In addition, he noted the role of external stakeholders, like donors and development agencies.

Dr. Nwankwo highlighted barriers Nigeria has faced regarding lead management approaches, namely the lack of a coordinating platform at the national and regional level. Currently, there is nowhere for coordinating agencies and stakeholders to share information, expertise, and best practices. Dr. Nwankwo suggested ECOWAS could provide such a platform and act as a coordinator at the regional level. At the national level, Dr. Nwankwo recommended that a lead

agency be identified, which could then link together at the regional level. He also suggested greater engagement and awareness raising with manufacturers and industry and shipping associations on governmental policies.

**Mr. Abdulhamid Makame, Vice President's Office, Division of Environment, United Republic of Tanzania**, responded to the question, *"What strategies have been successful in identifying and addressing sources of lead exposure in your country?"*.

Beginning with the issue of e-waste specifically, Mr. Makame noted that the United Republic of Tanzania established a national governmental policy in 1997, which was reviewed and revised in 2021, with new regulations in line with the Basel Convention. Mr. Makame noted that the e-waste value chain can create jobs through recycling and manufacturing new products, which can reduce this sector's carbon footprint. Discussing lead management more broadly, Mr. Makame noted that the initiatives in the United Republic of Tanzania are currently fragmented. At a recent national meeting, it was decided that there needs to be a single strategy, which is now currently in draft form. This strategic plan seeks to consolidate all current and future interventions related to lead management into a cohesive framework. Through that meeting, a gap was identified in that the health sector may not be highly aware of the issue of lead exposure, and Mr. Makame recognized the need for greater coordination.

**Mr. Stephen Kuyeli, Director of Technical Services, Malawi Bureau of Standards**, discussed the issue of lead in paint in Malawi. Mr. Kuyeli noted that this issue was recognized in Malawi twenty years ago, and the government is addressing this issue on several fronts. They began working with industry to adopt lead-free manufacturing practices and were monitoring paint products on the market. However, they faced issues with enforcement as they lacked testing capacity. They began collaborating with the NGO LEEP three to four years ago. These efforts enhanced their capacity for monitoring products on the market and involved revising the standard for lead in paint to align with the suggested lead concentration limit in the UNEP Model Law, which is increasingly being used by many countries as a mandatory limit for lead in paint. They now have new testing equipment and are currently building capacity among personnel. They are undertaking monitoring at points of production and import, as well as market surveys, using their own laboratory or contracting laboratories outside of the country.

## **5. Questions and Open Discussion – First Session**

Questions from the audience were posed to the panelists and presenters.

*How are lead management issues linked with climate change?*

While this question was not addressed during the consultation, organizers provided the following information after the meeting. A link between lead management and climate change could be made in the context of delivery of low-carbon energy systems. Decarbonization efforts to reduce climate change impacts often involve alternative technologies and energy systems, including solar, which still use lead acid batteries to store energy. Addressing climate change is an important activity, and it is helpful to consider how to address potential unintended consequences regarding lead management while supporting those efforts.

*What barriers to reducing lead exposures have been encountered and how were they overcome?*

Ms. Bandemehr noted the suggestion by Nigeria of the potential benefit of a platform for exchanging information and experiences. She highlighted that there is an existing [Lead in Paint Community of Practice](#) that meets periodically, which has been helpful for exchanging real-time progress on the lead in paint issue on a regular basis, particularly in terms of enforcement.

Ms. Nyaaba noted the following challenges – inadequate finance to support monitoring (air, soil, water, etc.), unregulated informal sectors, the cost of remediating contaminated sites, and the absence of medical treatment for those exposed to lead. She presented the following measures that could be taken – international collaboration and technical support with respect to monitoring equipment, support for advocacy, expansion of health surveillance to cover other regions of Ghana, market screening to identify other consumer products with high lead levels, ethical buying of lead ingots (to ensure companies comply with sound environmental practices), and building local capacity and expertise to remediate contaminated sites.

*What experience have authorities had with lead ammunition as a potential source of exposure?*

Ms. Nash responded that there is limited data from the region on this issue, but there are studies on lead exposure from hunting and fishing (specifically the production of lead weights) in South Africa.

Mr. Ian Rushworth of the South African Lead Task Team noted the risk of lead shot from shotguns in both agricultural fields and game meat, and expressed concern that this is an under-recognized exposure source. Mr. Rushworth added that the South African Lead Task Team has representatives from regulators, conservationists, NGOs and users of lead (fishing and hunting associations), in order to share information, learn from each other, and build trust.

*Participant comments*

Mr. Bereket Tesfaye from the GIZ-Energising Development (EnDev) Programme supplemented Mr. Hirpe's presentation with additional information on lead management in Ethiopia. He noted that a coordinated approach has been established at two levels. There is a ULAB Technical Working Group and a Ministry of Health Lead Mitigation Working Group, both of which convene quarterly and serve as a national knowledge hub to exchange knowledge products and provide input to the higher coordination unit. An interministerial steering committee will be established soon.

Mr. Lamoussa Jean Claude Damiba of Burkina Faso noted that Burkina Faso wrote a reference report on the management of ULABs in 2021, which had a number of recommendations for environmentally sound management, and recommended economic studies for countries which currently lack formal recycling industries to examine the opportunities in that sector.

## **6. Panel discussion – International Organizations and Civil Society Representatives**

Ms. Bandemehr introduced the second panel discussion, which included representatives from international organizations and civil society.

**Ms. Nafisatou Cissé, Program Manager, Team Leader, Lead Exposure Elimination Project (LEEP)**, responded to the question, *“How can African countries leverage existing lead management activities to enhance collaboration and knowledge sharing nationally and across the region? How can stakeholders collaborate to address lead management challenges effectively?”*.



LEEP is an international NGO which works across three continents - Asia, Africa, and Latin America - engaging with governments and paint manufacturers. LEEP has 20 active programs in African countries to address lead exposure, supporting governments with the adoption and implementation of legal controls and providing technical support to manufacturers in eliminating lead paint.

LEEP promotes the harmonization of lead regulations across countries. ECOWAS has adopted a mandatory standard for lead paint for its fifteen members. However, national governments still need to implement this standard nationally by enacting regulations with enforcement provisions. The East African Community also has a standard in line with the internationally recognized lead concentration limit of 90 ppm. These standards provide a way for governments to act quickly and in concert with each other, and LEEP is working with several countries in these regions to support this effort. LEEP is also providing technical support to the African Standard Organization (ARSO) on standards for paint and varnishes.

Ms. Cissé described practical steps that could help overcome barriers. One of these steps is continued awareness raising as the dangers of lead are still not well known among all stakeholders. In addition to targeting government officials and the public, awareness raising is also important for paint manufacturers who may not know the dangers associated with their products. Ms. Cissé also noted the importance of government entities within countries working in a coordinated manner. LEEP supports consultations among government partners to provide platforms for coordination.

Ms. Cissé highlighted LEEP's work in Senegal with the Poison Control Center (PCC). They conducted a paint study in 2023, which showed the presence of lead paint on the market. The PCC then organized a workshop to inform other government agencies and the paint industry of the results and to discuss the development of a lead paint regulation. The PCC also shared detailed information on the findings with manufacturers and importers. Since then, the manufacturers of certain brands have reported taking action to discontinue production or import of lead paint. LEEP is now providing technical support to major paint manufacturers to reformulate paints to not include lead ingredients, as well as supporting the supply chain of non-lead additives to ensure sustainability. They are also providing testing support so manufacturers can ensure the safety of their products. LEEP aims to replicate this approach in other program countries and Ms. Cissé noted the progress that the Malawi Bureau of Standards has made under Mr. Kuyeli's leadership.

**Dr. Casey Bartrem, Senior Technical Advisor, United States Agency for International Development (US AID) Lead Working Group**, responded to the question, *"What practical steps can be taken to overcome barriers to implementing a coordinated, multi-sectoral approach to lead management, and how can stakeholders collaborate to address these challenges effectively? What are the roles of various stakeholder groups?"*.

Dr. Bartrem presented the example of Northern Nigeria, where one of worst outbreaks of lead poisoning occurred in 2010. during which 400 children died and many more were poisoned in Zamfara State. The Nigerian government's response had to be developed in a short period of time during an acute emergency. Dr. Bartrem reflected on four themes:

1. Coordination: The response included local, state, and national Nigerian authorities, traditional and religious leadership, NGOs, WHO, UN bodies, and the US Center for Disease Control (US CDC). This required a high degree of coordination, which was accomplished through regular, in-person stakeholder meetings with representatives from all of these organizations. The aim of these meetings was to discuss activities and share results so

that work by the different stakeholders could be complementary without duplicating efforts.

2. Testing: Dr. Bartrem noted the importance of having accurate data and continuing to build on that knowledge over time. In the case of Nigeria, additional investigation was needed to fully understand how children were being exposed and how best to stop exposure. More broadly, data on sources is needed to understand how to curb exposure.
3. Training: Dr. Bartrem noted the importance of training and capacity building across sectors. Responding to lead exposure requires experts from many different backgrounds (health, environment, industry), and supporting technical training across different disciplines is needed.
4. Evaluation and adaptation: In the case of Nigeria, as the lead poisoning response evolved from an acute emergency to a longer-term initiative, the team identified other sources of exposure. They implemented regular program evaluation to determine where changes or new strategies were needed as new exposure sources were identified.

Dr. Bartrem noted that these four elements could be applied to any country and any exposure source or multiple sources. She highlighted the presence of these four themes at the global level. As an example of coordination, US AID is a member of the ILEWG, which has allowed coordination of activities among US agencies. In terms of testing, there are a number of organizations currently carrying out lead source assessments. In certain countries, US AID missions are supporting sampling across industries and products. Regarding training, the UNICEF toolkit, which is currently under development, is going to provide information and capacity building on lead mitigation. Regarding evaluation and adaptation, the US domestic approach has evolved as scientific knowledge has grown, including from learning about sources of exposures in the US from consumer products and how to tackle those.

**Dr. Valerie Zartarian, Co-chair of the US Government International Lead Exposure Working Group, US EPA,** responded to the question: *“How can the international community support African countries in developing and implementing comprehensive and multi-sectoral lead management strategies that align with broader development objectives and priorities?”*.

The US has achieved >95% reduction in blood lead levels among children since the 1970s. This was achieved through a multi-faceted approach, which has been carried out at multiple geographic scales. Dr. Zartarian provided examples of accomplishments under the four specific goals of the Federal Lead Action Plan below. The comprehensive list of accomplishments can be found in the [2024 Federal Lead Action Plan 5-Year Progress Report](#). The US EPA strategy is based around the same four goals.

1. Reducing exposure to lead sources:
  - Strengthened regulations on soil, dust, drinking water and food.
  - Grants and trainings to avoid lead paint hazards.
  - Funding and technical support to replace drinking water service lines.
  - Cleaned up contaminated sites.
  - Continued screening and enforcement of consumer products.
2. Identifying communities with high lead exposures and improving health outcomes:
  - Lowered blood lead reference value.
  - Strengthened blood lead testing, reporting, surveillance and follow-up interventions.

- Supported environmental health education for medical community.
  - Collaboration among agencies to identify high risk locations using available data.
3. Communicating effectively with stakeholders:
    - Held National Lead Poisoning Prevention Week on risks in the US and coordinated on the International Lead Poisoning Prevention Week.
    - Hosted public meetings to promote lead prevention.
  4. Conducting critical research to inform other goals:
    - Released an Integrated Scientific Assessment to inform regulatory decisions.
    - Provided technology to identify water service lines made of lead.
    - Applied models to estimate blood lead levels.
    - Published US lead hotspot paper.

The US aims to consolidate and deliver knowledge, lessons learned, and best practices through a toolkit currently in development under the leadership of UNICEF. The toolkit is intended for use in LMICs and will be hosted by [UNICEF's collaborative portal](#). The US EPA in cooperation with members of the ILEWG is providing support to this toolkit, which will reflect some of the lessons learned through the implementation of the Federal Lead Action Plan. The toolkit will have twelve focus areas plus expert videos, and it will evolve based on government and stakeholder input. It is planned that six tools will be launched in 2024. Another available tool is the [US EPA Local Lead Action Plan Guide](#), which is a web-based framework and provides informational resources, best practices, and case studies to inform community-based action.

**Mr. Alexander Mangwiro, Programme Management Officer, Regional Coordinator, Chemicals, Waste management & Air Quality Sub-programme, UNEP Africa Office**, was unable to participate in the event in real-time, but provided a written response to the discussion question, *“How can the international community support African countries in developing and implementing comprehensive and multi-sectoral lead management strategies that align with broader development objectives and priorities?”*.

Supporting African countries in developing and implementing comprehensive lead management strategies that align with their broader development objectives and priorities involves a multifaceted approach. Here are some key strategies the international community can employ:

**a. Technical assistance and capacity building:**

- Provide expertise to develop national lead management policies and regulations.
- Support training programs for local officials and communities on lead safety and management.
- Facilitate the transfer of technologies that reduce lead emissions and exposure.

**b. Financial support:**

- Fund initiatives to replace lead-containing infrastructure and products, such as water pipes and paints.
- Provide grants or loans for lead clean-up projects and for establishing safe recycling facilities for lead-acid batteries.
- Support health systems to manage lead poisoning cases and conduct widespread blood lead level screenings.

**c. Research and data collection:**

- Collaborate on research initiatives to map lead contamination sources and impacted populations.

- Support the establishment of monitoring systems to continually assess lead exposure levels.
  - Develop databases and mapping tools to track progress and prioritize interventions.
- d. Public awareness and community engagement:**
- Sponsor campaigns to educate the public on the dangers of lead exposure and preventive measures.
  - Engage local communities in planning and implementing lead management programs to ensure they meet the specific needs and gain community trust and participation.
- e. Partnerships and multi-sectoral collaboration:**
- Foster partnerships between governments, NGOs, international agencies, and the private sector.
  - Encourage multi-sectoral approaches that integrate lead management with health, environment, and industrial policies.
- f. Policy advocacy and regulatory frameworks:**
- Assist in the development of stringent regulatory frameworks for lead use and disposal.
  - Advocate for policies that incorporate lead management into broader economic and environmental strategies.
- g. Sustainable Development Goals (SDGs) alignment:**
- Ensure that lead management strategies contribute to the SDGs, particularly those related to health, clean water, and sustainable cities and communities.
  - Promote lead management as part of climate and pollution mitigation efforts to garner broader support and resources.

By implementing these strategies, the international community can significantly assist African countries in addressing the challenges posed by lead exposure while also promoting sustainable development.

## 7. Questions and Open Discussion – Second Session

Regarding stakeholder engagement, Ms. Bandemehr noted that the US EPA’s Local Lead Action Plan concept was designed for communities to empower themselves to address lead exposure issues and now communities are sharing experiences among one another. This tool could also be adjusted for use by LMICs at the national level and potentially regionally as well to exchange information on lead sources and management.

UNICEF shared that one of the elements of the toolkit that is already completed, which is on [Assessing Environmental Lead \(Pb\) Exposure in Resource-Constrained Settings. Five expert videos](#) are also already available.

The Global Alliance on Health and Pollution (GAHP) highlighted their Health and Pollution Action Plans, which is also a cross-sectoral and multi-stakeholder approach; in particular, they are currently working with stakeholders in Uganda.

Regarding effective collaboration modalities or platforms, Dr. Bartrem noted that in-person coordination meetings are most effective when possible.

## 8. Closing Remarks

Ms. Bandemehr thanked participants, noting the wide participation from governments and stakeholders across Africa and several participants from other regions. She observed that there seems to be a consensus regarding the need for a large-scale view of the lead exposure and

management situation in a country, to understand what is happening across different authorities in the government and within industry. The consultation included perspectives about e-waste, LABs, and lead paint; the expertise being built through management of these sources could be used to inform approach to other sectors.

The opportunity for regional coordination was also highlighted. ECOWAS, the East African Community, and the African Organization for Standardization were recognized as great structures to work on further harmonization across countries.

The consultation provided new perspectives that will inform discussions moving forward, including the second consultation planned for French-speaking countries as well as conversations at the international level, such as the upcoming G20 summit.

The organizers express deep appreciation for the panelists, participants and attendees who contributed to the consultation.

## 9. Key Takeaways

The consultation discussions yielded the following key takeaways:

- Significant efforts are underway in the region to address major lead exposure sources, including lead-acid batteries, lead-based paint, and electronic waste.
- Participants noted the need for or benefit of having a mechanism for coordinating among the various government stakeholders and industry actors involved in lead management. In several cases mentioned, there are disparate activities related to lead being led by different agencies and having a central forum to provide updates and share information would allow for a more effective response.
- Moving forward with actions to address identified exposure sources is important, even if there is not yet a high degree of coordination or comprehensive information on all sources at the country level.
- This need for coordination also extends to the regional level. Participants highlighted the role of ECOWAS, the East African Community and African Standards Organization, in promoting action and harmonization on certain aspects of lead management across the region.
- International partners are eager to share experiences and support lead management strategies in LMICs. There are a number of tools already available or currently under development to support aspects of lead management, including a coordinated, multi-stakeholder approach. These include the [UNEP Toolkit for establishing laws to eliminate lead paint](#), the [UNICEF Toolkit](#), and the [US EPA's Local Lead Action Plan Guide](#).

## Appendix A

# Setting the scene: Overview of lead exposure sources in the Africa Region

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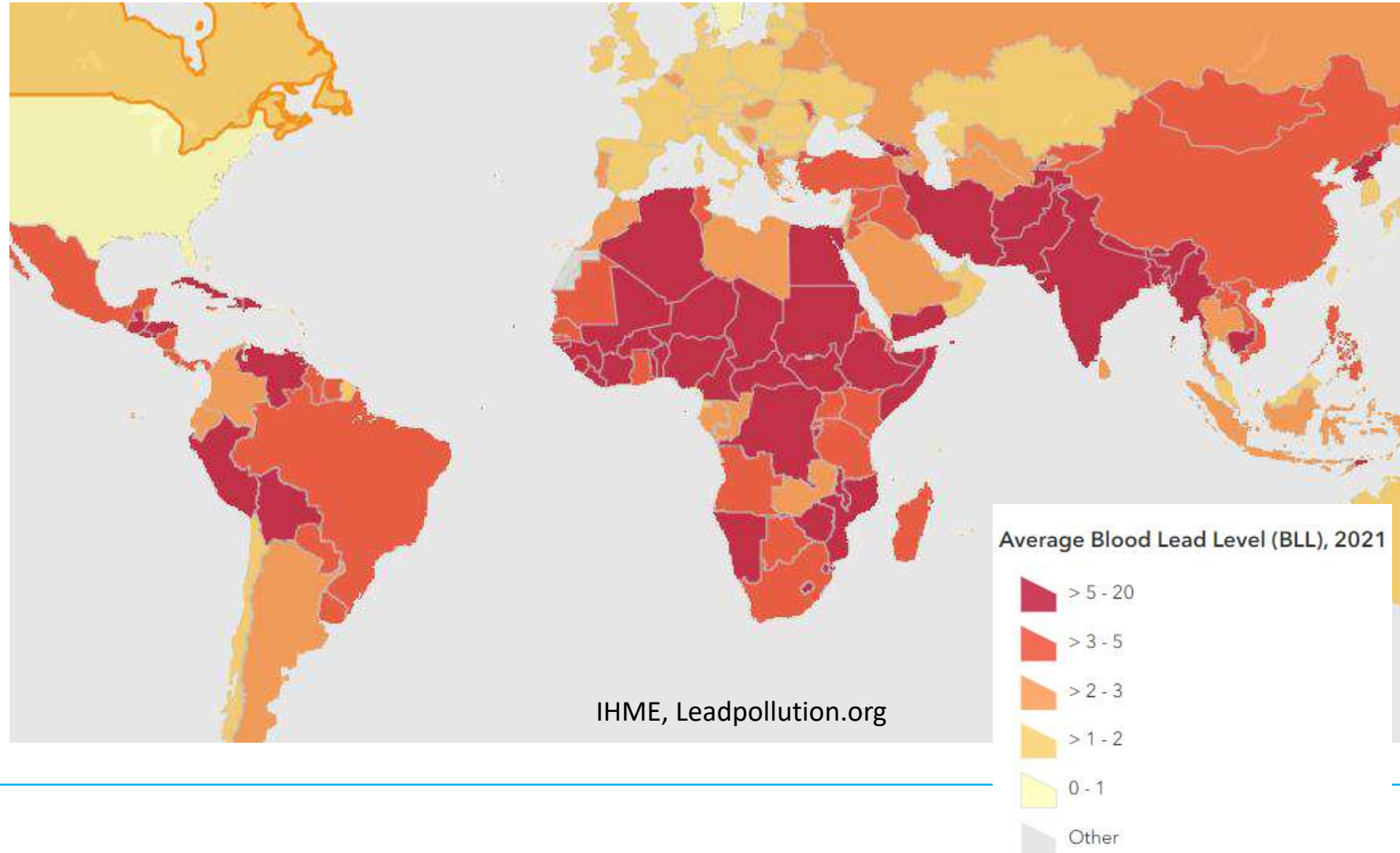
Emily Nash, Lead Management Consultant, Knowledge and Risk Unit, Chemicals and Health Branch, Industry and Economy Division

10 July 2024

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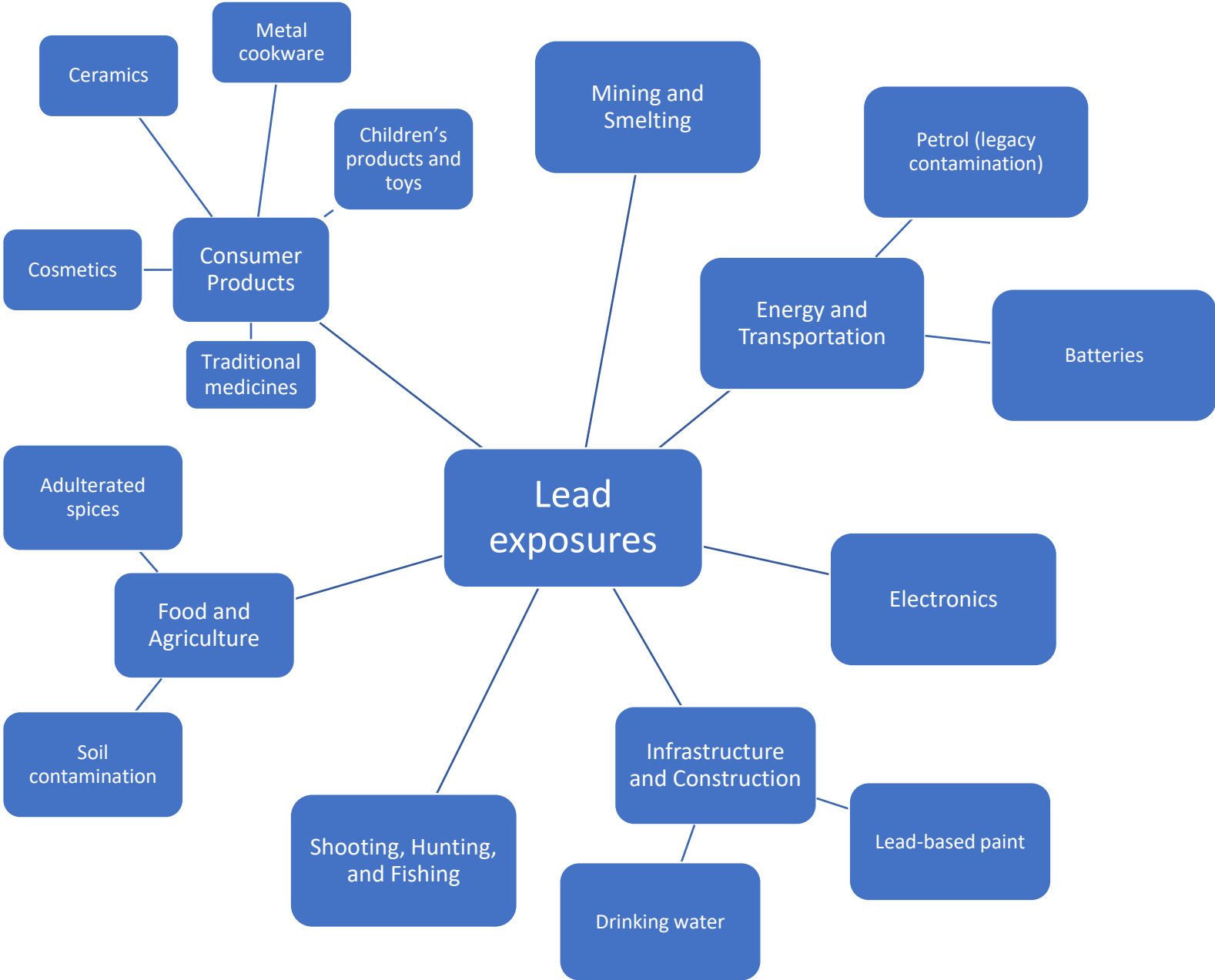
# Lead exposures in LMICs and Africa Region

- 1 in 3 children have BLLs above 5  $\mu\text{g}/\text{dL}$ <sup>1</sup>
- 94% of the disease burden (years of healthy life lost) occur in LMICs<sup>1</sup>
- 5.1  $\mu\text{g}/\text{dL}$  for SSA; 5.2  $\mu\text{g}/\text{dL}$  for MENA – highest regional averages after South Asia<sup>2</sup>
- Socioeconomic implications: cost due to IQ loss 6.3% of GDP for SSA; 2.9% for MENA<sup>2</sup>





# Global Lead Exposure Sources by Sector



# Mining and Smelting

## Lead mining

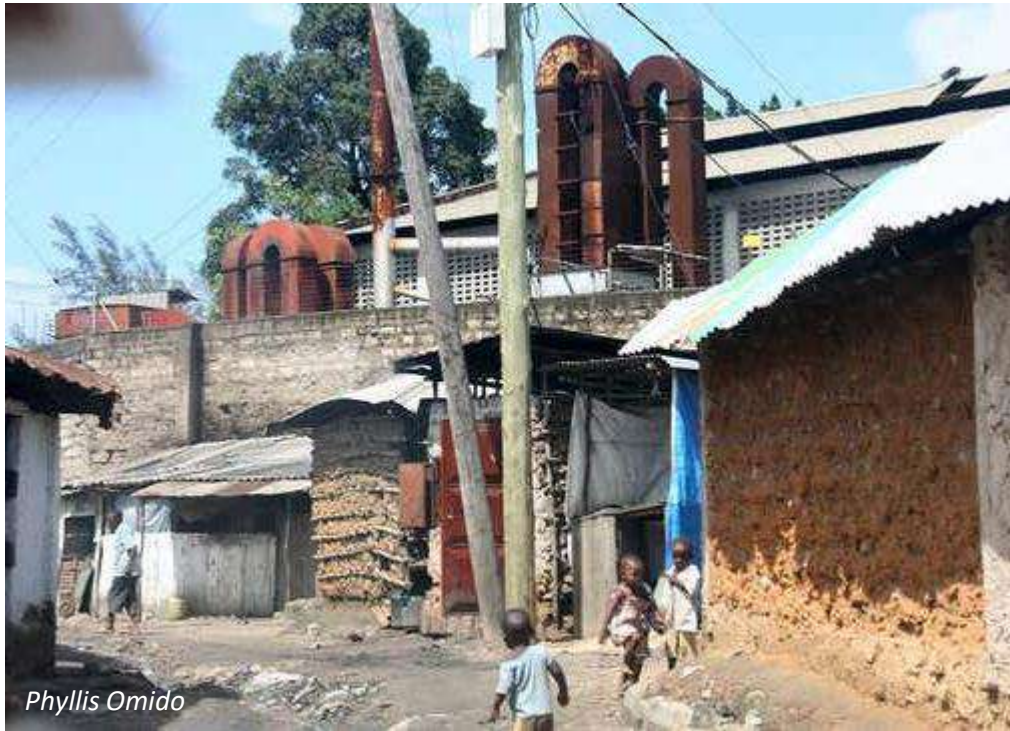
- Lead is highly recyclable but globally 4.5 million tons still mined annually<sup>3</sup>
  - Majority mined in China, Australia, Peru and US (~68% combined)
- In Africa region, pollution from active and legacy lead and zinc mining

## Artisanal and small-scale gold mining

- Exposure to lead dust while working with ore



# Mining and Smelting



## Smelting

- Required for primary lead from mining, as well as recycled lead
- Process of heating lead ore or recycled lead and adding reducing agents
- Can release lead particles into air and hazardous solid waste (slag), affecting workers and surrounding communities
- Ranges from formal facilities to very informal “backyard” set-ups

# Energy and Transportation

## Lead-acid battery manufacturing and recycling

- ~86% of lead in the global economy used in LAB<sup>4</sup>
- Applications:
  - Vehicles are the largest sector using LABs
  - Followed by energy infrastructure for telecommunications and data networks
  - Component of renewable energy power systems
- LABs are highly recyclable but process requires tight environmental controls

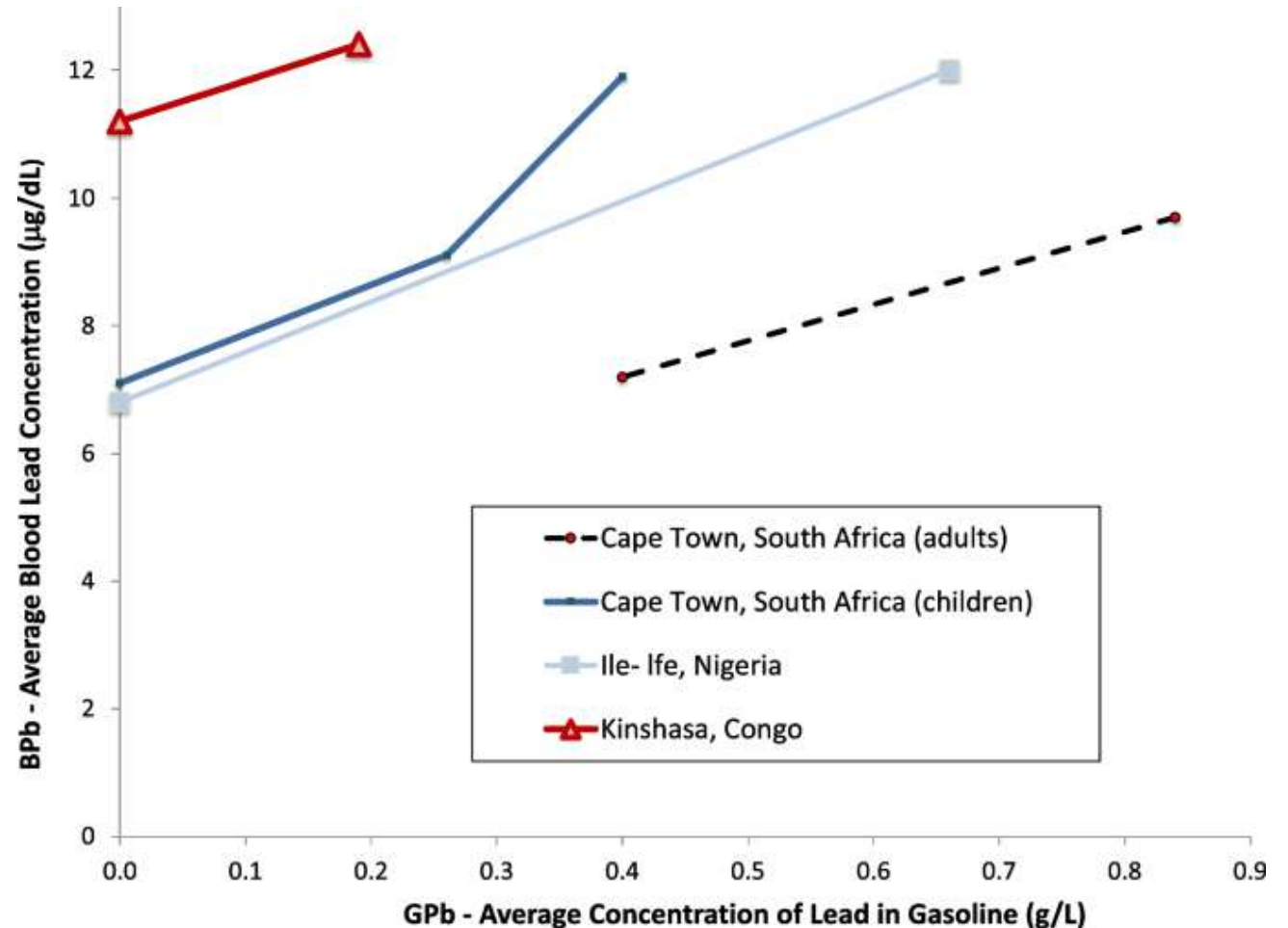


*Study of soil contamination from 15 LAB manufacturing and recycling sites across 7 African countries found mean lead concentrations in community areas 13x US EPA screening level<sup>5</sup>*

# Energy and Transportation

## Legacy of leaded petrol

- By 2006, all countries in Sub-Saharan Africa had eliminated its use
- Some use remained in the Middle East and North Africa until 2021
- Reductions in population-level blood leads observed in 3 countries with available data<sup>6</sup>
- Lead can remain in soil and act as reservoir of exposure<sup>7</sup>



# Electronics

## Electronic waste management

- Globally, 22.3% of the e-waste documented as being formally collected and recycled in an environmentally sound manner; <1% in Africa <sup>8</sup>
- E-waste contains valuable reusable materials, but can also release toxic substances
- Lead exposure concerns arise at sites of informal recycling or discard of electronic goods (both imported and domestically generated)
- Occupational and community-level risks

### Importing

- Increase in GDP
- Extend life of electronics, but shorter life span in Africa
- Increase access to electronics

### Recirculating

- Reuse, Repair, Refurbish, Recycle
- Increase Entrepreneurship opportunities
- Income for informal workers
- Loss of discarded resources

### Dismantling

- Income for informal workers
- Health risk for informal workers, population and the environment
- Loss of discarded resources

### Open burning and discarding

- Health risk for informal workers, population and the environment
- Loss of resources

# Infrastructure/Construction – Paint

## Lead-based paint

- Globally 48% of countries have lead paint laws (January 2024)
- As of January 2024, 9 countries in Africa have lead paint laws; more currently in development
- Studies indicate widespread availability of paint with lead concentrations above 90 ppm in region.
  - [Lead Exposure Elimination Project](#)
  - [Pure Earth Rapid Market Screening](#)
  - [IPEN Africa Lead Elimination Project](#)



# Infrastructure/Construction – Drinking water



## Lead in pipes, solder, and pumps

- Limited data at the regional level, but evidence of lead components in plumbing systems in region.
- Recent study in rural Ghana, Mali and Niger, 9% of samples exceeded WHO's guideline value of 10 ppb. 82% of water system components exceeded allowable lead (most commonly in brass).<sup>10</sup>
- Intervention to replace lead in pumps in Madagascar resulted in reduction in blood lead levels.<sup>11</sup>



# Food and Agriculture

## Agricultural soil contamination

- Limited data at regional level on lead content in food
- Potential for soil contamination from industrial sources (mining, e-waste recycling) or certain fertilizers<sup>12</sup>
- Individual studies have highlighted potential concern about specific food items (cereals, smoked fish, fruit juice)<sup>13</sup>



## Spice adulteration

- In other global regions, spices have been found to be intentionally adulterated with lead compounds
- Need for further investigation in MENA<sup>14</sup>
- Available data has not yet identified this as a major issue in SSA<sup>15</sup>

# Consumer Products - Cookware



## Metal cookware

- Growing data on lead in metal cookware, particularly inexpensive aluminum items
- Lead present in scrap metal used for production
- Risk of lead exposure through leaching
- In Pure Earth Rapid Market Screening, 58% of metal foodware items above reference in SSA; 25% in MENA<sup>15</sup>

## Ceramic cookware

- Lead may be present in glazes and decorative paints applied to ceramic ware
- In recent studies, high proportion of items identified as containing lead above 90 or 100 ppm<sup>15,16</sup>
- Need for additional research into the risk of leaching.<sup>16</sup>

# Consumer Products - Cosmetics

## Traditional eyeliner

- Extremely high concentrations of lead identified in traditional eyeliner (kajal, kohl, surma, tiro, chilo)
- Common in South Asia, Middle East, North Africa, and West Africa, with strong cultural significance
- Limited but growing data on use and blood lead impacts in region, especially among children



# Implications for Lead Management

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- Lead exposure sources are diverse
- Some sources are limited geographically to hot spots, while others may affect a larger proportion of the population
- Populations may face multiple exposure sources simultaneously



Complexity of lead exposure scenarios supports the idea of coordinated, multi-sector approach

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# Thank you

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## Appendix B



# US Government Example of a Multi-Sectoral Lead Management Strategy

Angela Bandemehr and Valerie Zartarian, Ph.D.

Co-Chairs, US Government International Lead Exposure Working Group  
US Environmental Protection Agency

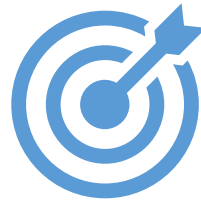
UNEP Consultation – Addressing Lead Pollution in Africa  
Virtual Meeting, 10 July 2024

# Overview



## **US Government-wide mechanisms**

US President's Task Force  
Addressing Lead and Other Issues  
President's Task Force Priority  
Activities 2024-2026 for the  
International Lead Exposure  
Working Group



## **US Action Plans and Strategies**

US Federal Action Plan & EPA  
Strategy Goals and Progress  
Addressing Lead Exposures



## **Potential application to LMIC context**

Sectoral Management Approach  
UNICEF Toolkit to Address Lead  
Exposures in LMICs  
UNICEF Toolkit building on EPA  
LLAP Guide and other Toolkits

# US President's Task Force Addressing Lead and Other Issues



The President's Task Force on Environmental Health Risks and Safety Risks to Children is the focal point for coordinating federal government efforts to explore, understand, and act together to improve children's safety and environmental health.

## **President's Task Force (PTF) on Environmental Health Risks and Safety Risks to Children**

- Established 1997 by EO 13045; comprised of 17 federal departments/offices
- Co-chaired by EPA Administrator and HHS Secretary
- 2016 PTF action plan was updated in 2024
- [priority activities 2024-2028 on public website](#) include 2 international lead actions



## **Senior Staff Steering Committee of the PTF**

- “Operational arm” of PTF, co-chaired by EPA & HHS



## **Lead (Pb) Subcommittee of the Senior Staff Steering Committee of the PTF (1 of 4)**

- Co-led by EPA, Health and Human Services, Housing and Urban Development
- Leading implementation of [2018 Federal Lead Action Plan](#)
- Established working groups: Data Mapping, International, Occupational Take-Home Exposures
- EPA implements activities through [EPA Lead Strategy](#)

# President's Task Force Priority Activities 2024-2028

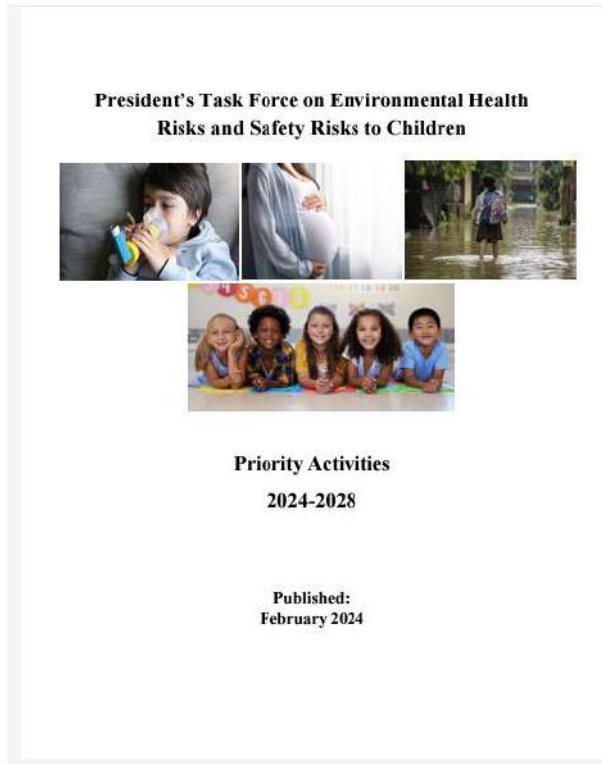
## ILEWG Actions

### Short-Term Action (2024-25)

Convene an International Lead Exposure Working Group within the Lead Exposures Subcommittee and **identify and leverage existing federal efforts** (e.g., technical expertise, lessons learned, and best practices) to help build and/or enhance capacity in low- and middle-income countries to address lead exposures.

### Long-Term Action (2026-28)

Build on U.S. international cooperative activities, including by leveraging existing and new multi-stakeholder international partnerships (such as the Global Alliance to Eliminate Lead Paint) **to help low- and middle-income countries establish, enhance, and implement targeted national and local prevention interventions** to reduce and eliminate key lead sources and exposures.



# US Federal Action Plan & EPA Strategy Goals and Progress Addressing Lead Exposures

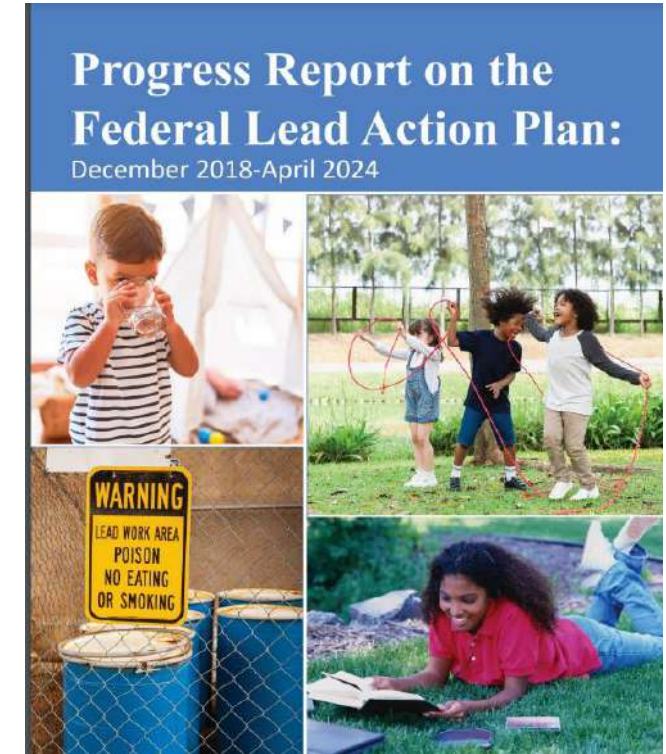
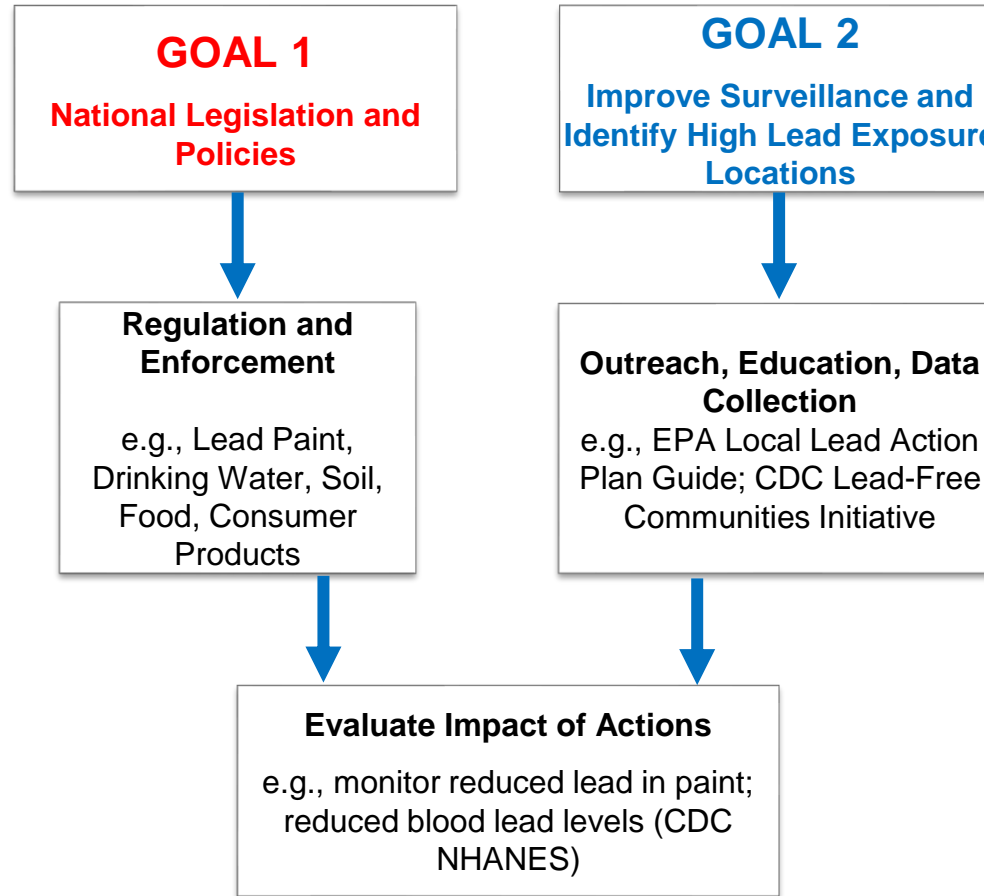
Whole-of-Government and Multi-Sector Collaborations

**3 Approaches:**  
*national-scale;*  
*local-scale; whole-*  
*of-government*

**GOAL 3**  
**Communications**

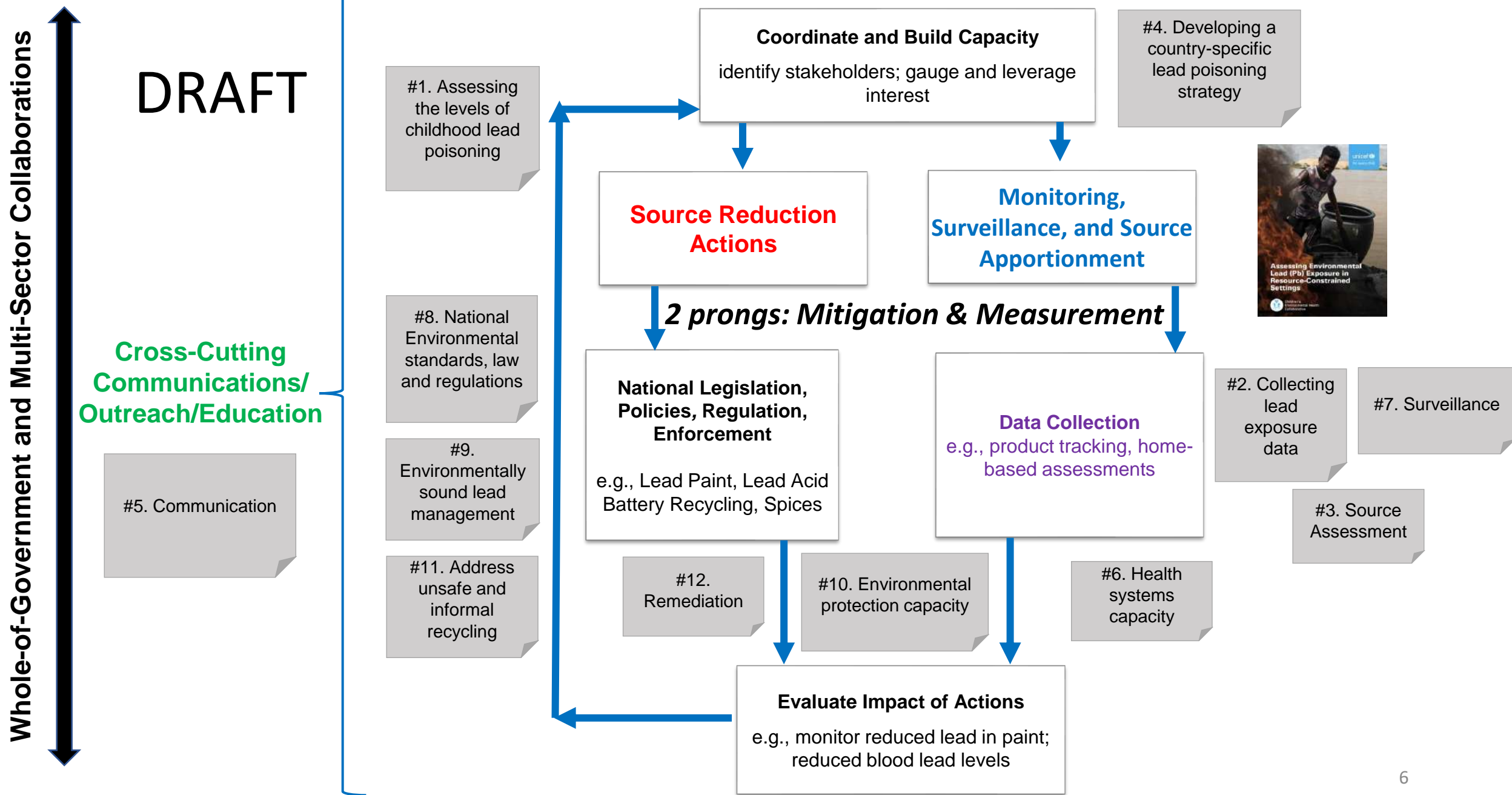
&

**GOAL 4**  
**Research and Data**



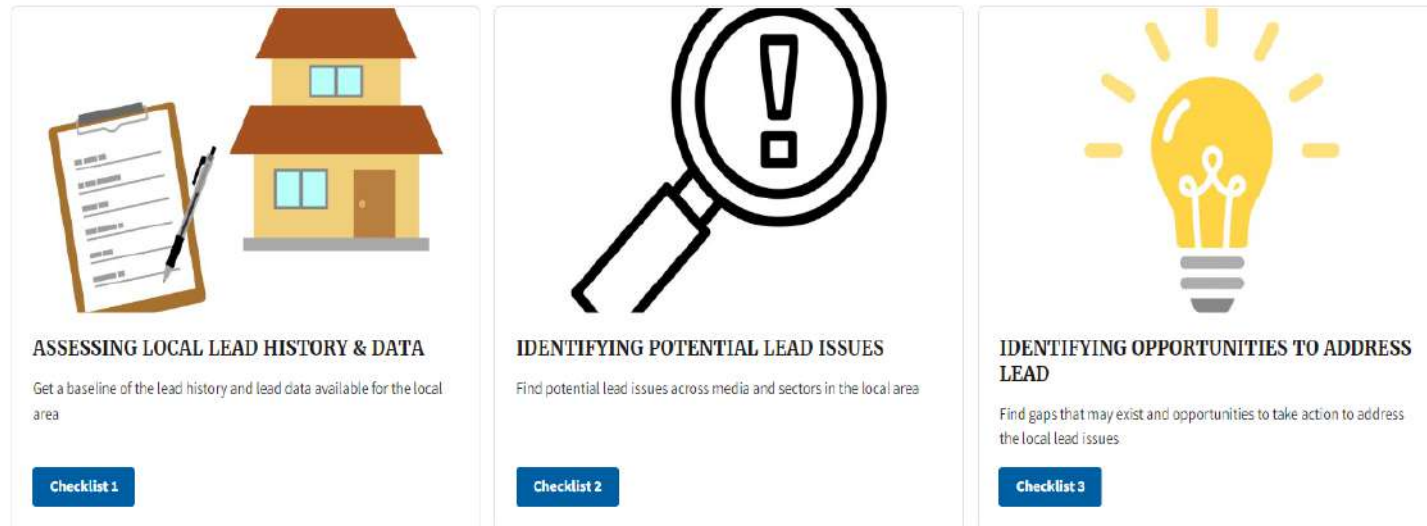
[https://ptfcehs.niehs.nih.gov/sites/niehs-ptfceph/files/files/progress-report-flap\\_508.pdf](https://ptfcehs.niehs.nih.gov/sites/niehs-ptfceph/files/files/progress-report-flap_508.pdf)

# Multi-Sectoral Management Approach & UNICEF Toolkit to Address Lead Exposures in LMICs



# UNICEF Toolkit is building on EPA LLAP Guide and other Toolkits

- UNICEF’s LMIC “Toolkit” builds upon existing USG resources, including the LLAP Guide
- EPA’s Local Lead Action Plan Guide ([LLAP](#)) is a web-based framework available on [EPA’s lead website](#)
- Includes checklists, action plan templates, informational resources, best practices, and case studies
- LLAP steps include:
  - Step 1: Complete LLAP Checklists
  - Step 2: Create a Local Lead Action Plan
  - Step 3: Implementation
- Many of the “tools” are connected



**ASSESSING LOCAL LEAD HISTORY & DATA**  
Get a baseline of the lead history and lead data available for the local area  
[Checklist 1](#)

**IDENTIFYING POTENTIAL LEAD ISSUES**  
Find potential lead issues across media and sectors in the local area  
[Checklist 2](#)

**IDENTIFYING OPPORTUNITIES TO ADDRESS LEAD**  
Find gaps that may exist and opportunities to take action to address the local lead issues  
[Checklist 3](#)

# Thank you

## Contact

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