FUNDER BRIEF

Ensure a Healthy Start

Prevent and Reduce Childhood Exposure to Harmful Chemicals

FORSYTHIA

THE CENTER FOR HIGH IMPACT PHILANTHROPY
The University of Pennsylvania

About the Center for High Impact Philanthropy

Founded in 2006, the Center for High Impact Philanthropy has emerged as a unique and trusted authority for funders around the world who are seeking to maximize the social impact of their philanthropic activities. In areas as diverse as closing the achievement gap in the U.S., providing basic needs to those most affected by the recent economic downturn, effective disaster relief after Haiti's earthquake, and major global public health issues such as malaria and child mortality, the Center translates the best available information into actionable guidance for those looking to make the greatest difference in the lives of others. Put simply, success to us means moving more money to do more good.

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About this Brief

This brief was created in partnership with the Forsythia Foundation, a foundation focused on improving health by reducing dangerous chemicals in our lives. It is part of **Invest in a Strong Start for Children,** a free online toolkit that provides donors with key facts, strategies for investment, and our analysis of several high impact opportunities in early childhood. The toolkit is an extension of our ongoing partnership with **The Annie E. Casey Foundation**.

What You'll Find in this Brief

Our funder briefs provide 1) an explanation of key concepts and considerations funders will encounter when exploring philanthropic opportunities in a new topic area, and 2) strategies and resources funders can leverage to achieve high impact.

Ensure A Healthy Start: Prevent And Reduce Childhood Exposure To Harmful Chemicals presents an overview of key issues involved in addressing childhood exposure to harmful chemicals in the U.S., and several strategies for funder engagement. The brief reflects our synthesis of over 20 publications, studies, and websites, as well as several conversations with academics, funders, and nonprofits working in this space. To illustrate how funders can support the identified strategies, we included several organizations that were cited in our review of the literature and/or mentioned by those we consulted. We have not analyzed their impact and cost-effectiveness.

As always, we hope this brief helps funders move from good intentions to high impact.

Summary

No discussion of early childhood development is complete ***without*** exploring the connection between a child's exposure to harmful chemicals and the adverse health consequences that follow. This brief introduces the key issues involved in addressing childhood exposure to harmful chemicals. Specifically, we provide three high-level strategies to prevent and reduce childhood exposure to harmful chemicals, examples of organizations implementing these strategies, as well as additional resources for those interested in learning more.

Why Invest In Preventing And Reducing Childhood Exposure To Harmful Chemicals?

Early childhood is a unique time of life, when children's bodies – especially their brains – are developing rapidly. The most acute stages of human neurological development begin in the womb and continue through age two, a period increasingly referred to as "the first 1,000 days."[1] While children's brains continue to develop into adulthood and beyond, influences on this earliest period of brain development, including maternal health during pregnancy, can have particularly profound and lifelong effects.[2] Without a safe and healthy start, our youngest and most vulnerable children can miss critical opportunities to thrive and become productive members of our communities.

Factors that contribute to a safe and healthy start for children include high-quality prenatal and pediatric care, good nutrition, supportive adult-child interactions, and a safe environment. This brief focuses on one necessary aspect of the safe environment: minimizing exposure to harmful chemicals. Chemicals are everywhere—in the air we breathe, the food and beverages we eat and drink, and the products we use. Many are instrumental in improving the quality of our lives. However, out of the 80,000 chemicals registered for use in the U.S., only an estimated 200 have had testing for human health impacts.[3]

There is a small, but powerful subset of those chemicals that have been identified as toxic to the human nervous system. For this brief, we are solely focusing on three of these toxic chemicals that are among the most thoroughly investigated in extensive animal and human studies: *lead*, *methylmercury*, and *polychlorinated biphenyls (PCBs)*.[4] Not only are these chemicals well-studied, but they are also among the most pervasive. A recent study in the U.S. found lead, methylmercury, and PCBs in 96%, 89%, and 100% of children[5], respectively, and in more than 80% of pregnant women.[6] These chemicals present a significant risk for children and pregnant moms everywhere.

Toxic Chemical	Basic Facts	Sources and Routes of Exposure	Associated Neurological Disease/Disorder
Lead	Highly toxic metal found in all parts of the environment, primarily from human activities (e.g. mining, manufacturing, and burning of fossil fuels)	Contaminated paints, water, dust, soil, pottery, and glassware	ADHD[7], Learning Disability[8], Intellectual Disability[9], Conduct Disorders & Behavioral Deficits[10], Impairments in Vision and Hearing[11], and Loss of IQ[12]
Methylmercury	Formed when inorganic mercury is converted to methylmercury in the environment; readily bioaccumulates (becomes concentrated inside the bodies of living things) within the environment	Contaminated fish and shellfish	Intellectual Disability[13], Cerebral Palsy[14], Impairments in Vision and Hearing[15], and Loss of IQ[16]
Polychlorinated Biphenyls (PCBs)	Though banned in 1979, this family of synthetic organic chemicals are still commonly released in the environment and do not break down easily	Contaminated fish, meats, dairy, dust, cosmetics, dyes, soil, and caulks and lighting systems used in schools/buildings built before the late 1970's	ADHD[17], Learning Disability[18], Loss of IQ[19]

An Evolving Field:

Numerous other chemicals have evidence of associated negative physiological and neurological impacts and have drawn increased concern from scientists, economists, and health advocates alike. Examples include pesticides, flame retardants, TCE and other organic solvents, and more. To learn more about other potentially harmful chemicals not included in this Funder Brief, see **sixclasses.org**, the **Agency for Toxic Substances and Disease Registry**, and Mount Sinai Hospital's **list of environmental toxins**.

How Can Funders Prevent And Reduce Exposure To Lead, Methylmercury, And PCBs In Children?

Prevent and reduce exposure today to known harmful chemicals in the built, consumer, and natural environments

Advocate for improved policy and practice to prevent and reduce exposure to, and use of, harmful chemicals

Support research and innovation to further assess chemicals whose effects have not yet been fully tested

Prevent and Reduce Exposure Today to Known Harmful Chemicals in the Built, Consumer, and Natural Environments

People of all ages are exposed to chemicals. However, compared to adults, young children engage in more hand-to-mouth activities, spend more time near the ground, and have higher rates of eating, drinking and breathing, all of which increase their potential for exposure to toxic chemicals.[20] Lead, methylmercury, and PCBs, three of the most well-researched chemicals, have been identified as toxic to the human nervous system and linked to adverse childhood neurological and behavioral outcomes, such as ADHD and loss of IQ. Additionally, the annual economic costs to society of exposure to these harmful chemicals is billions in direct and indirect expenses.

Here are ways funders can help protect children's health today and promote safer consumer habits:

Prevent and reduce lead and PCB exposure in older buildings

Many homes built before 1978 contain some lead paint. For that reason, California established legislation that requires multi-unit properties built before 1978 to be proactively inspected every two years. Unfortunately, some residents don't allow inspectors entry due to mistrust and lack of information, a phenomenon that not only prolongs the inspection process but also leaves many children at risk. The **Healthy Homes Collaborative**, an association of community based organizations (CBOs) in Los Angeles, uses home visitation strategies (e.g. pre-visits and information sessions) before city-required lead inspections. Such activities educate families and increase the likelihood of a successful home assessment. Through this initiative the likelihood of city officials being allowed entry for lead inspections has increased from 20% to 80%.[21] By serving as a trusted intermediary, CBOs also help property owners and tenants navigate the enrollment process for government-subsidized repair programs should a property fail tests and the owners or tenants lack the financial resources to address needed repairs.

To learn more about lead exposure, including ways to protect children, healthy practices during pregnancy, and practices to safeguard homes, see **leadfreekids.org**.

Similarly, PCBs are found in old schools and buildings built before 1979, when the U.S. government banned their use and production. In 2010, the **New York Lawyers for Public Interest** (NYLPI) helped release the results of a survey which found that over 1,200 New York City schools may be PCB-contaminated from the schools' caulk, lighting systems, or both.[22] NYLPI, together with its coalition partners, launched the PCB Lights Out campaign to help parents conduct walk-throughs to find signs of visibly leaking PCB light fixtures in schools. NYLPI has also filed several successful lawsuits, including one where they represented New York Communities of Change, an organization whose membership includes thousands of parents across the city, to expedite the removal of PCB-containing light ballasts.

To learn more about PCBs in schools, and tools for administrators, see the Environmental Protection Agency's (EPA) **PCB Fact Sheet**.

Promote awareness of safer seafood consumption

Safe and nutritious seafood can be part of a well-balanced and healthy diet for pregnant women and children alike. However, certain types of seafood (e.g. farmed salmon, swordfish, shark, shellfish etc.) are susceptible to being contaminated with methylmercury and PCBs.[23] It's important that pregnant mothers and those feeding children (parents, schools, daycare centers, etc.) understand which seafood poses a risk. **Healthy Child, Healthy World** works to empower parents with credible advice for healthier homes, including providing a checklist on how to find and prepare safe seafood. They also provide Healthy Parenting Kits to families through local organizations in major cities to educate families about harmful toxins, alternative products to use, and healthy foods to eat.

See Stony Brook University's **Gelfond Fund for Mercury Research and Outreach** for more educational resources to help families understand where they can find safe seafood.

Additional educational resources to reduce exposure:

- The clinical practice of the University of California, San Francisco's **Program on Reproductive Health and Environment** (PRHE) educates and engages health care professionals to promote environmental health. PRHE also offers the **Toxic Matters** brochure, which provides everyday advice to help families reduce their environmental exposures (available in English and Spanish).
- The Centers for Disease Control and Prevention's **Healthy Homes** initiative offers information and training to families to help increase the safety of their homes.
- The Environmental Law Institute's **Reducing Environmental Exposures in Child Care Facilities: A Review of State Policy** report is designed for policy makers, agency officials, non-governmental organizations, and others who work to promote quality child care and advance children's health. The report contains information to help strengthen state laws, regulations, and programs around indoor environmental contaminants in child care facilities.

Advocate for Improved Policy and Practice to Prevent and Reduce Exposure to, and Use of, Harmful Chemicals

Since more immediate strategies to prevent and reduce harmful chemical exposures have not been broadly implemented at scale, many organizations and funders have sought to change how chemicals are regulated, used, and disposed of at local, state, and federal levels.

Unfortunately, policy change is slow-going. For example, in 1976, the Toxic Substances Control Act (TSCA) was passed as the first piece of U.S. legislation to regulate the chemical industry. In the nearly 40 years since the law's passage, TSCA has never been significantly amended, and many feel[24] that in its current form, it fails to adequately prevent and reduce childhood exposure to harmful chemicals. Specifically, several independent reviews[25] have found that TSCA has not:

- regulated known harmful chemicals;
- allowed the federal government to share chemical information it obtains from manufacturers;
- required adequate testing of existing chemicals and the thousands of new chemicals which are introduced to market each year; nor
- provided incentives for the development of safer alternatives or required their use when such alternatives are available.

With ongoing efforts to reform and update national policy, a few states and local municipalities have enacted their own supplementary legislation to TSCA to create change and protect residents from toxic chemicals (e.g., Massachusetts Toxics Use Reduction Act; State of California's Green Chemistry Initiative).

In addition to the testing and regulation of chemicals, local, state, and federal governments also play a critical role in their recovery and disposal. For example, many harmful chemicals have become highly concentrated in the nation's 1,200 Superfund sites, where significant amounts of hazardous waste, pollutants, and contaminants (like PCBs, methylmercury, and lead) are located and sometimes insufficiently controlled. The Comprehensive Environmental Response, Compensation, and Liability Act, commonly known as the Superfund program, was passed in 1980. It created a federal government program to clean up these Superfund sites. Unfortunately, cleanup is a costly, long-term process where affected community members can help put pressure on policy makers to ensure that these sites no longer pose a threat to them or their families.

Finally, while policy change is critical to regulate chemicals that make it to market and, ultimately, to their recovery, how companies use the chemicals and the supply chain decisions they make are also key drivers to reducing exposure risk. A limited but growing set of tools and stakeholders are working to promote safer materials and reduce the number and volume of toxic chemicals in consumer products.

Here are ways that funders can advocate for improved policy, financial support and business practices to prevent and reduce childhood exposure to harmful chemicals:

Partner with advocacy organizations working to reduce toxic exposures and create a healthier environment for children and their families

Over 11 million parents, businesses, and healthcare professionals belong to the coalition **Safer Chemicals, Healthy Families** that advocates for the safer use of chemicals in homes, businesses, schools and household products. The coalition focuses on three areas to strengthen protection against toxic chemicals: stronger policies through advocacy, safer standards for retailers and manufacturers, and better information available to educate citizens. Safer Chemicals, Healthy Families also advocates for TSCA reform to better ensure that families are protected from harmful chemicals at the federal level.

In addition, both the **Environmental Defense Fund** and the **Natural Resource Defense Council** also have long-standing, successful campaigns against toxic chemicals, and are working to fix TSCA on behalf of children's health.

Build the capacity of businesses to identify, source, and use safer materials and fewer chemicals

Concern for worker, community and environmental safety has shifted the dialogue in many companies across the world regarding supply chain choices. However, many also perceive barriers to selecting safer alternatives, including a lack of information and the high cost to research technically and economically feasible alternatives. As a result, the growing awareness has not yet translated into widespread corporate action. Organizations such as **Clean Production Action**, with its Green Screen initiative, and the **Green Chemistry and Commerce Council** are engaging business leaders to collaborate across sectors and supply chains for improved chemical use policies.

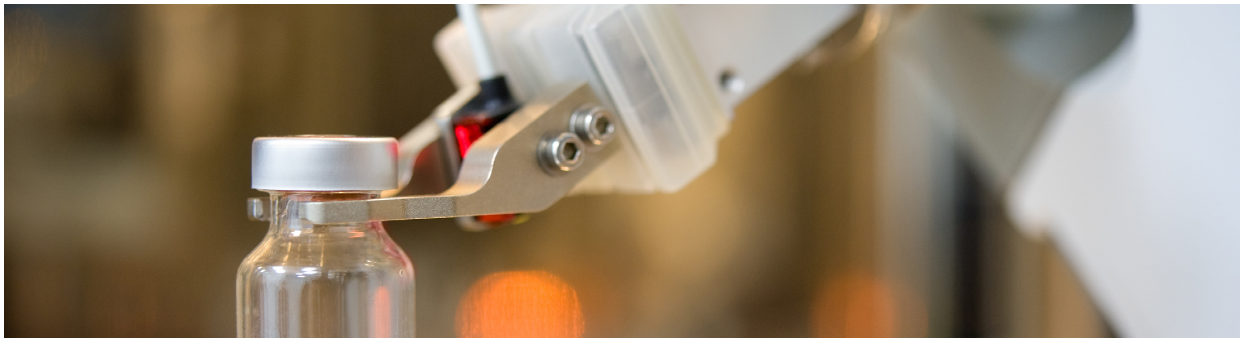
Involve the community in Superfund sites and advocacy regarding their ongoing cleanup

1 in 4 Americans live within four miles of a Superfund site[26] and may have increased risk for exposure. Superfund's broad authority was given to the EPA, who provides removal and remedial actions as well as resources to help communities participate in decisions at local Superfund sites.

To get involved, visit the **EPA's website** to find the Superfund site nearest you. The website provides contact information for each site's Regional Community Involvement Coordinator. Ask the coordinator which organizations/individuals are already involved at the site, how to connect to them, and what EPA community resources (technical assistance grants, community advisory groups, trainings, conflict resolution tools, etc.) are available to further that site's remediation efforts.

Other leading advocates for children's environmental health:

- **Health Care Without Harm**
- **American Academy of Pediatrics Council on Environmental Health**
- **Children's Environmental Health Network**
- **Canadian Environmental Health Atlas**
- **Collaborative on Health & the Environment**
- **International Society for Children's Health and the Environment**



Support Research and Innovation to Further Assess Chemicals Whose Effects Have Not Yet Been Fully Tested

There are limited epidemiological studies and available data on the exposure to other recognized toxic chemicals (outside of lead, methylmercury, and PCBs) and their link to adverse childhood health outcomes. Additionally, exposure to chemicals does not occur in isolation, and little is known about how chemicals interact with each other and other known risk factors, such as preexisting medical conditions and genetics. Lastly, approximately 200 of the 80,000 chemicals registered for use in the U.S. have had any testing at all[27] and, of the 3,000 chemicals produced at high volume (greater than 1 million pounds), nearly half have no testing data on their toxicity publicly available.[28]

Here are ways funders can help the research community make needed strides toward better understanding the potential adverse childhood and pregnancy health outcomes from chemicals:

Study the relationship between chemical exposures and adverse pregnancy outcomes

The University of California, San Francisco's **Program on Reproductive Health and the Environment** (PRHE) is a multidisciplinary research center working to expand our understanding of chemical exposure during prenatal development in order to improve health-based decision-making, policy and clinical research.

The EPA and the National Institute of Environmental Health Sciences (NIEHS) have established 14 **Children's Environmental Health & Disease Prevention Research Centers** (CEHCs) nationwide, each housed at a major college or university. CEHCs study the interactions between known or suspected toxic chemicals prevalent in our environment and their relationship to health outcomes in children.

Protect children against environmental threats to health with increased testing

The **Toxicology in the 21st Century** (Tox21) program, a collaboration between the National Institutes of Health, the EPA, the NIEHS/National Toxicology Project, and the Food and Drug Administration, provides large-scale chemical testing. For example, part of this program is teaching and training a robot to do large-scale rapid chemical testing by scanning thousands of chemicals at a time and recognizing threats inexpensively and quickly. Tox21 is also using alternative testing models, such as looking at how a single chemical might affect a wide range of people by analyzing its relationship to different human genomes from different ethnic groups across the globe.

The **Environmental Defense Fund** provides some additional resources on chemical testing and evaluating risk.

Other leading researchers and centers:

- **Bruce Lanphear, Simon Fraser University**
- **Philip Landrigan, Mount Sinai School of Medicine**
- **Philippe Grandjean, Harvard University School of Public Health**
- **David Bellinger, Harvard Medical School**
- **CDC National Center on Birth Defects and Developmental Disabilities (NBCDDD)**

Conclusion

In this brief we highlighted several strategies and resources that funders can leverage to provide children with a healthier start. Whether donors support reductions of known harmful chemicals in the built, consumer, and natural environments; advocate for improved policy and practices; or invest in research and innovation to prevent future harm, the ultimate impact is the same – healthier kids who are better able to achieve their full potential and a stronger society.

List of Organizations Mentioned in this Brief:
Agency for Toxic Substances & Disease Registry, http://www.atsdr.cdc.gov/
American Academy of Pediatrics Council on Environmental Health, https://www.aap.org/
The Annie E. Casey Foundation, http://www.aecf.org/
Canadian Environmental Health Atlas, http://www.ehatlas.ca/
Collaborative on Health & the Environment, http://www.healthandenvironment.org/
Environmental Defense Fund, http://www.edf.org/
Environmental Law Institute, http://www.eli.org/
Environmental Protection Agency, http://www.epa.gov/
The Gelfond Fund for Mercury Research and Outreach, http://www.stonybrook.edu/commcms/gelfond/
Green Chemistry & Commerce Council, http://www.greenchemistryandcommerce.org/
Health Care Without Harm, https://noharm.org/
Healthy Child, Healthy World, http://healthychild.org/
Healthy Homes Collaborative, http://www.healthyhomescollaborative.org/
International Society for Children's Health and the Environment, http://www.ische.ca/
Lead Free Kids, http://www.leadfreekids.org/
Mt. Sinai Hospital, http://www.mountsinai.org/
Natural Resources Defense Council, http://www.nrdc.org/
New York Lawyers for the Public Interest, http://www.nylpi.org/
Program on Reproductive Health and Environment, http://prhe.ucsf.edu/
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