# A Consensus Statement on Breast Cancer and the Environment*

As organizations and individuals concerned with breast cancer and other environmentally mediated illnesses, we are aware of the many ways in which science demonstrates that human health and the environment are intimately linked. We also recognize that public health measures have long been, and will likely continue to be, our best hope to reduce the incidence of breast cancer, other cancers, and many other chronic diseases of our time.

The breast cancer epidemic continues. In 2005, breast cancer struck an estimated 211,000 women in the U.S.[1] and more than 1.1 million worldwide—more than any other type of cancer except skin cancer.[2] While environmental factors do not solely account for the increasing incidence of the disease since 1950, neither known risk factors nor improved diagnostic methods explain the escalation in incidence of breast cancer.

Animal and cell studies clearly identify dozens of chemicals that cause mammary tumors or mimic the activity of estrogen, a known breast cancer risk factor, and research evidence documents widespread human exposure. This evidence provides a compelling basis for reducing exposures while we continue to investigate links between the environment and breast cancer.

According to the National Cancer Institute, more than 100,000 chemicals are in use today in the United States.[3] Less than 10 percent of these chemicals have been tested for their effects on human health. As long as 90% of the chemicals we are exposed to are untested for their impact on human health, any public health statement that seeks to minimize the contributing role of chemicals to breast cancer or other diseases should recognize the limited evidentiary base on which it is made.

Exposure to ionizing radiation is the longest-established environmental cause of human breast cancer in both women and men. In 2005, the National Toxicology Program classified X-radiation and gamma radiation as known human carcinogens, because "exposure to these kinds of radiation causes many types of cancer including leukemia and cancers of the thyroid, breast and lung."[4] Also in 2005, a report from the National Research Council established that there is no safe dose of radiation, that "the smallest dose has the potential to cause a small increase in risk [of cancer] to humans."[5] Ionizing radiation is a mutagen as well as a carcinogen, and may even enhance the ability of hormones or other chemicals to cause cancer.[6]

The incidence of breast cancer and other cancers varies widely within the U.S. population. Some of this variation is associated with socioeconomic and

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individual factors such as income disparities, ethnicity, nutrition, and life stressors. These factors are beyond the scope of this statement. However, these factors may influence susceptibility and/or exposure to the environmental factors that are discussed in this statement. Research has made clear that breast cancer and other cancers result from a complex web of causation in which multiple factors interact.

## An epidemic of cancer and chronic disease

Breast cancer is part of a larger cancer epidemic: the lifetime risk of some type of cancer in the U.S. is 1 in 3 for women and 1 in 2 for men.[7] Once rare, cancer is now a familiar occurrence in our population and evidence linking cancer and environmental exposures continues to mount.

Our concerns extend beyond breast cancer, and indeed beyond cancer in general, to the extraordinary number of chronic diseases in the United States and how many of those diseases may be linked to environmental exposures. An estimated 125 million Americans, or 43 percent of the population, have at least one chronic illness, while 60 million people, or 21 percent of the population, suffer from multiple chronic conditions. Nearly 20 million American children suffer from at least one chronic health problem.[8] Cancer, asthma, heart disease, birth defects, developmental disabilities, diabetes, endometriosis, infertility, and Parkinson's disease are among the chronic conditions becoming increasingly common. Scientific understanding of the role of environmental factors varies across this spectrum of diseases, but the emerging evidence is powerful and frequently includes chemical contaminants as contributing to the growing toll of human suffering.

## Common threads in a complex puzzle

Although links between exposures to environmental contaminants and health effects have been known for centuries, emerging science gives us new insights into the changing patterns and mechanisms of disease and disability. For example, most cancers cannot be attributed to a single cause but rather to an incredibly complex interplay of genetic and environmental factors over time, beginning with fetal development. Repeated environmental insults or "hits" throughout life can alter gene expression, damage the immune system, and alter cellular function, including disruption of cell signaling, thereby putting a person on the pathway to cancer or autism or Parkinson's or one of a host of diseases and disorders later in life. Within the complexities of each of these diseases, common elements can be seen. Some of the same environmental exposures are linked to different diseases, depending on the age and genetic makeup of an individual at the time of exposure. For example, fetal exposure to certain polychlorinated biphenyls (PCBs) may cause neurodevelopmental effects in some individuals and contribute to breast cancer risk in others. Finding ways to prevent these diseases requires a new paradigm for solutions based on an interdisciplinary and precautionary approach. Only through collaboration

among scientists, health-affected communities, policy makers and the public will we find meaningful solutions to protect human health and the health of the planet.

## Measuring the pollution in people

When most people hear the word "pollution," they think of chemicals that have contaminated the external environment—their neighborhood, their town, their air or water. But research by the Centers for Disease Control and Prevention (CDC) shows that pollution is personal—the external environment has invaded our internal environment. CDC scientists have found measurable levels of 148 chemicals in the blood and urine of Americans of all ages.[9] Biomonitoring, the process of measuring our chemical body burden, reveals widespread exposure to complex mixtures of toxic chemicals.

## Timing of exposure matters

More than two decades of research on laboratory animals, wildlife and cell behavior demonstrate the inadequacy of the old adage, "the dose makes the poison." Today's scientists know that the timing, duration, and pattern of exposure are equally if not more important than the dose. Low dose exposure to environmental chemicals—parts per billion or even per trillion—during a critical window of development can cause profound, irreversible effects on organs and systems.

The tragic legacy of diethylstilbestrol (DES), a drug prescribed between 1941 to 1971 to prevent miscarriages, shows that cancer can begin in the womb.[10] Women's bodies are the first environments for the next generation, but sadly, it is now clear that toxic chemicals reach even this once-believed safe place. CDC scientists found that women have higher levels of some chemicals in their bodies than men do. A recent study of umbilical cord blood of newborn infants revealed the presence of an average of 200 industrial chemicals per cord blood sample.[11]

## Multiple and chronic exposures

Each of us is exposed to hundreds of synthetic chemicals every day--at home, at school, at work, and as we travel from place to place. However, much of what we know about the health effects of exposure to synthetic chemicals comes from occupational health research. Workers are exposed on a daily basis to higher levels of chemicals than the general public. Aircraft and automotive workers, barbers and hairdressers, chemists, farmers, paper mill workers, and microelectronics workers and women in many other jobs are exposed to known mammary carcinogens.[12] [13] Chemicals used in these occupations ultimately enter the larger environment when they are carried home on work clothes, added to consumer products, dumped into landfills or released into the air or water.[14] Workers and communities near industrial sites are at greatest risk of harm. We must ensure that no population bears an adverse burden of chemical exposures.

## Breast cancer organizations want answers

A national study by Silent Spring Institute found that leaders of grassroots breast cancer advocacy groups want to know how the environment contributes to cancer and strongly support environmental research and precautionary public health policies.[15] Through interviews with 56 leaders in 27 states and 2 Canadian provinces, researchers found that 70-82 percent of leaders of breast cancer advocacy groups rated as "very important" research on workplace chemicals, air pollution, pesticides, household chemicals, drinking water, and endocrine disrupting compounds. Twenty-three percent of the organizations are actively addressing local environmental issues.

## We need precautionary measures to protect human health

Research on environmental contributors to breast cancer and other diseases should be aggressively expanded. But while research continues, scientific uncertainty should not be a reason for inaction on public health policy. Breast cancer is a symptom of a larger public health crisis that demands action by society as a whole.

We need stronger prevention-oriented public health policy that ensures our families have access to clean air, clean water, safe foods, and safe products.

The European Union has increasingly adopted a precautionary approach to chemical policy that should be the goal for the United States and the world. Collaborations in states such as California, Massachusetts, Washington, Maine and New York are also working on chemicals policy reform campaigns. The precautionary principle is a "better safe than sorry" approach.

The precautionary principle provides that:

> When an activity raises threats of harm to the environment or human health, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically….The process of applying the precautionary principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.[16]

The precautionary principle mandates that manufacturers and industries that use or emit toxic chemicals assess the health consequences and environmental impacts of these chemicals *before* introducing them to the marketplace.

As people and organizations deeply concerned with the breast cancer epidemic, we join in signing this statement because we want to reach out to our colleagues

who are concerned with a wide range of other diseases, disorders and conditions in which chemical contaminants are known, or suspected by many scientists to contribute to the toll.

We join in believing that:

- All chemicals must be tested for their effects on health and the environment before they are marketed;
- Chemicals shown to build up in our bodies should be tested promptly for safety or withdrawn from use;
- All patient and health professional organizations should ask themselves whether prevention of the diseases with which they are concerned has its rightful place in their organizational agenda.

***Signed:***

## CHE Breast Cancer Working Group Signatories

*Barbara A. Brenner*, Executive Director, Breast Cancer Action

*Charlotte Brody*, RN, Executive Director, Commonweal

*Theo Colborn*, Ph.D., President, The Endocrine Disruption Exchange, Inc.

*Marian Feinberg*, For A Better Bronx

*Amanda Hawes*, JD, Founder, CalCOSH

*Michael Lerner*, Ph.D., President, Commonweal

*Susan Marmagas*, MPH, Collaborative on Health and the Environment

*Karen J. Miller*, President, Huntington Breast Cancer Action Coalition, Inc., Prevention is the Cure, Inc.

*Jeanne Rizzo*, RN, Executive Director, Breast Cancer Fund

*Deborah Shields*, Executive Director, Massachusetts Breast Cancer Coalition

*Sandra Steingraber*, Ph.D., Distinguished Visiting Scholar, Ithaca College, New York

*Laura Weinberg*, President, Great Neck Breast Cancer Coalition

*Diana Zuckerman*, Ph.D., President, National Research Center for Women & Families

## Organizational Signatories

Breast Cancer Action

Breast Cancer Fund

Breast Health Project

CalCOSH

Capital Region Action Against Breast Cancer
Center for Children's Health and the Environment, Mt. Sinai School of Medicine
Commonweal
Families Against Cancer and Toxins
For A Better Bronx
Grassroots Environmental Education
Great Neck Breast Cancer Coalition
Healthy Children Organizing Project
Huntington Breast Cancer Action Coalition, Inc.
Institute for a Sustainable Future
Iowa Breast Cancer Edu-action
Massachusetts Breast Cancer Coalition
National Research Center for Women and Families
Prevention is the Cure, Inc.
Product Awareness Consulting, LLC
Rhode Island Breast Cancer Coalition
Science and Environmental Health Network
Sciencecorps
Smith Farm Center for Healing and the Arts
The Endocrine Disruption Exchange, Inc.
Women's Community Cancer Project

## **Individual Signatories**

*Jeff Anderson*, MD, Corte Madera, California
*Rita Arditti*, Women's Community Cancer Project
*Mary Bachran*, The Endocrine Disruption Exchange, Inc. (TEDX)
*Carol Becker*, CSW, American Cancer Society - Brooklyn, NY
*Lynn E. Carroll*, Ph.D., The Endocrine Disruption Exchange, Inc. (TEDX)
*Richard Clapp*, D.Sc., MPH, Boston University, School of Public Health
*Barb Daniels*, BOC, CMF, A New Image, Inc.
*Julia Earl*, MS, Preventing Harm, MN
*Margo Golden*, MPH, Women's Community Cancer Project
*Robert Gould*, MD, President, San Francisco Physicians for Social Responsibility

*Janet Gray*, Ph.D., Vassar College, New York
*Laura Holmes*, NH Environmental Health Tracking Program, NH Division of Public Health Service
*Genevieve Howe*, MPH, Boston, Massachusetts
*Karen Folger Jacobs*, Ph.D., Filmmaker, Surviving Breast Cancer
*Molly Jacobs*, MPH, University of Massachusetts, Lowell, Center for Sustainable Production
*Phil Landrigan*, Ph.D., Center for Children's Health and the Environment, Mt. Sinai School of Medicine
*Cheryl A. Maloney*, D.Min, Exective Director, Women's Cancer Resource Center, Minneapolis, Minnesota
*Roy Ozanne*, MD, HMD, CMT, Chapter Leader, Weston A. Price Foundation
*Laura Pole*, RN, MSN, Oncology Clinical Nurse Specialist, Washington DC
*Carlos Sonnenschein*, MD, Professor, Department of Anatomy and Cell Biology, Tufts University School of Medicine
*Ana M. Soto,* MD, Professor, Department of Anatomy and Cell Biology, Tufts University School of Medicine

## RESOURCES

### *International*

**Paris Appeal**

http://www.artac.info/static.php?op=AppelPremPageen.txt&npds=1

Also known as the International Declaration on Chemical Pollution Health Dangers, this document was released in May 2004, signed by hundreds of members of the European Parliament, scientists, physicians, ethicists and citizens from the EU, Canada and the U.S.

**Statement from the Standing Committee of European Doctors** (Comite Permanent Des Medecins Europeens). Health and environment (REACH). Brussels, Belgium.

http://cpme.dyndns.org:591/adopted/CPME_AD_Brd_030905_100_EN.pdf

This document supports the Paris Appeal and calls for substitution of all highly suspicious chemicals and recommends that implementation of the precautionary principle.

**Stockholm Convention on Persistent Organic Pollutants (POPS)**
www.pops.int/
The goal of this treaty is to "rid the world of PCBs, dioxins and furans, and nine highly dangerous pesticides. The United States has signed the treaty but Congress has yet to ratify it.

**WHO Resolution on Cancer Prevention and Control** (2005). 25 May 2005. Fifty-eighth World Health Assembly.
http://www.who.int/cancer/media/news/WHA58%2022-en.pdf

This resolution recognizes the rising trends of cancer risk factors, the number of new cancer cases, and cancer and morbidity worldwide, particularly in developing countries, and calls on member states to develop evidence-based strategies for prevention.

**WHO Report: Ecosystems and Human Well-being**
http://www.millenniumassessment.org/en/index.aspx
This report outlines why ecosystems matter to human health and well-being, what actions are needed to address the consequences of ecosystem disruption, ands the policy implications of the threats that ecosystem change present to health.

***National***

**State of the Evidence: What is the Connection Between the Environment and Breast Cancer, 4th edition.** Breast Cancer Fund and Breast Cancer Action (2006). San Francisco. www.breastcancerfund.org or www.bcaction.org

This document summarizes the current research linking involuntary environmental exposures and increased risk of breast cancer. It also includes recommendations for research needed, and outlines a 10-point plan for policy change to protect public health.

**Health and Environment database.** Collaborative for Health and the Environment
http://database/healthandenvironment.org

**Environmental and Occupational Causes of Cancer: A Review of Recent Scientific Literature** Clapp RW, Howe GK, Jacobs MM. September 2005
www.sustainableproduction.org
This extensive literature review also includes recommendations for reducing exposure to known and suspected carcinogens.

**Louisville Charter**
www.louisvillecharter.org
The Louisville Charter for Safer Chemicals is a set of principles agreed upon in Louisville, Kentucky in May 2004 by a network of environmental health and justice organizations working on chemicals policies and campaigns.

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