



SUPPORT PURE EARTH'S WORK to Protect Women and Girls

The Toll of Lead Exposure on Maternal and Reproductive Health

Pure Earth is committed to making women's health a cornerstone of our global expansion in lead exposure prevention. We are seeking \$8 million to institutionalize this programming, ensuring women and girls receive appropriate interventions and education tailored to their unique risks.

Why Women and Girls are Uniquely at Risk

Hazardous chemicals undermine women's well-being around the world, but especially in low- and middle-income countries. Lead exposure has serious impacts on women's reproductive health, affecting pregnant and nursing mothers, developing fetuses, newborn infants, as well as adolescent girls. Since lead is stored and accumulates in bones, and can persist for years, exposure to lead during adolescence has long term consequences for future generations. Pregnancy is associated with the release of lead stored in the mother's bones into the blood stream, and since lead in blood readily crosses the placenta, fetal exposure can occur even without ongoing environmental exposure. This type of fetal lead exposure has been shown to predict lower intelligence in children even if their subsequent lead exposure during childhood is low.¹ Similar to other heavy metals, lead can also be transferred to infants through breast milk, increasing health risks during early development.

Hypertensive Disorders and Other Adverse Health Outcomes

Women's lead exposure increases the risk of hypertensive disorders—particularly during pregnancy—along with anemia, pregnancy loss, and poor birth outcomes.² A 2025 systematic review and meta-analysis found a significant association between prenatal lead exposure and pregnancy-induced hypertension, which contributes to reduced fetal growth and low birth weight. Populations exposed to lead and other heavy metals also face a higher risk of spontaneous abortion.³





Sources of Lead Exposure

In many high-income countries, public awareness of lead exposure is shaped by well-known risks such as paint or contaminated drinking water. But globally, the sources of lead exposure are far more varied. In low- and middle-income countries, everyday environments and products pose significant risks, from spices, cosmetics, and cookware, to informal used lead-acid battery recycling and industrial emissions. Lead-contaminated spices are a documented source as well. For example, in Bangladesh, lead-adulterated turmeric was linked to elevated blood lead levels (BLLs) in pregnant women.⁴ These exposure pathways uniquely affect women and children, whose biological vulnerability and social roles can increase both the likelihood and the consequences of exposure.

In many low- and middle-income countries, geophagy (the intentional consumption of soil or clay) is a common cultural and behavioral practice. It is most prevalent among pregnant women and young children, as it's used to treat micronutrient deficiencies, especially iron and calcium, in pregnant women. But because soils and clays may contain lead and other toxic metals, geophagy represents a potential and preventable source of prenatal lead exposure.

Successful Intervention

IN SENEGAL

Between 2007–2008 in Thiaroye-sur-Mer, Senegal, limited economic opportunities led women to rely on informal, unsafe recycling of used lead-acid batteries—often in their homes and around their children—unknowingly exposing them and their children to toxic lead. This resulted in at least 18 deaths and long-term health impacts for many others. Pure Earth and the government removed the contaminated soil, cleaned lead dust from more than 100 homes, and supported the women to stop recycling. After remediation, the soil contained less than 0.04% lead, and in 2021, the BLLs were 90% lower than in 2008.

Transformational Funding Opportunity

Through funding from **The Audacious Project**, Pure Earth will combat lead poisoning at an unprecedented pace, expanding into over 20 low- and middle-income countries in Asia, Africa and Latin America to protect 500 million children from lead exposure.

With substantial anchor commitments already secured, we are now seeking to close the remaining \$26 million funding gap. All contributions will be multiplied many times over; every dollar contributed will be matched 5X over through The Audacious Project, a TED initiative bringing together some of the world's most influential philanthropists to fund bold, proven solutions.

Investments at this phase can support interventions that advance maternal health in the world's most at risk geographies in Sub-Saharan Africa and South Asia.

From the remaining \$26 million, we request \$8 million to support the scale-up of programming focused specifically on women's health. This additional support will allow us to institutionalize women's health work and research at Pure Earth so that it is prioritized in our interventions, ensuring that women and girls are receiving tailored educational information and support as it relates to their health and unique risk to toxic chemicals.

INVESTMENT:
2026–2033

\$154M
TOTAL PROGRAM

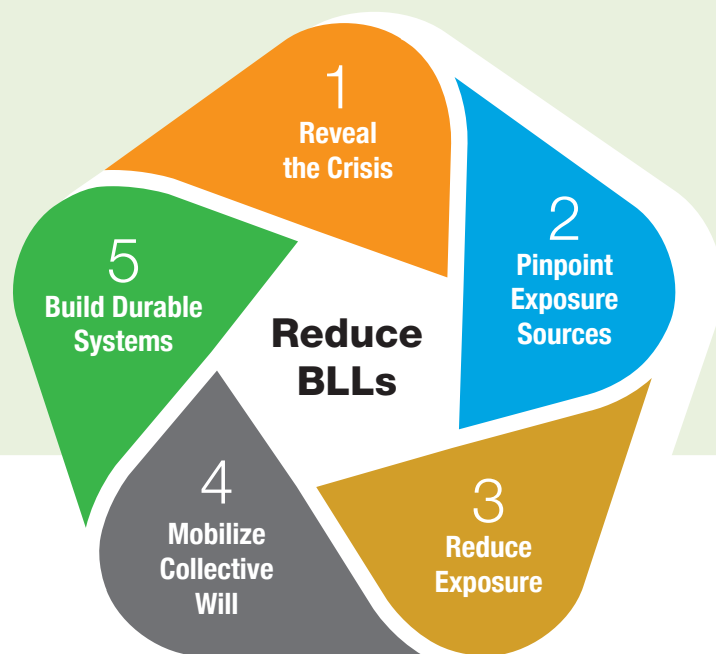
\$128M*
SECURED

\$26M
GAP

*Anchor Funding Commitments: Bloomberg Philanthropies and the Audacious Project

Integrating Women's Health into Our Approach

Our **5-phase approach** draws on more than 25 years of experience protecting people from lead exposure in low- and middle-income countries, and is tailored to each local context, with phases that can overlap and be adapted to country-specific priorities.



PURE EARTH'S 5-Phase Approach:

- 1 Reveal the Crisis** by implementing nationally representative BLL surveys revealing the true prevalence, severity, and distribution of exposure.
- 2 Pinpoint Exposure Sources** by conducting in-depth exposure source assessments to understand how people are getting poisoned.
- 3 Reduce Exposure** by targeting mitigation efforts on the most critical sources of exposure.
- 4 Mobilize Collective Will** by educating communities, policymakers, peer organizations, and funders on the health and economic toll of lead; and
- 5 Build Durable Systems** by embedding policies and practices into routine government operations, including national BLL monitoring, training health workers, and strengthening enforcement capacity, to ensure sustained reduction of lead exposure over time.

By targeting pregnant and nursing mothers and women of reproductive age, including adolescents, we can improve outcomes for maternal health, as well as have an impact on future generations. There are several ways that Pure Earth can enhance the 5-phase approach and add to the research addressing women's health. Increasing biomonitoring of pregnant women is a key priority, including measuring blood lead levels at prenatal care checkups and conducting home source exposure assessments for those with elevated levels. Alongside this, calcium supplementation would be promoted during pregnancy as part of the prenatal vitamin regimen for women suspected of having significant lead exposure, as it has been shown to reduce blood lead levels in pregnant women by up to 35%.⁵ Policy advocacy efforts would educate government ministries of health and others to include lead testing as part of standard prenatal care.

Supporting training and education programs for healthcare providers and community health workers would also improve their understanding of lead exposure on maternal health and how to address it effectively. Source-specific interventions would also be pursued, including substituting safe alternatives to lead-contaminated products such as cookware, cosmetics, and spices. Moreover, finding and activating local champions focused on women and girls would be essential for driving meaningful change.

RESEARCH NEEDED on Women's Health

- 1 Are there sources of lead exposure for which pregnant women are at particular risk, such as geophagy, ayurvedic medicines, jewelry, cosmetics?
- 2 Is lead exposure a risk factor for preeclampsia?
- 3 To what extent can maternal nutritional supplementation with calcium, iron, and Vitamin C further reduce fetal lead exposure?
- 4 Among women with significant lead exposure history, do the neurodevelopmental benefits of breastfeeding outweigh the risks of transferring lead to infants through breast milk?
- 5 Are there simple strategies that can help mitigate the adverse impacts of lead exposure on neurodevelopment, such as early learning support or nutritional supplementation, such as calcium and iron?

Protecting Women and Girls FROM LEAD EXPOSURE



END NOTES

1. Hu H, Téllez-Rojo MM, Bellinger D, Smith D, Ettinger AS, Lamadrid-Figueroa H, Schwartz J, Schnaas L, Mercado-García A, Hernández-Avila M. **Fetal lead exposure at each stage of pregnancy as a predictor of infant mental development.** *Environ Health Perspect.* 2006 Nov;114(11):1730–5. doi: 10.1289/ehp.9067. PMID: 17107860.
2. Vige M, Yokoyama K, Sahebi L. **Prenatal lead exposure and risk of Pregnancy-Induced hypertension: A systematic review and Meta-Analysis.** *BMC Pregnancy Childbirth.* 2025 Oct 1;25(1):989. doi: 10.1186/s12884-025-08131-9. PMID: 41034873; PMCID: PMC12487262.
3. Kaur M, Sharma P, Kaur R, Khetarpal P. **Increased incidence of spontaneous abortions on exposure to cadmium and lead: a systematic review and meta-analysis.** *Gynecol Endocrinol.* 2022 Jan;38(1):16–21. doi: 10.1080/09513590.2021.1942450. Epub 2021 Jun 25. PMID: 34169802.
4. Forsyth JE, Saiful Islam M, Parvez SM, Raqib R, Sajjadur Rahman M, Marie Muehe E, Fendorf S, Luby SP. **Prevalence of elevated blood lead levels among pregnant women and sources of lead exposure in rural Bangladesh: A case control study.** *Environ Res.* 2018 Oct;166:1–9. doi: 10.1016/j.envres.2018.04.019. Epub 2018 May 24. PMID: 29804028; PMCID: PMC6143383.
5. Ettinger AS, Lamadrid-Figueroa H, Téllez-Rojo MM, Mercado-García A, Peterson KE, Schwartz J, Hu H, Hernández-Avila M. **Effect of calcium supplementation on blood lead levels in pregnancy: a randomized placebo-controlled trial.** *Environ Health Perspect.* 2009 Jan;117(1):26–31. doi: 10.1289/ehp.11868. Epub 2008 Sep 2. PMID: 19165383; PMCID: PMC2627861.

Our Commitment to Impact and Sustainability

We integrate lead mitigation into national health and regulatory systems so that countries can sustain impact long after our support ends. Our work strengthens protections for women and children—particularly during pregnancy, but also across the life course. We exit when governments and local partners can sustain progress, indicated by: BLL decline, with at least a 20% reduction; national systems are in place to monitor, prevent, and clinically respond to lead poisoning; governments allocate sustained funding and coordinate action across sectors; and when enforceable standards limit lead in consumer products and the environment. This approach ensures lasting health gains, stronger maternal and child outcomes, and scalable impact.