

BREAST CANCER AND THE ENVIRONMENT

Updated March 2024

INTRODUCTION

Breast cancer is a complex disease that occurs in an environmentally complex world. For people assigned female sex at birth the lifetime risk increases with age, and the established risk factors for breast cancer account for only a fraction of the cases. Indeed, the incidence of breast cancer is rising faster than hereditary or lifestyle factors can explain. There is growing evidence of health harms, including breast cancer, from exposures to a range of chemicals and toxins. In fact, as far back as 2010, the President's Cancer Panel reported that "the true burden of environmentally induced cancer has been grossly underestimated [and]...the American people—even before they are born—are bombarded continually with myriad combinations of these dangerous exposures."¹

WHAT WE KNOW

50-70% of people assigned female sex at birth with breast cancer have no known risk factors.² Known risk factors include family history, early onset of menstruation, late menopause, late or no childbirth, alcohol consumption, dense breasts, physical inactivity, and ionizing radiation.

Repeated exposure to toxic environments is related to increased risk for breast cancer. At-risk groups are people who work frequently with toxic chemicals and ionizing radiation, and include but are not limited to farmers, nail salon technicians, chemists, and radiology technicians.³

There is also growing evidence that during certain periods of rapid breast development or changes, we are more susceptible to the harmful effects of environmental toxins linked to breast cancer.^{4, 5}

Research into the long-term impacts of environmental toxins on public health has been slow due to its complexity. It's challenging because over a lifetime, individuals are exposed to thousands of stressors, not only environmental but temporal, spatial, and socio-demographic. Many studies have focused on specific stressors such as electromagnetic fields (EMFs) and

ultraviolet light (UV) through dermal uptake, phthalates through inhalation, and chromium, mercury, and lead through food intake. The results of a study in Italy showed that long-term exposures to multiple stressors are also affected by age, gender, and education level, and many studies have focused on specific life stages. There are so many variables: the timing and length of exposure, the various combinations of exposures, and migration patterns.⁶

Although there are numerous studies that point to associations between exposure to environmental toxins and high rates of breast cancer, exposure to ionizing radiation is the only confirmed exposure that raises a woman's risk of developing breast cancer. Suspected carcinogens for breast cancer include but are not limited to polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCB⁷), formaldehyde⁸ and endocrine disrupting chemicals (EDCs) such as DDT⁹, bisphenol A (BPA), phthalates¹⁰, parabens¹¹, and per- and poly-fluoroalkyl substances (PFAS)¹² mimic or interfere with the body's natural system of hormones. Making matters worse, the global climate crisis exacerbates our chemical exposures with every extreme weather event.

The good news is that a framework for improved environmental research has been developed. It's the study of the "exposome:" the totality of exposure individuals experience throughout their lives and how those exposures affect health. Developed by Christopher Wild, PhD (Director of the International Agency for Research on Cancer) it provides a framework to more effectively incorporate our complex environment into the study of health and disease. Dr. Wild has estimated that 70-90% of chronic disease is attributable to environmental toxins.¹³

EXPOSOME

The totality of exposure individuals experience throughout their lives and how those exposures affect health

CHEMICAL EXPOSURES COME FROM MANY SOURCES

We are exposed to multiple chemicals on a daily basis from many different sources that potentially increase our risk of developing breast cancer. BCAction continues to advocate for more effective regulation because we cannot put the burden on consumers to buy "safer" products. These are just a few of the ways we are routinely exposed:

- Through the food we eat – pesticides on produce, recombinant bovine growth hormone (rBGH) in dairy products, BPA in cans and hard plastics and in some retail receipts, and perfluorooctanoic acid (PFOA) in nonstick coatings on cookware.
- Through the products we use – flame retardants in furniture, phthalates and parabens in personal care products, nonylphenols in cleaning products, detergents, shampoos, and paints.
- Through the environment in which we live – chemicals of concern used in the fracking process for natural gas and oil, and fossil-fuel exhaust from automobiles and power plants.

Of urgent concern is the impact of the climate crisis on our involuntary exposure to toxic chemicals. With every extreme weather event, chemicals are released into our water systems, our soil, and our air due to the damage to infrastructure. Whether it's from a tsunami, a wildfire, or a flood, we are being bombarded with chemicals that have serious health impacts. Many of these toxins have been linked to an increase in breast cancer risk.

EVERYDAY CHEMICALS ARE GROSSLY UNDER- REGULATED

The Toxic Substances Control Act (TSCA) of 1976 did not require safety testing for all existing chemicals in order to remain on the market. In the 4+ decades since TSCA was enacted, less than 2% of the more than 80,000 chemicals used and produced in the U.S. have been tested for safety.¹⁴

Production and use of synthetic chemicals are on the

rise. Following the World War II industrial boom, the growing incidence of breast cancer has paralleled the increased production of synthetic chemicals.¹⁵ According to the U.S. Environmental Protection Agency (EPA), as of 2023, a child born today will grow up exposed to more chemicals than a child from any other generation in our nation's history. Of the 85,000 synthetic chemicals in commerce today, only a small fraction has been tested for toxicity on human health.

The use of terms such as "natural," "organic," and "non-toxic" in product labeling is not adequately regulated in the U.S., and improvements to regulation have been slow. The Federal Trade Commission (FTC) is tasked with enforcing consumer protection laws but the FTC Act doesn't require pre-market approval of health claims in the advertising of foods, dietary supplements, or other products.

The FTC's first Green Guides for marketers were issued in 1992, providing general principles that apply to environmental marketing claims. The Guides are currently being updated and revised for the fourth time with the goal of better protecting consumers from false advertising.¹⁶ Unfortunately, the Green Guides are not law, and they do not address use of the terms "sustainable," "natural," and "organic."

Organic claims made for textiles and other products derived from agricultural products are covered by the U.S. Department of Agriculture's (USDA) National Organic Program (NOP). The NOP is a federal regulatory program created to develop and enforce consistent national standards for organically produced agricultural products sold in the U.S. The NOP also accredits third-party organizations to certify that farms and businesses meet the national organic standards.

The USDA developed an organic certification process, and after public complaints of false advertising, they recently issued a rulemaking that amends organic regulations "to strengthen oversight and enforcement of the production, handling, and sale of organic agricultural products."¹⁷

BCAction continues to advocate for improved regulatory enforcement toward safer consumer products, toxin-free food, and environmental protection.

BREAST CANCER ACTION'S PERSPECTIVE

Structural change to our regulatory system is necessary. While BCAction supports individuals making informed choices about products they buy, we know this isn't enough to protect everyone from the cumulative effects of multiple chemical exposures in our daily lives. Comprehensive chemical policy reform will happen only by sustained pressure from consumers and health and environmental justice groups.

People with the furthest relationships to power, especially BIPOC+ communities, are more likely to be employed in occupations with higher levels of toxic chemical exposure such as manufacturing, agriculture, and certain service sector occupations.¹⁸ They are also more likely to live in more highly contaminated communities.¹⁹ Studies have shown that these disproportionate exposures result in racial and ethnic differences in chemical body burdens²⁰ of certain chemicals such as flame retardants, BPA, and phthalates.²¹

Currently in the U.S., the prevailing approach to chemical regulation is reactionary: we wait until harmful effects on public health are reported before regulating a chemical's usage. Instead, we should implement the precautionary principle and demand proven safety of a chemical before it reaches the market. We need to shift the burden of proof to companies making and distributing chemicals and products.

Research into environmental links to diseases must be a priority, and it must be funded independently, not by stakeholders. In order to stop cancer before it starts, we must spend as much time and money researching causes and prevention as we have spent on developing treatments.

BROAD CHEMICAL REFORM IS NECESSARY

The USDA, NOP, FTC, EPA, and Consumer Product Safety Commission must do a better job. Strong legislation reforming our chemical regulations will reduce our exposure to toxic chemicals that lead to many health harms, including breast cancer. Strong chemical regulation must include:

- Burden of Proof
- Precautionary Principle
- Expedited Action on the Worst Chemicals
- Protection for Heavily Impacted Communities
- Stronger Legislation
- Strict Compliance Deadlines and Timetables

WHAT YOU CAN DO

Support strong chemical reform! Take action with us when we call on you to endorse bills that will improve public health.

Get involved with Breast Cancer Action:

- Sign up for our mailing list bcaction.org/signup/
- Follow us on [Instagram](#) and [Facebook](#)
- Help us keep up the pressure by taking action with us on relevant legislation: bcaction.org/take-action/
- Pass on our educational materials to friends and family: bcaction.org/climate-crisis/
- Make a donation or explore other ways to contribute: bcaction.org/ways-to-give/

WHAT YOU CAN DO (CONTINUED)

Stay informed! Read *The New War on Cancer* by Kristina Marusic, *Living Downstream* by Sandra Steingraber, *Silent Spring* by Rachel Carson, *Exposed* by Mark Shapiro, and a free download of [The Ecology of Breast Cancer](#) by Ted Schettler, MD.

For additional information we trust, check out the following environmental health and justice organizations:

- [Breast Cancer Prevention Partners](#)
- [Center for Environmental Health](#)
- [Environmental Working Group](#)
- [Pesticide Action Network North](#)
- [Silent Spring Institute](#)
- [Toxic-Free Future](#)
- [Women's Voices for the Earth](#)

Breast Cancer Action is a national grassroots education and advocacy organization. We believe that breast cancer is a public health crisis and a social justice issue. We advocate for systemic change while supporting people at risk of and living with breast cancer. We do not accept funding from any corporation or organization that profits from or contributes to breast cancer, which allows us to remain an independent and unapologetic voice for those affected by this disease. For more information, go to www.bcaction.org.

REFERENCES

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