PURE EARTH

Solve pollution. Save lives. Protect the Planet.

Annual Report

2021/22

Contents

Cover and inside cover:
Children in Mirzapur, Bangladesh

LETTER FROM RICHARD FULLER

DEAR SUPPORTERS,

As I write this and reflect on Pure Earth's 23rd year of operations, it seems to have gone by so quickly. Now that we are past the global slowdowns of the early COVID pandemic, our teams have been back in the field conducting research, environmental and health assessments, and interventions aimed at protecting children from lead and mercury exposure.

Lead and mercury are two of the most prevalent pollutants in low- and middle-income countries and pose a greater risk than all other Top Ten Chemicals of Concern identified by WHO. Both lead and mercury pollution travel through the global environment in air, water, soil, and through global food supply chains to reach all corners of the earth. Because of widespread exposure, both toxicants have a significant impact on the trajectory of societies, causing disability, IQ loss, increased violence, and restricted futures for poisoned children.

I am gratified to report that a few years into our strategic plan—with a focus on lead and mercury—we've seen evidence that this was the right move. By concentrating our efforts, we have increased momentum and more organizations and funders are recognizing the scope and urgency of the problem. Following the leadership grant from Clarios Foundation, GiveWell designated Pure Earth as the most effective organization working on lead globally, and provided a major grant to investigate sources of lead exposure in 25 countries.

Pure Earth is expanding its capacity, and that of partner organizations and government stakeholders, to understand lead exposure from a broader set of sources, including consumer products such as spices, pottery, cosmetics, and aluminum pots and pans.

We are working to understand products, processes and industries that use lead and mercury that contribute to exposures, as well as the regulatory, economic and social contexts surrounding these products and industries with the goal of formulating broader systemic solutions.

Here in the US, a Congressional subcommittee report on lead, mercury and other heavy metals in baby

foods renewed concerns about these hidden sources of exposure for the most vulnerable. Consumer Reports published a report detailing levels of lead and other heavy metals found in top brand spices in major US grocery store chains. We have been working on lead-adulterated spices in Georgia and Bangladesh, but did not expect this to show up in top grocery chains in the US. This finding reinforced the messages in our 2019 report, *Pollution Knows No Borders*, and provided fresh evidence that pollution travels the world through the complex, global ingredient supply chain to impact us all, regardless of where it originates.

In the next few years, we will expand our advocacy with the US Government exploring policy solutions to get heavy metals out of the food and ingredient supply chain wherever it is detected.

Again, thank you for your support and commitment.

Sincerely,

RICHARD FULLER
PURE EARTH CEO

Women miner in Panjngan, West Java, Indonesia Photo: YTS

Launch of Project R.E.A.L.M.E.

Pure Earth's Project R.E.A.L.M.E. is a $40 million campaign to safeguard the world's children from lead and mercury poisoning and pollution. From bedrooms in Bangladesh to kitchens in Kansas, we use pragmatic solutions to get the lead and mercury out of our soil, air, water, fish, and bloodstreams. These toxins know no borders. They poison our people and our planet. Children are particularly vulnerable to the ravages of these toxins which impact neurological development, lessen IQs, and steal a child's full potential.

LETTER FROM THE CAMPAIGN CHAIRS

DEAR FRIENDS,

Last year, we announced Pure Earth's 10-year strategic plan: an evidence-based roadmap to reduce lead and mercury pollution using the most cost-effective and innovative solutions. This year we are thrilled to announce a new campaign that will turn that vision into a reality.

Project R.E.A.L.M.E. (Reduce Exposure to Adverse Lead and Mercury Everywhere) is a $40 million campaign to safeguard the world's children from lead and mercury poisoning and pollution. The stakes are high: by scaling up pollution solutions in our selected countries, we aim to reduce toxic exposure **for more than 15 million people, including 5 million children by 2025**.

While most toxic poisoning happens in low- and middle-income countries, our success matters to everyone. From global food supply chains to ecosystems, we live in an interconnected world. In 2021, investigators in the US found lead in baby food and spices. As for mercury, once it's released, it can travel around the world, dropping into oceans and rivers, contaminating the seafood we all consume. Pollution knows no borders.

That's why Pure Earth is calling on all of our committed partners, friends and stakeholders to join us in this unprecedented opportunity to scale up proven solutions in 12 countries that stop pollution at the source at a cost of merely **$9 per child**. By supporting Project R.E.A.L.M.E., together, we can solve pollution, save lives and protect the planet.

Sincerely,

FRANCOIS GUILLON
CAMPAIGN CO-CHAIR

GLORIA JANATA
CAMPAIGN CO-CHAIR

ALICIA OGAWA
CAMPAIGN CO-CHAIR

OUR VISION

A world where all, especially children, are able to live healthy lives and reach their full potential, free from exposure to toxic pollution.

OUR MISSION

Pure Earth partners with governments, communities and industry leaders to identify and implement solutions that stop toxic exposures, protect health, and restore environments.

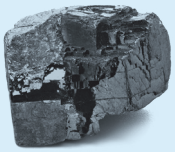
We prioritize actions to protect the developing brains and bodies of children and pregnant women living in toxic hot spots. We work to stop the multigenerational cycle of poisoning that is endemic in many low- and middle-income countries.

We believe the pollution crisis can be solved. In a world where pollution doesn't stop at borders, and we benefit from an interconnected global economy, we all have a responsibility to be part of the solution.

With 9 million deaths a year attributed to pollution, and over 90% of those deaths occurring in low- and middle-income countries, the scale seems overwhelming and solutions elusive. But they are not. High-income countries went through the same trajectory of industrialization, suffering severe air, water and soil pollution with rivers on fire and thousands of toxic chemical waste sites. But with effective regulation and enforcement, combined with public investment in pollution cleanup, management and control, a much greater level of environmental health was achieved in the second half of the 20th century. This same solution cycle can and must be replicated in countries suffering from life-threatening pollution today. The international funding community should prioritize this investment in development aid.

Photo: © Larry C. Price

Our Programmatic Strategy LEAD



BACKGROUND

One third, or 800 million of the world's children suffer from lead poisoning at levels above 5 micrograms per deciliter, the level that the WHO requires action.

90% of the children being poisoned are in low- and middle-income countries.

Lead exposure causes nearly 1 million deaths per year. That's more than malaria and on-par with HIV/AIDS.

Lead is a neurotoxin that causes permanent brain damage and is associated with intellectual impairment and violent behavior.

Lead is a global problem.

Economic cost amounts to 2–4% of the GDP of impacted countries.

Photo: © Larry C. Price

With 20 years of experience conducting over 50 projects to mitigate lead exposures in low- and middle income countries, we have developed a **5-PHASE APPROACH** to solve the lead poisoning crisis:

Child getting blood tested for lead in Kathgora, India.

1 Blood Testing

Conduct baseline BLL (blood lead level) testing and analysis to understand geographic and demographic variations in exposure.

2 Source Analyses

Conduct a series of source analyses including detailed household assessments (water, dust, toys), marketplace assessments (spices, toys, cookware) and toxic site assessments (industrial sources of exposures) to determine the most significant sources of exposure.

3 Source-specific Interventions

Design and implement interventions to reduce the use and/or release of lead in products and industrial processes, based on the findings of the source analyses.

4 Communications and Public Awareness

Implement education campaigns to raise public awareness and empower the public to take personal protection measures and/or change products/activities/behaviors; build awareness among key stakeholder groups, including key government and industry actors.

5 Country-Led Sustainable Solutions

Develop systems for ongoing monitoring of children's exposure levels, and treatment infrastructure for severely poisoned children.

BENEFITS

Using this 5-phase strategy, we aim to reduce blood lead levels of millions of children to under 5 ug/dl which will result in:

Mom and child in Vellore, India

✔ Greater educational attainment

Reducing lead poisoning reduces brain damage resulting in higher IQs with improved educational attainment by one grade on average.

✔ Increased economic growth

Childhood lead exposure is estimated to cost lower- and middle-income countries almost USD $1 trillion due to lost economic potential. Reducing lead poisoning yields broad economic benefits.

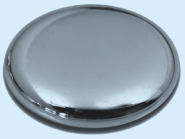
✔ Lower levels of violence

Reduction in lead exposure has been linked to decreases in crime and delinquency, and better decision-making. Less exposure means a safer, more peaceful world.

✔ Improved health

Lead exposure contributes to almost one million deaths from heart disease and stroke every year. Reducing lead poisoning will reduce this burden of disease.

Two children at a Pure Earth community outreach event in Bangladesh.



BACKGROUND

Photo: © Larry C. Price

Mercury is a toxic heavy metal and one of the top ten chemicals of major public health concern according to the WHO.

The artisanal small-scale gold mining (ASGM) industry is the biggest source of mercury emissions, releasing about 1,000 tons annually.

Up to 6.5 million miners globally-suffer from chronic metallic mercury vapor intoxication, leading to a loss of about 2 million years of good health (DALYs).

Pure Earth estimates that 19 million people are at risk for direct exposure to mercury in and around toxic hotspots like gold mines.

Mercury causes damage to the nervous, digestive, and immune systems, as well as the lungs, kidneys, skin, and eyes.

Mercury knows no borders and contaminates rivers and oceans, fish and other marine animals, and eventually the global food chain.

Pure Earth's Toxic Sites Identification Program (TSIP) has identified and assessed over 500 sites around the world where exposure to mercury threatens the health of the population. What's more, our technical staff are among the world's experts in mercury contamination and artisanal and small-scale gold mining.

We harness our technical expertise to implement cost-effective, locally oriented solutions. Focusing our efforts on Peru, Colombia, and Indonesia, three of the most mercury-contaminated countries in the world, Pure Earth takes a **4-PRONGED APPROACH** to reduce mercury pollution:

1 Mercury-free Methods

Pure Earth trains miners to go mercury-free, to safeguard their livelihoods and enable them to work safely while protecting their families and environment.

2 Education

Pure Earth raises awareness about mercury poisoning with miners, their families, school children and others in the community.

3 Remediation

Pure Earth is a global leader in mercury remediation techniques. We also work working directly with miners to safely close out old mining sites through reforestation, which rehabilitates previously degraded ecosystems.

4 Mine-to-market Solutions

Pure Earth is working to help create awareness and demand for mercury-free gold and connect jewelers and others in this industry to mercury-free miners.

BENEFITS

✔ Improved Health

Mercury causes damage to the nervous, digestive, and immune systems, and is particularly dangerous to young children, babies in utero, and pregnant women. Pure Earth's work gets mercury out of food and air, protecting miners, their communities, and the global food chain.

✔ Safer Livelihoods

Artisanal and small-scale gold mining provides a livelihood for up to 20 million globally. Rather than oppose the sector, Pure Earth works with miners to make the sector more responsible, dignified, and lucrative.

✔ Healthier Ecosystems

By pioneering mercury remediation techniques and working with miners to restore the rainforest, Pure Earth is helping to safeguard one of the world's most biodiverse ecosystems.

Leadership Council

Actor, activist and Pure Earth Leadership Council Member Matthew Modine visits the office and tries his hand at using an XRF (X-Ray Fluorescence) hand-held analyzer, guided by Dr. Jack Caravanos, Pure Earth Senior Advisor.

Pure Earth's Leadership Council is a key group that works to accelerate action to save lives threatened by the global pollution crisis and advance our important campaigns like Project R.E.A.L.M.E. Members include innovative thinkers, artists, and world leaders in health, government, business, and academia.

Over the last year, Pure Earth expanded the Leadership Council to include more high profile, high-impact individuals, including award-winning actor and environmental activist Matthew Modine, Beth Gerstein, Co-Founder and CEO of Brilliant Earth, and Chef Graciela Montaño.

LEADERSHIP COUNCIL

MAUREEN CROPPER PhD

Distinguished University Professor of Economics, University of Maryland

BETH GERSTEIN

Co-Founder & CEO, Brilliant Earth

DAVID HUNTER MBBS, MPH, ScD, FAFPHM

Richard Doll Professor of Epidemiology and Medicine, University of Oxford

MUKESH KHARE, PhD

Department of Civil Engineering, Indian Institute of Technology Delhi, India

PHILIP LANDRIGAN MD, MSc

Director, Global Public Health Program, Schiller Institute for Integrated Science and Society, Boston College

BRUCE LANPHEAR MD, MPH

Clinician Scientist, Child and Family Research Institute, BC Children's Hospital; Professor, Faculty of Health Sciences, Simon Fraser University

BLANCA LI

Choreographer, dancer, filmmaker

KEITH MARTIN MD, PC

Executive Director, Consortium of Universities for Global Health

CHEF GRACIELA MONTAÑO

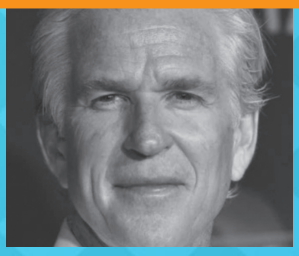
Executive Chef, Founder, and Owner of Aura Cocina Mexicana

KAREN MATHIASEN

Adjunct Professor at the Global Policy Program, Paul H. Nitze School of Advanced International Studies, Johns Hopkins; Former Acting Executive Director, World Bank Group

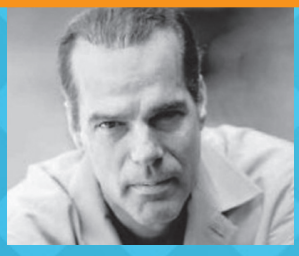
GREG MEDCRAFT

Director, OECD Directorate for Financial and Enterprise Affairs



MATTHEW MODINE

Award-Winning Actor, Environmentalist



RICK NEVIN, ECONOMIST

Economist and Author of "Lucifer Curves"

DEV PATEL

Actor, Activist

JANEZ POTOČNIK, PhD

Partner and Chairman, UNEP International Resource Panel

JAIRAM RAMESH

Member of Parliament, India

Global Lead Program

Bangladesh—Community event celebrating the completion of the Mirzapur cleanup.

MOMENTUM BUILDS

In 2020, Pure Earth and UNICEF released ***The Toxic Truth***, a groundbreaking investigation that revealed the previously unknown scale of lead poisoning: 1 in 3 children—up to 800 million globally—have blood lead levels at or above 5 micrograms per deciliter (µg/dL), the level at which requires action. The report was an urgent call to action to protect the world's children from toxic lead exposure.

Two years later, that call to action is gaining momentum. In October 2021, the Effective Altruism charity evaluator GiveWell named Pure Earth the most effective organization working to solve the global childhood lead poisoning crisis and recommended that we receive an incubation grant to expand our Global Lead Program. The grant, Support for Reducing Lead Exposure in Low- and Middle-Income Countries, was funded by Open Philanthropy, Effective Altruism's Global Health and Development Fund, and an anonymous donor.

Expansion of Protecting Every Child's Potential

The Protecting Every Child's Potential (PECP) initiative, founded by Pure Earth, Clarios Foundation, and UNICEF to protect children from lead exposure, grew substantially in just one year.

What started with $15M in seed grants to support work in five countries—Bangladesh, Georgia, Ghana, Indonesia, and Mexico—grew with $8.2M in new funding and expansion into two additional countries—India and the Philippines.

PECP also welcomed new partners, including GiveWell, the Global Alliance on Health and Pollution (GAHP), Vital Strategies, and four lead associations—Association of Battery Recyclers, Battery Council International, EUROBAT, and International Lead Association—which collectively represent the entire lead battery value chain, and a leading environmental engineering firm, Roux.

Pure Earth team members interviewing vendor during a market visit.

Searching for Sources of Lead in Marketplaces Across the Globe

Prior research and experience convinced us that lead in the household is pervasive and is a cause of chronic exposures, but what are the most common sources? That's the question we want to answer with $8.2M in new funding, with the hopes of reducing lead exposures from spices, cookware and other household sources through regional Rapid Marketplace Screenings (RMS) and establishing blood lead level testing programs.

Pure Earth is conducting Rapid Marketplace Screenings in 25 countries, including Mexico, Colombia, Peru, Bolivia, Morocco, Senegal, Nigeria, Ghana, Zimbabwe, Kenya, Egypt, Armenia, Georgia, Kazakhstan, Tajikistan, Azerbaijan, Kyrgyzstan, Pakistan, India, Nepal, India, Bangladesh, Vietnam, the Philippines, and Indonesia.

Using a protocol developed in collaboration with Stanford University's Woods Institute for the Environment that allows for quick collection of data, we are deploying teams to investigate markets worldwide. Researchers are sampling items ranging from spices to medicines, cosmetics, toys, ceramics, aluminum cookware, paints, sweets and other consumer items.

While data analysis is still underway, the team has already identified some of the most prevalent sources of lead in select countries and visited dozens of cities, vendors, and markets, collecting a total of over 2,500 samples to date.

Following the market investigation, we will collaborate with stakeholders to implement interventions to reduce lead exposure from key sources, conduct baseline and endline analyses of blood lead levels to evaluate the effectiveness of the interventions.

The XRF (X-ray fluorescence) hand held analyzer shows readings taken from a cup sold at a market in the Republic of Georgia. The sampling is part of our investigation into lead-contaminated products being sold in markets in 25 countries.

Global Mercury Program

Andrea Jose Castro demonstrates smelting techniques to miners Pure Earth has trained to go mercury-free in the Peruvian Amazon, to show them how to make their gold shiner and more marketable.

EXPANDING EFFORTS WITH THE JEWELRY INDUSTRY

Artisanal and small-scale gold mining (ASGM) is the biggest global source of mercury emissions and around 80% of global demand for gold comes from the jewelry industry. With more and more consumers demanding sustainable products, we believe that the jewelry industry has a key role to play in supporting artisanal miners and reducing mercury pollution.

Jewelers Dana Bronfman and Andrea Jose Castro collaborate on a piece using gold extracted by a miner Pure Earth trained to go mercury free.

Since 2017, Pure Earth has held the annual Pure Gold Jewelry Auction to promote responsibly sourced gold. This past year, we continued our engagement with the jewelry industry by working with them to demonstrate a potential mine to market solution for mercury-free gold and convening the inaugural meeting of the Pure Earth Jewelry Industry Action Group.

A Mine-to-Market Solution

In 2021, we connected Peruvian jeweler Andrea Jose Castro with Don Pedro, an artisanal gold miner Pure Earth trained to go mercury free in the Peruvian rainforest. As a result, Andrea made the first purchase of mercury-free gold from the Peruvian Amazon for the international market. She then brought this piece of mercury-free gold to New York-based designer Dana Bronfman. The piece of jewelry designed by Bronfman is a first step towards helping responsible gold miners get their mercury-free gold to market with 100% traceability.

Learn more: Watch our mine to market solution video, and follow Andrea into the Amazon.

MERCURY-FREE GOLD TRAINING, MADRE DE DIOS, PERU

Pure Earth has been helping members of the AMATAF mining association change the face of gold mining in the Peruvian Amazon. This includes helping them get certified in the proper use and maintenance of the shaking table, which helps them recover gold mercury free, and bringing in jeweler Andrea Jose Castro to demonstrate smelting techniques.

Pure Earth Jewelry Industry Action Group

In January 2022, Pure Earth convened the inaugural meeting of the Jewelry Industry Action Group, where leaders in responsible jewelry production can discuss ways to eliminate mercury pollution from ASGM. Attendees, who ranged from independent jewelers like Andrea Castro to representatives from companies like Richline or Dillon & Gage, shared ideas about how to raise awareness in the industry and build fundraising mechanisms for future projects.

Members include Kyle Abram, Ana Brazaityte, Dana Bronfman, Allison Charalambous, Jennifer Csengody, Brandee Dallow, Robert Donofrio, Alejandro Esponda, Edward Ezigliogl u, Francois Guillon, Mark Hanna, Alexandra Hart, Andrea Jose, Christina Malle, Andrea Pooler, Dani Cutler, and Susan Wheeler.

Jewelry Company Brilliant Earth Helps Pure Earth Bring Clean Gold to Market

"It's very important to try to incentivize the commercialization of clean gold," says France Cabanillas, Pure Earth's Local Coordinator in Peru.

In early 2022, the Brilliant Earth Foundation awarded Pure Earth a grant of $300,000 to turn that conviction into a reality. Pure Earth and partner, the Alliance for Responsible Mining (ARM), will work with AMATAF, an ASGM mining association, to produce Eco-Fairmined Gold, meaning it was produced mercury-free and that miners reforested degraded mine sites.

At the end of this three-year project, Brilliant Earth plans to source AMATAF's Eco-Fairmined Gold directly. As Brilliant Earth CEO Beth Gerstein explains, "Brilliant Earth customers will be able to support AMATAF's journey of reforestation and responsible mercury-free mining practices by wearing a beautiful piece crafted from AMATAF Eco-Fairmined gold."

Global Program Highlights

Two pollution investigators with our Toxic Sites Identification Program in Indonesia taking notes at a site being assessed.

Team members in Vellore, India, standing in front of an educational mural created by Pure Earth to raise awareness about the impact of lead on young brains.

After a long period of COVID restrictions and limited fieldwork, Pure Earth's country teams returned to action this year, whenever it was safe to do so, taking precautions, and working in close consultation with local partners and communities. We conducted in-person remediations and reforestation work, toxic site investigations, training sessions, and began the rapid marketplace screenings (RMS) of common products such as spices, toys, cookware, cosmetics and paint. To date, we collected and tested over 2,500 product samples from multiple markets in 13 countries and began research in all 25 countries.

When fieldwork wasn't possible, our experts developed innovative new tools to measure and calculate pollution's impact; published new research; organized webinars to share health and pollution data, and reached many more through global lead awareness campaigns.

SUCCESS BY NUMBERS

2500+
samples from marketplaces

25
country situational analyses on lead pollution

72 miners trained in better mining methods

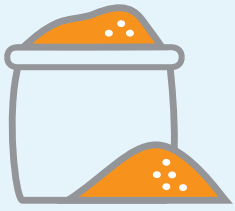
1,127
blood lead level samples

124
potters trained in better lead-free methods

235
toxic site assessments

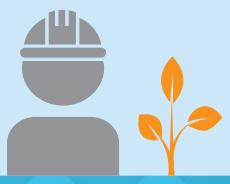
1
national lead monitoring program established

2
toxic site remediations



12
officials trained in spice assessment

53 health and environmental professionals trained in toxic site assessment



BANGLADESH

Country Representative:
Dr. Mahfuzar Rahman

KEY PARTNERS:

UNICEF; University of Dhaka, Environment and Social Development Organization (ESDO), Department of Environment; Ministry of Environment, Forest and Climate Change

KEY ACCOMPLISHMENTS:

- Launched rapid marketplace screening program
- Cleaned up a lead-contaminated community
- Raised awareness among key stakeholders and the public via community workshops
- Hired a communications director who launched a public awareness campaign

The Pure Earth Bangladesh team continues to make strong progress in mobilizing the government and stakeholders to protect children from lead poisoning in our country. At meetings, workshops and seminars, they have heard our call to action. They understand the urgency and what we need to do. I believe we can overcome this situation if we all co-operate.

—DR. MAHFUZAR RAHMAN
Country Representative, Pure Earth Bangladesh

In Bangladesh, villagers explain that their goats and other livestock have died from lead pollution.

Coordinating a National Response to Lead Poisoning

The average blood lead level of children in Bangladesh is among the highest in the world and productivity losses from exposure reduce the country's GDP by about $16 billion annually. Fortunately, Pure Earth and its partners are working quickly to build a broad, comprehensive strategy to reduce national exposure.

After completing a Country Assessment Report on the sources and impacts of lead exposure, Pure Earth Bangladesh and the Department of Environment developed a "Lead Pollution and Health Roadmap" and organized the virtual workshop 'Advancing a Lead Pollution and Health Roadmap for Bangladesh'. Participants, who included more than 65 diverse experts from government and non-government institutions, agreed that informal used lead-acid battery (ULAB) recycling is one of the biggest problems, along with spices, paint, aluminum cookware, among other sources.

Pure Earth is now working with the government to develop a national action plan, as well as a national awareness campaign. Among the most crucial parts of the plan will be to institute a blood

Clockwise, from top left: In Mirzapur, Bangladesh, boys shooting marbles on ground that was highly contaminated with lead; Local residents with a white bird; Workers dig up lead-contaminated soil.

lead level monitoring program. No routine blood lead level testing exists in Bangladesh despite 36 million children having elevated blood lead levels.

Cleaning Up Severe Lead Pollution in Mirzapur

In 2021, Pure Earth Bangladesh, with the support of the Tauw Foundation, remediated a 4.5 hectare lead-contaminated site in Mirzapur, Bangladesh, where over 600 people live. The contaminated area was home to an informal lead-acid battery recycling operation, which was abandoned in 2019. Three years of open-air battery breaking and lead smelting left behind an enormous amount of battery waste and highly contaminated soil, poisoning the residents, livestock and crops in the community. The Pure Earth Bangladesh team removed all the toxic waste replacing it with clean soil. They encapsulated the contaminated soil in a deep, lined pit and then decontaminated all the homes and structures in the village. This is one of four remediations to be conducted in Bangladesh

and the country team will produce a resource and training manual for the government to scale up lead cleanups.

Galvanizing Communities to Fight Pollution

Pure Earth Bangladesh and a local partner, We Are Friends for Human (WAFFH), hosted community workshops on the harmful effects of pollution on human health. The workshops brought together diverse stakeholders to discuss two of the community's biggest pollution concerns: pesticide exposure faced by tea plantation workers and rice husk pollution created by rice mills.

"Our community lacks education and awareness. We want more events like this," said Mintu Deshwara, a journalist who attended one of the workshops.

Rapid Marketplace Study

Pure Earth Bangladesh tested 162 samples from marketplaces for lead, including spices, rice, cookware, pottery, traditional medicines, cosmetics, paint, and toys, among other items, with a fraction of samples undergoing laboratory analysis.

Communications and Public Education

Accomplishments

- Community and youth mobilization: Community gathering events, courtyard community discussions, and hashtag campaigns.
- Stakeholder mapping and engagement: Mapped youth groups, solar companies, media agencies, and organized day observance events; roundtable discussions, seminars.
- Online campaigns and platforms: Social media ad campaigns.
- Launched Facebook, and YouTube channel, website page.
- Lead Safe Bangladesh Alliance: Conducted an online survey with 10 alliance partners/ stakeholders, developed the lead-safe BD website.
- Knowledge Materials: Approved messages from DGHS, generated pictorial, human centric, and communicative contents.
- Press Outreach: Op eds, special news feature, supplements, TV reports on remediation and PE BD's lead work.

Major Milestones

- 600 community members were sensitized, and 200 Youth representatives supported #LeadSolutions campaign.
- Secured commitment from 70 stakeholders to prioritize and work together to end lead poisoning.
- 30 media agencies featured Pure Earth Bangladesh's lead pollution prevention efforts.
- Received 60 million impressions and reached 34 million people in online campaigns. More than 7.5K likes, 1.5 million reach and 1.7 million engagement on Facebook page.
- Informally coordinated 3 knowledge sharing meetings.
- 12 videos, 70 posts, 38 Info card materials.
- 102 electronic and print media coverage, reached more than 7 million people.

GEORGIA

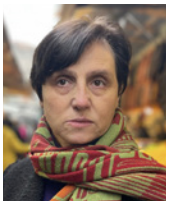
Country Representative:
Khatuna Akhalaia

KEY PARTNERS:

UNICEF; Stanford University; Tegata Motors; The Republic of Georgia government officials

KEY ACCOMPLISHMENTS:

- Georgian government strengthened regulations to stop the adulteration of spices with lead, and lead has now been nearly eliminated from the spice market in Georgia
- Launched rapid marketplace screening program
- Held first regional lead conference



Our quick success in solving the mystery of lead poisoning in Georgia is due in part to the commitment of the government, who vowed to move quickly once we gave them the results of our investigation. It shows that when we have cooperative partners and work together, we can move mountains to protect a nation's children.

—KHATUNA AKHALAIA
Country Representative, Pure Earth Georgia

Stemming the Flow of Contaminated Spices

In 2019, the Republic of Georgia faced a childhood lead poisoning crisis. A national survey revealed that 41% of children ages 2–7 had blood lead levels at or above 5 µg/dL (the level at which the CDC recommends intervention).

Spices being packaged for sale in Georgia

At the request of the Georgian government, Pure Earth set out to identify the most prominent sources of lead pollution, which included a detailed inventory of spices. After conducting interviews with spice vendors, the Pure Earth team identified the source: a dye called lead chromate added to enhance color. Using this information, the Georgian government swiftly enacted new regulations to target the problem. to target the problem. Since the intervention began, lead has now been nearly eliminated from the spice market in Georgia.

Coordinating a National Response to Lead Poisoning

While solving the mystery of lead in spices was a big victory, fixing the problem will require more research and coordination. That's why in September 2021, Pure Earth and UNICEF held the virtual workshop "Reduction of Exposure of Children to Lead in Spices in Georgia" for 20 representatives from the public and private sectors.

Two months after the virtual meeting, Pure Earth Georgia Country Director Khatuna Akhalaia led a technical training for 12 regional and national officials. Each participant left the training with basic technical know-how of lead assessment as well as a pamphlet on lead chromate in spices.

Clockwise, from left: Spices being packaged for sale at a wholesale warehouse in Georgia; The workshop allowed the team to share lessons from the successful intervention in Georgia; Pure Earth Georgia's Khatuna Akhalaia talking to a spice vendor.

Rapid Marketplace Study

Pure Earth Georgia conducted rapid marketplace screenings (RMS) in 22 markets in 9 cities. Researchers collected 539 samples of a wide range of products, including ceramics, aluminum cookware, toys, paints, and other non-food items. Separately, investigators took 264 spice samples from 77 vendors in 23 cities. Analysis is underway.

Hosted First Regional Lead Conference June 16–17, 2022

Pure Earth organized a workshop in Batumi, Georgia, with participants from 9 countries coming together to share knowledge, expertise, and recommendations on lead pollution solutions.

The group discussed lead contamination issues in Georgia, legislation and control mechanisms, and how to overcome challenges. As part of the workshop, attendees visited the facility of Tegeta Motors, the largest auto/auto part dealer in the Caucasus region and the largest processor of used lead acid batteries (ULABs). Representatives of the company shared their experience in handling hazardous waste in Georgia and committed to helping decrease the risks of childhood lead poisoning related to improper handling of ULABs.

The Pure Earth team shared key takeaways and results of the successful intervention in Georgia. Outcomes of Pure Earth projects in Mongolia, Kyrgyzstan, Tajikistan, Azerbaijan, and Armenia were also shared and discussed.

GHANA

Country Representative:
Elsie Appeadu

KEY PARTNERS:

UNICEF; Ghana Health Service; Ghana Standards Authority; Mountain Research Institute; Roux Associates

KEY ACCOMPLISHMENTS:

- Launched rapid marketplace screening program
- Established the world's first Pure Earth School Club
- Launched a public awareness campaign during International Lead Poisoning Prevention Week
- Mapped lead-contaminated sites throughout Accra.

I do what I do because I believe children are the future of my country. We know people who are made aware of the dangers surrounding them are empowered to take steps to protect themselves and their community. It is why we are bringing our message directly to families, and especially to students in Ghana. Educating students today will lead to change tomorrow.

—ELSIE APPEADU

Country Representative, Pure Earth Ghana

The Pure Earth Ghana team speaking to parents and healthcare workers at a hospital about lead as part of International Lead Poisoning Prevention Week.

Coordinating a National Response to Lead Poisoning

In 2021, Pure Earth opened an office in Accra, one of the world's hubs of e-waste and ULAB recycling. During international lead poisoning prevention week in October 2021, Pure Earth and UNICEF officially kicked off the PECP initiative with a two-day workshop, attended by government agencies, civil service organizations, academics, and industry.

The team is currently designing Ghana's first national blood lead monitoring program in collaboration with UNICEF, the Ghana Health Service and the Ghana Standards Authority.

Identifying and Cleaning-up Toxic Lead Sites
In partnership with the Mountain Research Institute, Pure Earth Ghana is mapping the lead landscape around Accra, identifying 42 suspected lead-contaminated sites so far. The team carried out preliminary site assessments (PSAs) in four of these 42 sites. Using the results of these evaluations, the team plans to conduct a cleanup on the most contaminated and feasible site, partnering with lead remediation experts Roux Associates.

Clockwise, from left: Testing a sampling of items purchased from markets in Ghana; Pure Earth-trained pollution investigators in Ghana, part of our Toxic SItes Identification Program, during a site visit; Members of the first Pure Earth school club in Ghana.

Galvanizing Communities to Fight Pollution–First School Club Established

Pure Earth is building a grassroots movement in Ghana to respond to the lead crisis. For International Lead Poisoning Prevention Week, Pure Earth Ghana Director Elsie Appeadu and her team visited five hospitals and six schools to talk to healthcare workers and upper primary students and their teachers about lead poisoning. In February 2022, the team inaugurated a Pure Earth Club at the Tema Parents' Association School to activate students to fight lead pollution. The movement is catching on. On Earth Day 2022, the Ghana national channel TV News interviewed Elsie about Pure Earth's work to stop lead poisoning.

Rapid Marketplace Study

The Pure Earth Ghana team took 240 rapid market screening (RMS) samples from 11 marketplaces, including spices, cookware, medicine, paint, toys, sweets, and ceramics/pottery, among other items. The team also interviewed 127 vendors.

INDONESIA

Country Representative:
Budi Susilorini

KEY PARTNERS:

UNICEF; Yayasan Tambuhak Sinta (YTS); planetGold; Vital Strategies; Sepuluh Nopember Institute of Technology (ITS); Ministry of Environment and Forestry

KEY ACCOMPLISHMENTS:

- Pure Earth Indonesia registered as an independent office—Yayasan Pure Earth Indonesia (YPIE)
- Launched rapid marketplace screening program
- Mapped lead-contaminated sites throughout the islands of Java and Sumatra.
- Established and artisanal women's mining cooperative
- Developed 6 modules on mining formalization

About 30% of workers in the artisanal and small-scale mining industry are women. Because of cultural and institutional barriers, they are often excluded from the most well-remunerated positions, and on average, make less than their male colleagues. But we've found that when we empower them with skills, they are quick to exercise their opportunities to shape their communities' economic development, which often includes making communities safer.

—BUDI SUSILORINI

Director of Yayasan Pure Earth Indonesia

School children in Indonesia.

Coordinating a National Response to Lead Poisoning

With over half of children (36 million) with blood lead levels (BLLs) over 5 µg/dL, Indonesia is in urgent need of a national response to the lead crisis. Fortunately, Yayasan Pure Earth Indonesia (YPIE) and partners are laying the groundwork for an action plan. After completing a Country Assessment Report on the sources and impacts of lead exposure, the team worked with the Ministry of Environment and Forestry to create a gender role analysis in the context of ULAB recycling.

During International Lead Poisoning Prevention Week in October 2021, YPIE and UNICEF co-hosted an educational webinar with over 100 participants from the government, academic, and non-governmental sector. YPIE will be working with stakeholders to design the country's first national blood lead monitoring program.

Mapping Lead Contamination in Indonesia

In collaboration with partner Sepuluh Nopember Institute of Technology (ITS), Yayasan Pure Earth Indonesia is mapping the lead landscape in the islands of Java and Sumatra. In the process of assessing contaminated ULAB recycling sites,

Clockwise, from left: Pure Earth visited vendors at 20 markets in Indonesia; A woman gold miner in Tewang Pajangan, Indonesia, panning for gold. Photo by YTS.

investigators are also building a comprehensive picture of the ULAB recycling supply chain. The team presented the investigations to regional and national ministries and will be used in developing future intervention strategies.

Building a Safer Gold Mining Sector

Yayasan Pure Earth Indonesia is a leader in reforming the country's artisanal and small-scale gold mining (ASGM) sector. Co-founder of the Women in Mining and Energy (WiME) initiative, YPIE worked this year with Yayasan Tambuhak Sinta (YTS) on projects to empower women miners to eliminate mercury-use and establish a cooperative in one of planetGOLD's six project sites in Indonesia. In parallel, YPIE and the YTS team wrote six modules that guide miners through the formalization process. Lastly, the team supported planetGOLD's efforts to improve the regulatory framework for mercury-free ASGM, financing for mercury-free processing equipment and capacity building for mercury-free ASGM.

Rapid Marketplace Study

With technical support from ITS, Yayasan Pure Earth Indonesia took 116 rapid marketplace screening (RMS) samples of spices, including coriander, turmeric, pepper and chili powder. The team visited 20 markets in 10 different cities.

MEXICO

Country Representatives:
Daniel Estrada
Jesus Maldonado

KEY PARTNERS:

Clarios Foundation; Meridian Bioscience; CARINAC; COFEPRIS; FONAR; INSP; IMSS; CSG (General Health Council); INSP (National Institute of Public Health); Universidad Autónoma de Querétaro

KEY ACCOMPLISHMENTS:

- Launched the Lead-free Food Alliance (Alianza Comida Sin Plomo)
- Established the first "lead-free neighborhood" (Barrio con Barro), Roma in Mexico City
- Developed a digital app to map lead exposure
- Launched the rapid marketplace screening program

It is in the strength of the women, of the potters, of the work that is done with each one of them on a daily basis that we have found the strength to gradually change things from a local level towards a global one. It is important to understand that the work is not the work of a single person, but the work of many women behind a project, an idea. Women's collective work at a local level can make the difference.

—NETZY PERALTA

Operations Coordinator, Pure Earth Mexico, and 2022 Force of Nature Awardee

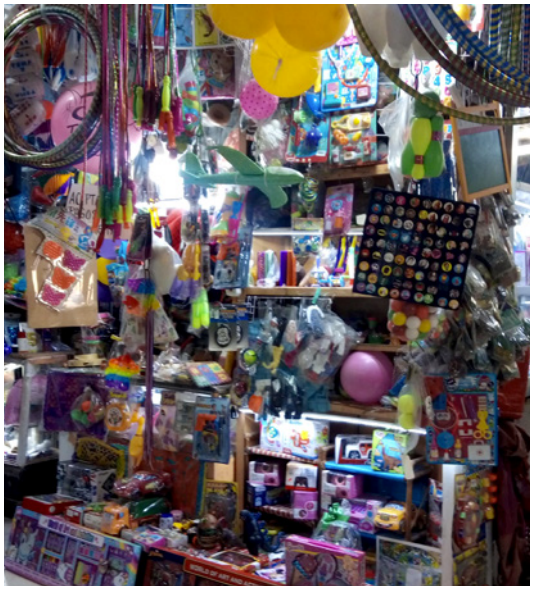
A pot with the Barro Aprobado seal indicating it was made without using a lead glaze.

Because traditional potters in Mexico use a lead glaze, people are exposed to toxic lead with every meal. 13 million Mexican children under 14 have elevated blood lead levels and Mexico suffers a loss of 3% GDP due to IQ loss, healthcare costs, and an inability to export lead-glazed pottery. Pure Earth Mexico's efforts this year focused on rekindling the country's rich pottery tradition by building alliances and promoting safe, lead-free techniques.

Expanding the Circle of Women

In 2020, Pure Earth launched "Circle of Women" program to teach ceramics-producing female communities how to create and market a lead-free glaze. So far, Pure Earth has trained 285 potters, evaluated 17 ceramics studios, built 12 new high-temperature kilns appropriate for lead-free ceramics, and taken nearly 100 biological samples in potter populations.

To celebrate and promote these women, Pure Earth Mexico broadcasted 13 interviews with potters who have adopted lead-free glazes on the Professional Gastronomic Association of Mexico's Facebook channel.



Clockwise, from top left: Women potters standing next to a new, higher-firing kiln that will help them produce lead-free pottery; Hand-crafted examples of beautiful traditional pottery from artisans trained by Pure Earth to go mercury-free; A circle of women in session; A toy vendor in Mexico City; A potter demonstrates her art at the launch of Barrio con Barro.

Launch of Barrio con Barro

With Pure Earth's 2021 *El Plomo en la Mesa* (*Lead on the Table*) report confirming that toxic lead is in most Mexican kitchens, Pure Earth Mexico launched Barrio con Barro, a campaign designed to transform neighborhoods into lead-free communities. The launch event in September 2021 brought together chefs, community leaders and others, celebrating the deep connection between Mexico's food and pottery tradition, and emphasizing the importance of safeguarding these rich traditions from toxic lead.

In summer 2021, the team announced Mexico's first "lead-free neighborhood" (Barrio con Barro) in the popular Mexico City neighborhood of Roma. Since then, the Pure Earth México team has recruited 16 restaurants and 5 shops to go lead-free.

Lead-Free Food Alliance (Alianza Comida Sin Plomo)

During international lead poisoning prevention week in October 2021, Pure Earth Mexico launched the Lead-free Food Alliance (Alianza Comida Sin Plomo), a multisector initiative to promote a lead-free food industry. Among those who attended the event was activist and poet Homero Aridjis, who issued an urgent call to action. The event received extensive media coverage, reaching an audience of millions, from restaurant owners to everyday consumers.

To date, nearly 20 public and private organizations have joined the initiative, conducting outreach to schools to test children and to restaurants to adopt lead-free pottery. The group also developed a crowd sourcing application called "La Ruta del Barro" that allows users to map where lead-glazed pottery is sold or used. The app also identifies hotspots of lead poisoning and establishes strategies to transform them into lead-free hubs.

Rapid Marketplace Study

Pure Earth Mexico conducted regional rapid marketplace screenings (RMS) in public markets in Mexico City, collecting 276 samples. Samples focused on sweets and "moles" made in lead-glazed pottery, as well as cosmetics and toys.

Acidic foods like tomatoes and peppers are more likely to cause lead to leach out of lead-glazed pottery, but can be safely cooked and served in ceramic pots made by Barro Aprobado artisans, who do not use lead.

INDIA

Country Representative:
Promila Sharma Malik

KEY PARTNERS:

Stanford University; Institute for Environment & Eco-Development (IEED, Bihar); Indian Society for Lead Awareness and Research (InSLAR, Lucknow); Vital Strategies; the Tamil Nadu Pollution Control Board (TNPCB)

KEY ACCOMPLISHMENTS:

- Launched rapid marketplace screening program
- Completed a cleanup of a long-standing lead-contaminated site
- Conducted household lead source assessments

I love the collaborative approach Pure Earth uses to tackle issues, where we can get the polluter, the community, NGOs and government officials all sitting together talking about the problem and setting aside contradictions. This is one of our strengths. India is growing rapidly and we are working to find a balance between economics and the environment to maintain the sustainability of this growth and to protect children's health.

—PROMILA SHARMA MALIK
Country Representative, Pure Earth India

School children in India

Coordinating a National Response to Lead Poisoning

Pure Earth is expanding its work in India, given that it accounts for 30% of the world's lead poisoned children. A desk review was conducted to identify the prevalence of lead in different household products as well as the BLLs in populations in five major states. The review will lay the groundwork for future interventions.

Demonstrating a Model for Lead Cleanup Across India

In the fall of 2021, after over a year of delays from COVID restrictions, Pure Earth India resumed a cleanup of a school and residences contaminated by lead smelter in Tamil Nadu, the state with the most deaths from lead exposure in the country, according to data from the Institute of Health Metrics and Evaluation (IHME). Like many small operations across India, the smelter exposed a residential community, including 54 homes, a childcare center, and a school with 50 children under the age of 5. Pure Earth investigators found that unsafe practices were exposing workers and the community to soil lead levels as much as

Clockwise, from left: Parents registering their children for blood lead testing in India; The Pure Earth India team with local parters in Vellore, India; A lead-contaminated home in Vellore, India, being given a deep clean to remove lead dust.

12 times higher than the US EPA standard. Following Pure Earth's recommendations, the smelter owner agreed to shut down the operation and is in the process of remediating and redeveloping the site. As part of the cleanup, Pure Earth teams are collecting blood lead samples of children and conducting household lead source assessments to better understand the extent of lead poisoning and the sources. The project, supported by the Trafigura Foundation, will serve as a model to demonstrate how communities contaminated with lead can be cleaned up across the state and the country.

Rapid Marketplace Study

Pure Earth India conducted the rapid marketplace screenings (RMS) in 20 markets from 10 cities in the region of Tamil Nadu. In total, the team took 502 samples in spices, ceremonial powders, sweets, herbal medicines, paints, plastic toys, metallic and earthen cookware.

PHILIPPINES

Country Representative:
Larah Ortega Ibanez

KEY PARTNERS:

National Poison Management and Control Center (NPMCC); Philippine Department of Science and Technology's Food and Nutrition Research Institute (DOST FNRI); Meridian Bioscience; USAID; Vital Strategies; HSBC; Clarios Foundation

KEY ACCOMPLISHMENTS:

- Integrated blood lead testing into a national health survey for the first time
- Launched rapid marketplace screening program
- Featured on an award-winning advocacy show, World Changers

When I approached the national government about incorporating lead into the existing national nutrition survey, they could see that it was a quick way to jumpstart a lead monitoring program that would have otherwise taken years of planning and resources to get off the ground. At the end of the day, we all agree that we must save lives, especially children who are not at fault for the harm and yet suffer it.

—LARAH ORTEGA IBAÑEZ
Country Representative, Pure Earth Philippines

A participant in the first childhood lead monitoring program in the Philippines.

According to the IHME, 20 million children in the Philippines (50%) have blood lead levels above 5 ug/dL. In 2021, Pure Earth expanded the Philippines lead programming, with a focus on raising national awareness, establishing a national lead monitoring system, and conducting rapid marketplace screenings (RMS).

Coordinating a National Response to Lead Poisoning

After completing a desk review to identify the main exposure sources, Pure Earth Philippines successfully advocated for the first ever national lead monitoring program in the National Nutrition Survey, in partnership with the Food and Nutrition Research Institute (DOST FNRI). Monitoring will be done in 25 areas, with around 3,500 children and pregnant women. In the same year, Pure Earth and the Philippine General Hospital's National Poison Management and Control Center (NPMCC) also inked an agreement to screen blood lead levels in children and adults.

Based on the findings of the national survey, Pure Earth plans to implement home-based

Clockwise, from top left: Melted down lead being poured into a mold; Collecting samples at a market in the Philippines; A child getting tested for lead in the Philippines.

assessments, exposure-reduction programs and work with the NPMCC to design a feedbacking and referral mechanism as well as a system to monitor blood lead levels at specific childhood developmental milestones.

Raising National Awareness

During International Lead Poisoning Prevention Week (ILPPW) in October 2021, the G Diaries, a multi-awarded advocacy show from the ABS-CBN Foundation, selected Pure Earth Philippines for an episode of World Changers, which features organizations that have made significant contributions to Filipino society. The episode included an interview with Pure Earth's Larah Ortega Ibanez talking about childhood lead poisoning in the Philippines, and the impact of Pure Earth's work in communities across the country.

Rapid Marketplace Study

Pure Earth Philippines conducted rapid marketplace surveys (RMS) in 8 markets from 7 cities/towns in the greater Metro Manila area. Investigators took 237 samples of a wide range of products from over 70 vendors.

COLOMBIA

Country Representative:
Alfonso Rodriguez

KEY PARTNERS:

US Department of State (DoS); United Nations Development Programme (UNDP) (completed); Bioparques; Ministry of Environment and Sustainable Development (MADS); Ministry of Mining and Energy (MME)

KEY ACCOMPLISHMENTS:

- Completed a project with planetGOLD investigating Colombia's worst toxic mercury sites
- Refined technology that recovers mercury from tailings and trained miners
- Awarded pollution grants to local NGOs
- Marketplace screening program

In Colombia, we are taking the lead in developing new and innovative technologies related to recovering mercury from mine tailings, and measuring the impact of the pollutant, because we recognize we have a big program to solve. If we can reduce mercury in Colombia, the techniques we develop will be useful in other countries, too. And that's key because we know mercury travels and affects us all.

—ALFONSO RODRIGUEZ
Country Representative, Pure Earth Colombia

Investigating mercury sites in Colombia.

Transforming a Landscape Contaminated with Mining Tailings

According to UNEP, over 50 tons of mercury are released into Colombia's environment annually, littering the second most biodiverse country in the world with heaps of contaminated tailings. A global leader in the field of tailings management, Pure Earth Colombia is taking a multipronged approach to solve this problem, which includes site assessment, capacity building, and technical innovation.

In 2021, Pure Earth Colombia completed a project with planetGOLD to investigate the worst toxic mercury sites in Colombia. In total, investigators identified 30 contaminated areas and 30 tailings piles. Each site was uploaded into the TSIP database, which now contains around 140 total sites in Colombia.

In parallel, Pure Earth Colombia continues to innovate a technology that rec overs mercury from tailings called the "Silver-Coated Copper Plates." The team has been working with a local miner to test and refine this technology, processing over 80 tons of tailings over the past two years and achieving a recovery rate of up to 80%. In April

Clockwise, from top left: Measuring the amount of mercury at a gold ore processing site where mercury-gold amalgam is burned, leaving behind gold; The team is testing an innovative technology using copper plates to to recovery mercury from mine tailings; Collecting samples near a gold mining site.

2022, the team also trained and certified 58 miners in the technique so they can become part of the solution.

Moving forward, Pure Earth will continue testing the copper plates and working closely with the Colombian government to establish a pilot interim storage unit for mercury, where mercury can be safely managed, stored, and eventually disposed of. The unit will serve as a model that can be replicated in Colombia and beyond.

Galvanizing Communities to Fight Pollution

As part of Pure Earth's pilot global community outreach initiative, the Pure Earth Colombia team completed a Civil Society Organization Activation project in September 2021, which awards funds to local organizations to fight pollution. Pure Earth received over 100 proposals and ultimately granted awards of $10,000 to four projects. The winning projects spanned four Colombian Departments and included air pollution monitoring systems, water treatment plants, a youth-run recycling system, and a business plan to deal with plastic waste.

Rapid Marketplace Study

After conducting a desk review on the most important sources of lead exposure, investigators collected around 260 samples in markets in Bogota and Villavicencio, including fruits, vegetables, spices, toys, cosmetics, plumbing elements, ceramics and kitchen utensils.

PERU

Country Representative:
France Cabanillas

KEY PARTNERS:

Center for Amazonian Scientific Innovation (CINCIA); CITE Minería y Medio Ambiente; Alliance for Responsible Mining (ARM); Casa Collab; The Tiffany & Co. Foundation

KEY ACCOMPLISHMENTS:

- Trained mining leaders in mercury-free mining methods and forest restoration
- 87% success/survival rate of saplings planted by miners to restore their degraded land
- Initiated partnership with Alliance for Responsible Mining to help miners sell certified gold

I believe it is very important to try to incentivize the commercialization of 'clean' gold (without mercury)... We have managed to generate a model of artisanal and small-scale mining for the Amazon that is more suitable for the ecosystem, focusing on an adequate mine closure and the cessation of the use of mercury, encouraging the miners by connecting them to responsible markets, with the valuable support of local institutions.

—FRANCE CABANILLAS
Country Representative, Pure Earth Peru

An artisanal miner in the Peruvian Amazon holds up a piece of gold extracted without the use of mercury.

Reforestation and Remediation

Pure Earth Peru has been working with miners from the AMATAF mining association since 2020 on community-led reforestation in the Peruvian Amazon and mercury-free mining methods. So far, the team has restored over 5 hectares of degraded land in their mining concessions.
In 2021, Pure Earth Peru conducted follow-up evaluations at two sites and found the survival rate of seedlings at both sites was about 87%, a rate considered excellent in the field. We also delivered 5 tons of the soil amendment biochar, donated by project partner CINCIA, to the sites for fertilization. In addition, nine artisanal miners were trained in monitoring and evaluation methodology.

Marketing Mercury-Free Gold

AMATAF then began tackling the next big challenge: how to recover gold without mercury and, just as importantly, how to market it. For this, Pure Earth recruited two key partners: CITE Minería y Medio Ambiente, a Peruvian institution dedicated to promoting clean mining techniques, and Andrea Jose Castro, a Peruvian jeweler and longstanding collaborator with Pure Earth.

Clockwise, from left: Checking on the growth of seedlings planted to restore land damaged by gold mining; Miners in the Peruvian Amazon are working with Pure Earth on the reforestation of land damaged by mining; A biochar truck delivers a load of biochar to a site undergoing reforestation. The biochar soil amendment helps in the remediation of mercury-contaminated soil

Working with CITE, we recalibrated a shaking table in September 2021 and managed to recover about 80% of gold, a rate 30% higher than what miners were getting with mercury. Convinced of its potential, five concession owners from AMATAF participated in a training course developed by CITE in the operation, safety, and maintenance of the shaking table. In November 2021, Andrea Jose Castro visited AMATAF to train miners in ways to commercialize mercury-free gold, including how to advertise it, where to sell it, and how to comply with legal requirements.

Despite their knowledge and dedication, mercury-free mining groups like AMATAF still struggle to find consistent demand for their clean gold. That's why, Pure Earth and the Alliance for Responsible Mining (ARM) began a project in January 2022 to help AMATAF sell certified gold on the international market, as well as support the miners with the construction of a greenhouse so they can begin reforesting their land independently.

Building Tools to Manage Toxic Pollution

Budi Susilorini (Yayasan Pure Earth Indonesia) with Alfonso Rodriquez (Pure Earth Colombia) at the Minamata Convention.

Presenting the Mercury Index Calculator at the Minamata Convention on Mercury

In March 2022, international leaders, NGOs, academics, and other stakeholders convened in Bali, Indonesia for COP 4 of the Minamata Convention on Mercury, an international treaty approved in 2013 to protect the global population from mercury pollution.

Alfonso Rodríguez, Pure Earth's Colombia Country Director, presented a novel assessment tool designed by Pure Earth technical experts called the Blacksmith Mercury Index (BMI). The BMI is a formula that quantifies and ranks the health risk of a site contaminated with mercury, taking into account factors such as population demographics and amount of mercury vapor inhaled.

Pure Earth is using the BMI as a prioritization tool in its Toxic Sites Identification Program (TSIP), and it could also serve as a tool for governments to prioritize and remediate mercury sites across the world.

New Calculator Predicts Costs of Inaction to Chemical Exposure across Africa

In 2019, Pure Earth was invited to join the Chemical Observatory Project, or ChemObs for short, a partnership between UNEP, WHO and the Africa Institute. ChemObs aims to provide participating African countries with the ability to establish evidence-based policies and make sustainable decisions on sound management of chemicals and related disease burdens.

Under development is a new tool currently undergoing peer review—The Economic Cost of Inaction Calculator. Built in Microsoft Excel, the tool estimates the Disability Adjusted Life Years (DALYs), full scale intellectual quotient (IQ) decrement, and economic costs resulting from chemical exposure. The tool will empower policymakers and other stakeholders to prioritize pollution interventions.

"A better approach is needed so that all low- and middle- income countries can do their own toxic contamination assessments, rather than rely on outside groups," explains Pure Earth Senior Advisor Jack Caravanos, "We are sharing our talents and metrics so that participating countries may prioritize projects based on the greatest rewards in terms of public health."

A Roadmap to Managing Used Lead Acid Batteries in Africa

In September 2020, the United Nations Environment Programme (UNEP) commissioned Pure Earth to develop a set of recommendations for the government in Burkina Faso and Tanzania on the environmentally sound management of used lead-acid battery (ULAB) waste.

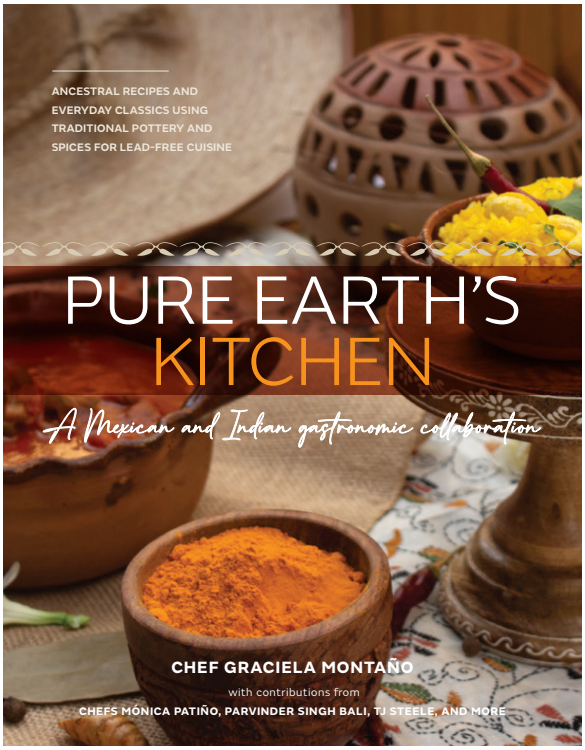
As part of that initiative, Pure Earth co-created and published a manual in February 2022 called Guidance Manual for Policy Makers and Regulators for the Environmentally Sound Management of Waste or Used Lead Acid Batteries in Africa. Like the ChemObs Economic Calculator, this manual gives countries the tools to evaluate and respond to chemical pollution without drawing on outside expertise. Such capacity building is critical in Africa, which contains six of the top ten countries with the highest rates of pollution-related death in the world.

"May the work I do with my pottery and recipes be remembered and passed down to future generations."

—**MARGARITA PÉREZ TORRES**
Lead-free potter from
the Circle of Women

Recipes for Change

A COOKBOOK FOR A LEAD-FREE KITCHEN



In April 2022, Pure Earth teamed up with world-renowned Mexican chef and Pure Earth Ambassador Graciela Montaño to publish the first edition of *Pure Earth's Kitchen*, a cookbook of 50 Mexican and Indian recipes that call for lead-free clay and spices. Contributors to this book included 13 chefs, two cooks, one turmeric producer, and seven potters from Pure Earth's Circle of Women project. They come from countries as diverse as Mexico, India, France, USA, Singapore, and Germany. The cookbook highlights the rich materials given to us by the natural world– clay in Mexico and spices in India– to honor heritage and make healthy, delicious food. It also invites readers to join the global movement to stop lead pollution and poisoning.

Marking the disproportionate impact lead poisoning has on maternal and child health, Pure Earth promoted the first edition of Pure Earth's Kitchen on International Women's Day. Supporters have the option of downloading a digital cookbook for $50 or owning a beautiful hard copy of the cookbook with a donation of $250 or more.

Policy

Steering US Policy Towards a Safer Global Food Supply Chain

In 2021, two reports from the U.S. House on the widespread contamination of baby food, and a new Consumer Reports study on contaminated spices, led to heightened public awareness in the U.S. about how pollution crosses borders and affects our global food supply chain, getting into kitchens everywhere.

In March 2021, Pure Earth experts and other colleagues in the field met with U.S. legislators to brief them on toxic heavy metals contaminating foods, and discuss solutions to protect families.

Although toxic baby food was the key issue at hand in that meeting, Pure Earth CEO Richard Fuller reminded the lawmakers present that the problem of toxic heavy metal contamination was much broader, affecting spices, supplements, and a range of imported foods and products.

While the bill to address toxic baby food is currently stalled in Congress, Pure Earth continues to monitor the situation, staying in contact with legislators to provide further guidance. We also created an advocacy guide on how consumers can take action, which includes signing the Consumer Reports petition calling the FDA to "Protect Americans from heavy metal exposure."

UN Environmental Assembly Approves New Pollution Panel

To support global action on pollution, the Global Alliance on Health and Pollution (GAHP) launched a campaign with Pure Earth and other partners in late 2021 to elevate pollution and environmental health in the agenda of the United Nations Environment Assembly. The campaign paid off. In March 2022, the UN Environment Assembly agreed to establish a Science Policy Panel (SPP) to promote the sound management of chemicals and waste and to prevent pollution.

"This resolution is a major step forward to address the health and environmental impacts of chemicals, wastes and pollution—and a major achievement for GAHP. We look forward to continuing to work with governments to ensure application of the best science to policy decisions to solve pollution problems at their source," said Rachael Kupka, GAHP Executive Director.

Rachael Kupka, Executive Director, GAHP with GAHP board member Hossam Abou Zeid at T20 Summit in Saudi Arabia.

Research

"Pollution has typically been viewed as a local issue... Now, however, it is increasingly clear that pollution is a planetary threat"

—FROM *POLLUTION AND HEALTH*
A Progress Update,
Published in May 2022

The *Lancet* Commission on Pollution and Health: a progress update

In May 2022, The *Lancet Planetary Health* journal published Pollution and Health: a progress update, with Pure Earth CEO, Rich Fuller as the lead author.

The report again garnered global attention with over 800 articles and 1.5 billion media impressions across all continents.

An update to the seminal 2017 *Lancet* Commission on Pollution and Health, some key findings include:

- **In the past 20 years, deaths caused by the modern forms of pollution (eg, ambient air pollution and toxic chemical pollution) have increased by 66%**, driven by industrialization, uncontrolled urbanization, population growth, fossil fuel combustion, and an absence of adequate national or international chemical policy.

- Despite declines in deaths from household air and water pollution, **pollution still causes more than 9 million deaths each year globally with 90% occurring in low-income and middle-income countries.**

- **Key areas in which focus is needed include air pollution, lead poisoning, and chemical pollution.** Air pollution causes over 6.5 million deaths each year globally, and this number is increasing. Lead and other chemicals are responsible for 1.8 million deaths each year globally, which is probably an undercounted figure.

Pollution is still the largest existential threat to human and planetary health and jeopardizes the sustainability of modern societies. Preventing pollution can also slow climate change—achieving a double benefit for planetary health.

A Pure Earth-organized pottery fair in Mexico to raise awareness about lead-free pottery.

Evaluating the Health Benefits of Lead-Free Glazes in Mexico

In March 2022, the Pure Earth Mexico team, in collaboration with Pure Earth International, the School of Public Global Health, the Mexican Social Security Institute, IMSS (Instituto Mexicano del Seguro Social), the National Institute of Public Health, INSP (Instituto Nacional de Salud Pública) and the Autonomous University of Morelos (Universidad Autónoma del Estado de Morelos), published "Lead Levels in a Potters Population and Its Association With the Use of Different Glazes: Cross-Sectional Evaluation of the Approved Pottery Program" in the journal Frontiers in Toxicology.

The authors found that potters who have switched to a lead-free glaze tend to have lower blood lead levels (BLLs) and lower soil lead levels in their workshop area. This was good news for Pure Earth's Barro Aprobado Program, since it demonstrates that transitioning to a lead-free glaze protects potters and their communities from lead poisoning.

Press Coverage

With growing international awareness about the lead crisis, Pure Earth saw increased media recognition for its Global Lead Program, with highlights in Vox, ABC, and the *Guardian*. Members of Pure Earth's international team also appeared in prominent national outlets, featuring in radio interviews, op-eds, and TV channels.

BBC News Interview with Pure Earth and GAHP Founder Richard Fuller on *Lancet* Update

Pollution Caused 1 in 6 Deaths Globally for Five Years, Study Says; *The Washington Post*, May 17 2022

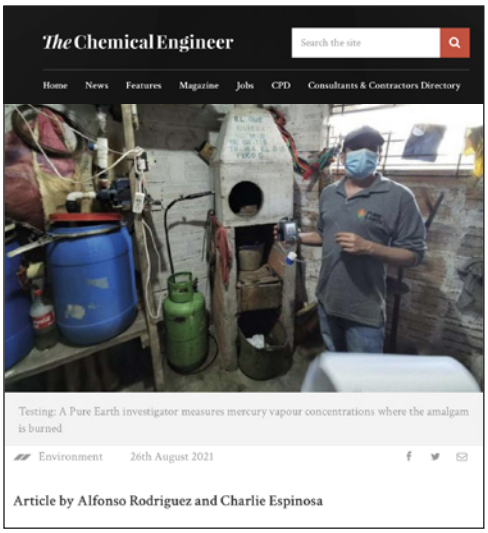
Pollution Responsible for One in Six Deaths Across Planet, Scientists Warn; *The Guardian*, May 17 2022

Pollution Behind 1-in-6 Global Deaths in 2019: Study; *France24*, May 18 2022

Pure Earth's France Cabanillas' Radio Interview on Gold Mining in Madre de Dios, Peru

Country Director Elsie Appeadu was featured on TV news discussing Pure Earth Ghana's work to combat lead poisoning.

- Nearly half the world's kids are exposed to dangerous levels of lead; *Vox*, Jan 14, 2022
- Lead free Mexican pottery? It is already possible; MSN, Feb 16th, 2022
- Radio segment with Pure Earth CEO Richard Fuller, The Opportunity Costs of Global Pollution; ABC, Feb 6, 2022
- Op-ed from Pure Earth's Mahfuzar Rahman: Combating Menace of Lead Exposure; *Financial Express*, Jan 2nd, 2022
- In Mexico, 13 million children with a high level of lead from kitchen utensils; *La Jornada*, Oct 27th, 2021
- Pure Earth Partners With U.S. Jewelers to Push for "Healthy" Gold, JCK Sep 3rd, 2021
- Feature in Chemical Engineering on Pure Earth's mercury work in Colombia: Trapping a Slippery Foe; *The Chemical Engineer*, Aug 26th, 2021
- Millions of electric car batteries will retire in the next decade. What happens to them? *The Guardian*, Aug 20th, 2021



Events

Children participate in a global Pure Earth social media campaign for International Lead Poisoning and Prevention Week.

International Lead Poisoning Prevention Week

In October 2021, we mobilized Pure Earth teams around the world for a global campaign that reached millions during International Lead Poisoning and Prevention Week, a global awareness-raising campaign run by the World Health Organization, with participation by national and regional health authorities around the world. While in previous years the event has focused on lead exposure from paint, this year PECP raised awareness of the exposure risk from unsafe car battery recycling, lead-glazed pottery, cookware and adulterated spices. The campaign featured webinars, panel discussions, school and hospital talks, children's essay competitions, Op-Eds, a social media campaign that garnered over 21 million impressions, and more. Using the hashtag #LeadSolution, the campaign called for concerned citizens and activists everywhere to submit photos of themselves holding up signs that read "Together we can end lead pollution."

Each Pure Earth country office adapted to local conditions. Pure

Actors Gianna and Chazz Palminteri with Pure Earth CEO Richard Fuller at the 2021 Pure Earth benefit gala.

Pure Earth Impact Award winner Gloria Janata, President and CEO of Togo Run, receives her award at the 2021 Pure Earth benefit gala.

I to r: Actors Kathrine Narducci and Gianna Palminteri, along with comedian Tara Cannistraci, helped us showcase the 2021 Pure Earth Pure Gold jewelry collection.

Earth Mexico added the hashtag #SolucionesAlPlomo and the slogan "*Together we can eliminate lead from pottery*" to highlight the main cause of lead poisoning affecting Mexicans, while Bangladesh took the campaign beyond regular social media channels to reach an estimated 1 million people via SMS.

Pure Earth Annual Bash 2021

We were thrilled to host our annual bash and jewelry auction in-person again in the Edison Ballroom in NYC on October 4, 2021 (a virtual option was also available).

Chazz Palminteri, creator of "A Bronx Tale," and Broadway star Bobby Conte joined for a night of music, food, and protecting millions of children from pollution. We also had dozens of talented jewelers donate responsibly sourced pieces to support our cause, many of them with certified Fairmined gold, which supports artisanal miners and reduces mercury pollution.

Our 2021 Impact honorees included Dana Bronfman, Lisa Conte, Gloria Janata, and Don Jones and Annie Smith-Jones. Thanks to our generous sponsors and guests, we raised over $300,000 to support Pure Earth's life-changing work.

2022 FORCE OF NATURE

INTERNATIONAL WOMEN'S DAY CELEBRATION

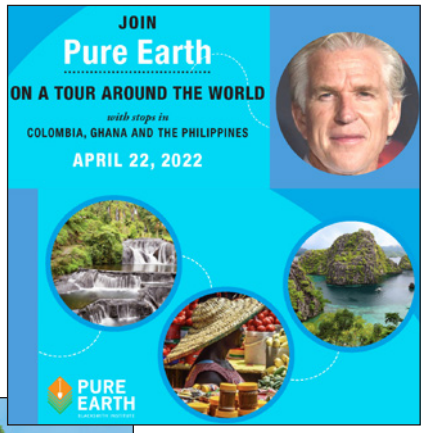
I to r: Jeweler Christina Malle and former EPA Administrator Carol Browner, two of the winners of Pure Earth's 2022 Force of Nature award, with Pure Earth CEO Richard Fuller.

The Force of Nature award was intricately hand crafted by artisanal potters in Mexico who are part of Pure Earth's Barro Aprobado program.

International Women's Day

Pure Earth celebrates International Women's Day, held on March 8th, by recognizing the critical role women play to solve pollution, protect their families and communities, and advocate on behalf of the most vulnerable at the annual Force of Nature Luncheon.

The 2022 awards were presented to Carol M. Browner, the former EPA Administrator, for her lifelong leadership in the fight to protect children from toxic pollution; Christina Malle, a goldsmith and jewelry designer, for her human rights advocacy in the jewelry supply chain; and Dr. Netzy Peralta, an anthropologist and Pure Earth Coordinator, for her role in catalyzing the "Circle of Women," a cooperative of artisanal women potters committed to lead-free production.



Speakers at Lancet report launch in New York. Richard Fuller, Pure Earth CEO; Dr. Jack Caravanos, Pure Earth Senior Advisor and Professor at the School of Global Public Health at NYU; Gloria Janata, President Togo Run and Pure Earth board member; Rachael Kupka, Executive Director, GAHP.

Pure Earth Day

On April 22nd, we hosted a Pure Earth Day World Tour, with stops in Colombia, Ghana, and the Philippines. Matthew Modine, the award-winning actor, environmentalist, who recently joined Pure Earth's Leadership Council, kicked off the event with a "Pure Earth Day" greeting. Next, viewers traveled to the Philippines, Ghana, and Colombia where Country Directors Larah Ibanez, Elsie Appeadu, and Alfonso Rodriguez provided personal country tours, shared how they are cleaning up toxic pollution, participated in a live Q & A, moderated by Pure Earth CEO Richard Fuller.

Lancet Report Briefings in NYC and Geneva

In May 2022, Pure Earth CEO Richard Fuller and other leading environmental health experts published *Pollution and Health: a progress update* in the *Lancet Planetary Health Journal.* The report reaffirmed the gravity of the pollution crisis and issued an urgent call to action.

Together with New York University and the Global Alliance for Health and Pollution (GAHP), Pure Earth hosted launch events on May 19th in NYC with about 300 virtual participants, and on May 22nd with the World Heart Federation during the #worldheartsummit weekend in Geneva.

In addition to the launch event, findings from the report reached millions through major global news outlets, including BBC, the *Guardian*, the *Washington Post*, France24, among many others.

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Children in village in Vellore, Tamil Nadu, India.

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Financial Statement

Consolidated Statement of Financial Position

Years Ended December 31, 2020–2021

	2021 Consolidated*	2020 Consolidated**
ASSET		
Current Assets		
Cash and Cash Equivalents	6,812,774	899,878
Grants Receivable	5,972,515	8,099,063
Pledges Receivable	267,002	243,584
Prepaid and Other Current Assets	577,304	831,751
Total Current Assets	**$13,629,594**	**$10,074,276**
Long-term Assets		
Property & Equipment	416,629	353,620
Security Deposit	26,253	25,000
Total Long-term Assets	**$442,882**	**$378,620**
Total Assets	**$14,072,476**	**$10,452,896**
LIABILITIES AND NET ASSETS		
Accounts Payable	253,390	777,500
Accrued Liabilities	190,424	150,997
Total Liabilities	**$443,814**	**$928,498**
Net Assets		
Without Donor Restriction	798,259	355,615
With Donor Restriction	12,830,403	9,168,784
Total Net Assets	**$13,628,662**	**$9,524,399**
Total Liabilities and Net Assets	**$14,072,476**	**$10,452,897**

* Management prepared, unaudited 2021 statements
** Audited 2020 Financial Statements

Consolidated Statement of Activities

Years Ended December 31, 2020–2021

	December 31, 2021* Pure Earth Consolidated			December 31, 2020** Pure Earth Consolidated		
	Unrestricted	Restricted	Total	Unrestricted	Restricted	Total
SUPPORT AND REVENUE						
Grants	—	9,313,519	9,313,519	—	9,724,141	9,724,141
Fundraising Income	453,843	—	453,843	145,946	—	145,946
Contributions	434,579	—	434,579	520,501	—	520,501
In-Kind Contributions	232,384	—	232,384	55,856	—	55,856
Net assets released from restrictions	5,651,900	(5,651,900)	0	4,427,872	(4,427,872)	0
Total Support and Revenue	**$6,772,705**	**$3,661,619**	**$10,434,324**	**$5,150,175**	**$5,296,269**	**$10,446,444**
FUNCTIONAL EXPENSES						
Program	4,907,275	—	4,907,275	3,645,532	—	3,645,532
Administration	799,787	—	799,787	950,031	—	950,031
Fundraising	622,999	—	622,999	392,423	—	392,423
Total Functional Expenses	**$6,330,061**	**—**	**$6,330,061**	**$4,987,986**	**—**	**$4,987,986**
Change in Net Assets	**$442,644**	**$3,661,619**	**$4,104,263**	**$162,189**	**$5,296,269**	**$5,458,458**
Net Assets—Beginning	**$355,615**	**$9,168,784**	**$9,524,399**	**$193,426**	**$3,872,515**	**$4,065,941**
Net Assets—Ending	**$798,259**	**$12,830,403**	**$13,628,662**	**$355,615**	**$9,168,784**	**$9,524,399**

* Management prepared, unaudited 2021 statements
** Audited 2020 Financial Statements

Consolidated Statement of Cash Flows

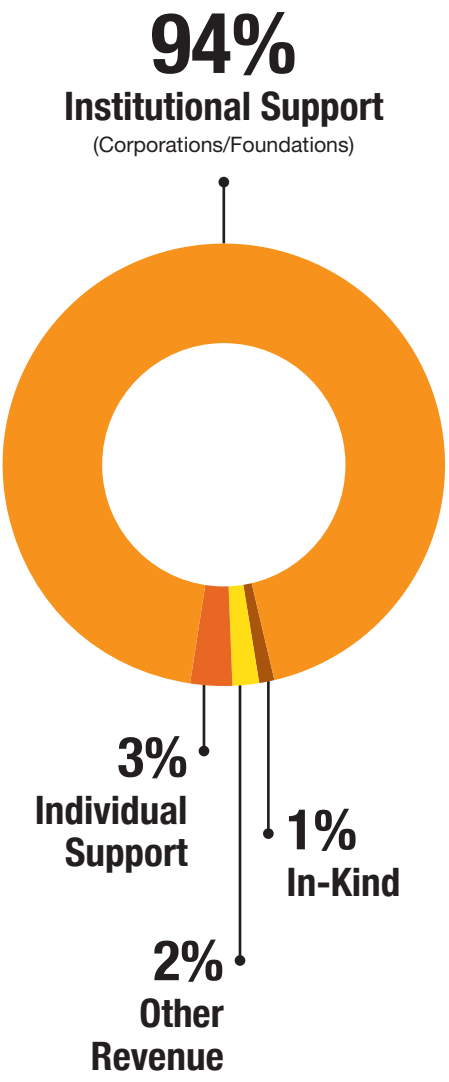
Years Ended December 31, 2010–2021

	2021*	2020**
OPERATING ACTIVITIES		
Change In Net Assets	4,104,263	5,458,458
Change in Cash from Operating Activities		
Depreciation	97,895	58,255
Grants Receivable	2,127,967	(4,132,473)
Pledges Receivable	(23,413)	154,028
Forgiveness of Payroll Protection Program	0	(273,900)
Prepaid Expenses and Other Current Assets	252,482	(663,530)
Accounts Payable	(524,916)	129,551
Accrued Expenses	39,521	39,811
Net cash used by Operating Activities	**$6,073,800**	**$770,200**
INVESTING ACTIVITIES		
Proceeds from sale of investments	—	(623)
Fixed asset purchases	(160,903)	(4,216)
Fixed asset disposals	—	—
Net cash used by investing activities	**$(160,903)**	**$(4,839)**
FINANCING ACTIVITIES		
Repayments on line of credit	—	(170,924)
Proceeds from Payroll Protection Program	—	273,900
Repayments of long-term debt	—	(43,508)
Net cash used by investing activities	**$0**	**$59,468**
Net Increase (Decrease) in Cash and Cash Equivalents	**$5,912,896**	**$824,829**
Cash and Cash Equivalents, Beginning	**$899,878**	**$75,049**
Cash and Cash Equivalents, Ending	**$6,812,774**	**$899,878**

* Management prepared, unaudited 2021 statements
** Audited 2020 Financial Statements

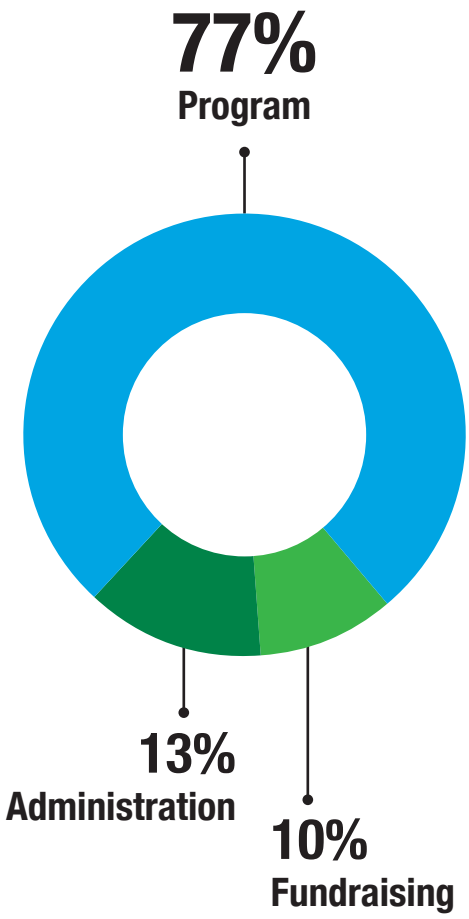
SOURCES OF FUNDS

2021



UTILIZATION OF FUNDS

2021



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