

# Executive Summary

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A two-year study involving five independent research laboratories in the United States, Canada and the Netherlands has found up to 232 toxic chemicals in the umbilical cord blood of 10 babies from racial and ethnic minority groups. The findings constitute hard evidence that each child was exposed to a host of dangerous substances while still in its mother's womb.

The research, commissioned by the Environmental Working Group in partnership with Rachel's Network, marks the most extensive investigation of the particular environmental health risks faced by children of African American, Hispanic and Asian heritage.

The laboratory analyses represent the first reported detections in American newborns for 21 contaminants. Among them:

- **Bisphenol A (BPA)**, a derivative of the petrochemical benzene essential to the manufacture of tough polycarbonate plastic and epoxy resins that are fabricated into a wide variety of modern products, including metal food cans, hard plastic infant formula bottles, water bottles, safety helmets and glasses, television, computer and cell phone housings, compact discs and high performance coatings. BPA is a synthetic estrogen that researchers have found to disrupt the endocrine system, disrupt normal reproductive system development and diminish test animals' intellectual and behavioral capacity.
- **Tetrabromobisphenol A (TBBPA)**, a fire retardant for circuit boards that interferes with thyroid function and may inhibit the production of T cells the body uses to fight disease, undermining immune defenses against bacteria, viruses and cancer. TBBPA can break down to BPA, and when incinerated it creates brominated dioxins, which are considered likely human carcinogens.
- **Galaxolide and Tonalide**, polycyclic musks that are synthetic fragrances in cosmetics, laundry detergent and other scented products and that have been detected in numerous biomonitoring studies of pollution in people and in the aquatic environment.
- **Perfluorobutanoic acid (PFBA, or C4)**, a member of the perfluorocarbon (PFC) chemical family used to make non-stick, grease-, stain- and water-resistant coatings for consumer products, including brands Teflon, Scotchgard and Goretex. The most studied PFCs, the Teflon chemical PFOA and the Scotchgard chemical PFOS, are linked to cancer, birth defects and infertility. PFCs are extremely persistent in the environment. There is almost no toxicological data for PFBA in the public domain.
- **Previously Undetected Polychlorinated biphenyls (PCBs)**. Developed as industrial lubricants, coolants and insulating materials, also used in caulk, PCBs were effectively banned in the late 1970s but are long-lasting in the environment. The U.S. government lists PCBs as probable human carcinogens. According

[government and academic scientists](#)scientists, PCBs have been shown to disrupt the endocrine system and damage the immune system, and are toxic to the developing brain.

## What's Unique About EWG's Biomonitoring Research?

This study is EWG's eleventh biomonitoring investigation. To date, EWG studies have found 414 industrial chemicals, pollutants and pesticides in 186 people, from newborns to grandparents. Our goal is to quantify the pollution in people, or what we call the "human toxome," and to drive science and policy changes to protect public health.

The Centers for Disease Control and Prevention (CDC) has published biomonitoring study results involving thousands of people nationwide over the past decade. Its next report, the fourth in a series, is expected to list detections of more than 200 pollutants found in representative samples of the U.S. population.

*EWG's biomonitoring program complements the CDC in three key respects:*

**1. More chemicals:** CDC looks for fewer chemicals, but in larger, statistically representative samples of the U.S. population. EWG studies typically look for more chemicals than the CDC, but in smaller sample cohorts. EWG has detected more than 414 chemicals in people, compared to 203 reported by the CDC. EWG relies on specialized laboratories around the world to maximize the scope of its analyses.

**2. Mixtures in each person:** Mixtures in each person:

**3. Early life exposures:** CDC tests adults and children age 6 and up. The agency rarely tests cord blood or infants. EWG studies include cord blood, infants and toddlers to help document exposures during the most vulnerable periods of development.

Some racial and ethnic minority communities in the U.S. experience disproportionate exposures to environmental pollution (Brulle and Pellow 2006). Whether through poverty or historical patterns of discrimination, some are more likely to live near busy roads, industrial sites and in older housing. These factors, combined with workplace exposures, diet and use of certain consumer products, may lead to greater contamination with chemicals. When combined with poor nutrition and health, the adverse effects of having a greater chemical body burden can be aggravated.

In spite of the acute need to understand prenatal exposures in all segments of American society, EWG could find no studies that examined the chemical body burden in the womb for minority children. This study is a first attempt to fill that void.

The 10 children in this study were born between December 2007 and June 2008 in Michigan, Florida, Massachusetts, California and Wisconsin. They are otherwise anonymous.

We have no way of knowing anything about the homes and neighborhoods into which they were born. This study tested for chemicals that can be found in virtually every American household. We did not test for chemicals, such as the byproducts of smoking or alcohol consumption, that would indicate behaviors by the mother that could in any way jeopardize the health of the child. We also did not test for chemicals from local pollution sources.

We cannot determine how chemical exposures in utero may vary from one community to another, but our results strongly suggest that the health of all children is threatened by trace amounts of hundreds of synthetic chemicals coursing through their bodies from the earliest stages of life.

The contaminants found in these children are from unintended exposures to some of the most problematic consumer product and commercial chemicals ever put on the market. Their presence in fetal cord blood represents a significant failure on the part of the Congress and government agencies charged with protecting human health.

Scientists know far too little about the health threats posed by exposure to toxic chemicals in the womb. There is broad agreement, however, that the dangers are greater when exposure occurs before birth. Just how much more dangerous is not known.

Brominated flame retardants, PCBs, the Teflon chemical PFOA and the Scotchgard chemical PFOS, BPA, lead, mercury, perchlorate, dioxins and furans are all considered either likely human carcinogens, serious neurotoxins or well-established hormone disrupters, according to government health authorities. Many are strongly linked to more than one of these effects.

## **Recommendations**

Government, academic and independent biomonitoring studies, including those by EWG, have detected up to 358 industrial chemicals, pesticides and pollutants in the cord blood of American infants. Exploring the so-called “additive” effects of possible carcinogens, hormone disrupters and neurotoxins is a new and urgent priority for environmental health scientists. EWG supports this very important work.

But as this science moves forward, we need to act now to reduce exposures that present the greatest health threats based on what we know today, even as scientists struggle to understand how the cocktail of chemicals in the womb could harm current and future generations.

Many of the up to 232 compounds detected in this study have been the target of regulatory action and government controls. As a rule, however, these actions came far too late, well after the environment and the human race were polluted to a degree that has raised serious health concerns. Our failure to act quickly has ensured that these chemicals will continue to pollute future generations for decades, even centuries to come.

EPA Administrator Lisa Jackson has identified several of the substances found in this study as priority chemicals of concern. These include BPA, brominated flame retardants and the entire class of perfluorinated (Teflon and Scotchgard) chemicals.

In our view, any chemical found in cord blood should be a top candidate for tough regulatory action to protect public health.

To ensure a full accounting of chemical exposure before birth, we recommend that the CDC initiate a comprehensive cord blood-testing program. This work should be coordinated with ongoing biomonitoring in the National Children's Study but should seek to identify and quantify the full extent of chemical exposures in the womb over time. The complete costs of this work must be borne by industry.