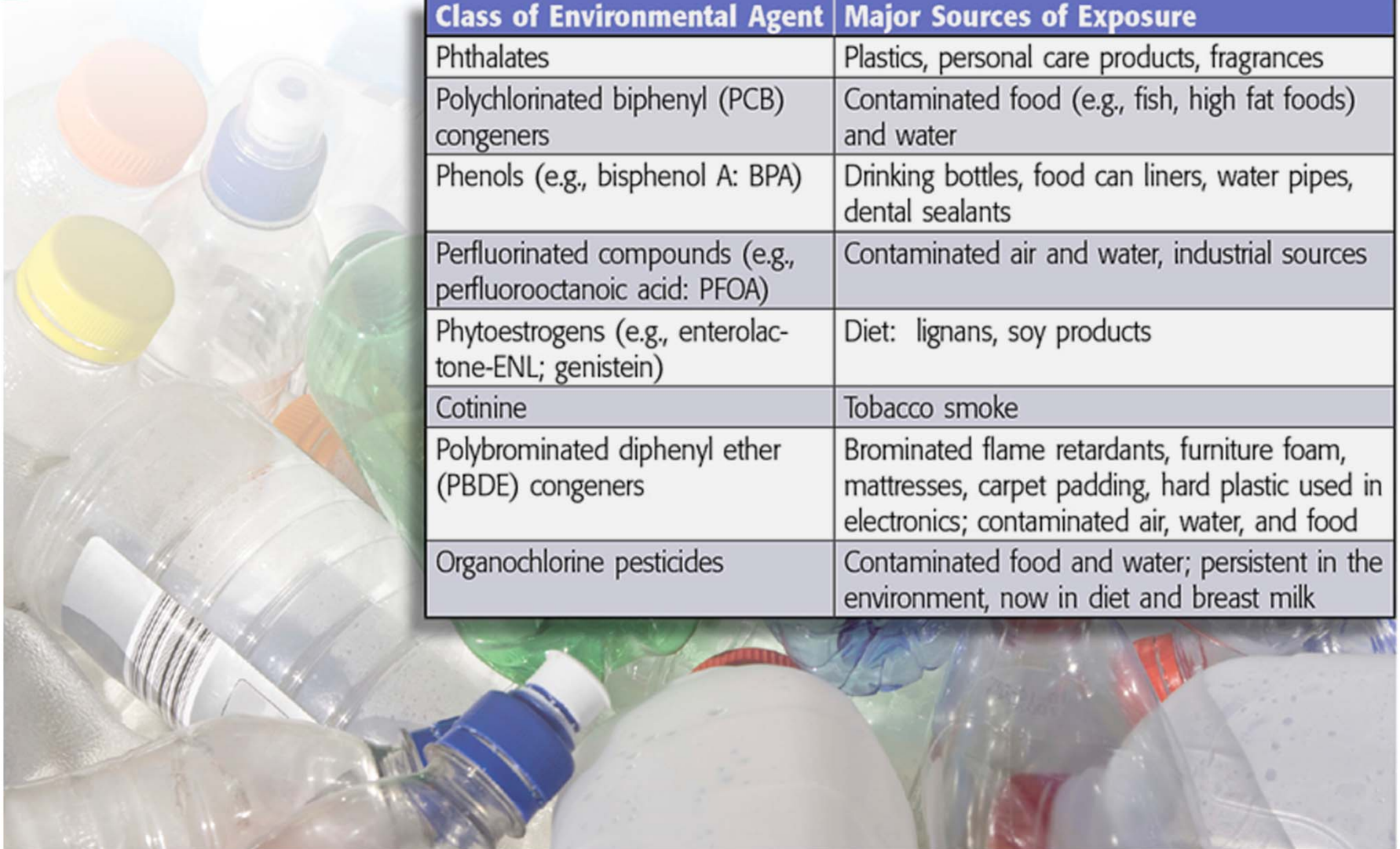




# **Breast Cancer and the Environment Research Centers (BCERCs)**

## Environmental Agents Studied and the Major Sources of Exposure

Class of Environmental Agent	Major Sources of Exposure
Phthalates	Plastics, personal care products, fragrances
Polychlorinated biphenyl (PCB) congeners	Contaminated food (e.g., fish, high fat foods) and water
Phenols (e.g., bisphenol A: BPA)	Drinking bottles, food can liners, water pipes, dental sealants
Perfluorinated compounds (e.g., perfluorooctanoic acid: PFOA)	Contaminated air and water, industrial sources
Phytoestrogens (e.g., enterolactone-ENL; genistein)	Diet: lignans, soy products
Cotinine	Tobacco smoke
Polybrominated diphenyl ether (PBDE) congeners	Brominated flame retardants, furniture foam, mattresses, carpet padding, hard plastic used in electronics; contaminated air, water, and food
Organochlorine pesticides	Contaminated food and water; persistent in the environment, now in diet and breast milk





# **NIEHS-NCI Collaborations in Breast Cancer and the Environment 1992–2009**

- **North East Mid-Atlantic Breast Cancer Program**
- **Long Island Breast Cancer Study Project**
- **NIEHS and NBCC Brainstorming Workshop April 2002**
- **Breast Cancer and the Environment Research Centers**



# Scientific Opportunities Identified During the NIEHS Brainstorming Workshop April 2002

- **Molecular architecture and how it changes with environmental stressors**
  - Utilization of transgenic animal models that are closer to human disease
  - Breast stem cells
  - Normal mammary gland development
- **Windows of Susceptibility/Timing of Exposure**
  - Understanding the factors that impact puberty
  - Onset of menarche, histology of breast development, changes in hormonal environment
  - What happens to the breast at the time of the first pregnancy/lactation that is so pivotal for future risk?
- **Epidemiology, exposure assessment, GxE**
  - Cosmetics and consumer products
  - Longitudinal studies of cohorts of adolescent girls



## Purpose of the BCERCs

- Develop new scientific data on histology, pathology, cellular and subcellular changes in normal mammary gland tissue over the lifespan and compare with exposure-induced changes.
- Conduct a focused longitudinal study of the environmental and genetic determinants of puberty, focusing on the timing of breast development and age at menarche.
- Integrate results from biological, toxicologic, and epidemiologic studies from pertinent windows of exposure and development that may make the breast more susceptible to cancer to disseminate public health messages to young girls and women at risk.



# Key Element for Success: Three-way Communication and Collaboration

**Basic Science**  
(Model systems)



**Public Health**  
(Epidemiology)



Research, Governance  
and Outreach



**Advocates/Community**



## Fox Chase Cancer Center

### Center Director

**Jose Russo, M.D.**

### Collaborators

Mount Sinai School of Medicine  
University of Alabama at Birmingham

### Community Partners

The Renaissance University for Community Education of the Harlem  
Children's Zone Project: Girls, Inc.  
New York City Parks Foundation  
Community Science Specialists  
Share  
Avon Foundation  
American Cancer Society  
Huntington Breast Cancer Action Coalition, New York  
Linda Creed Breast Cancer Foundation, Philadelphia, PA  
Helen's Hope Organization, Philadelphia, PA  
Great Neck Breast Cancer Coalition, New York  
Rose of Hope Scholarship Fund from League of Women Against Cancer,  
Rydal, PA

## Michigan State University

### Center Director

**Sandra Z. Haslam, Ph.D.**

### Community Partners

Faith Access to Community Economic Development  
Susan G. Komen Breast Cancer Foundation, Lansing, MI Chapter  
Michigan Breast Cancer Coalition  
Michigan Environmental Council  
American Cancer Society, Great Lakes Division

## Bay Area – University of California, San Francisco

### Center Director

**Robert A. Hiatt, M.D., Ph.D.**

### Collaborators

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Kaiser Permanente of Northern California  
Lawrence Berkeley National Laboratory  
Marin County Department of Health and Human Services  
New York University  
Roswell Park Cancer Center  
San Francisco Department of Public Health  
University of Michigan  
Zero Breast Cancer

### Community Partners

Alameda County Department of Public Health  
Bay Area Breast Cancer SPORE Advocacy Group  
Bayview Hunters Point Health and Environmental Assessment Task Force  
Breast Cancer Fund

## University of Cincinnati

### Center Director

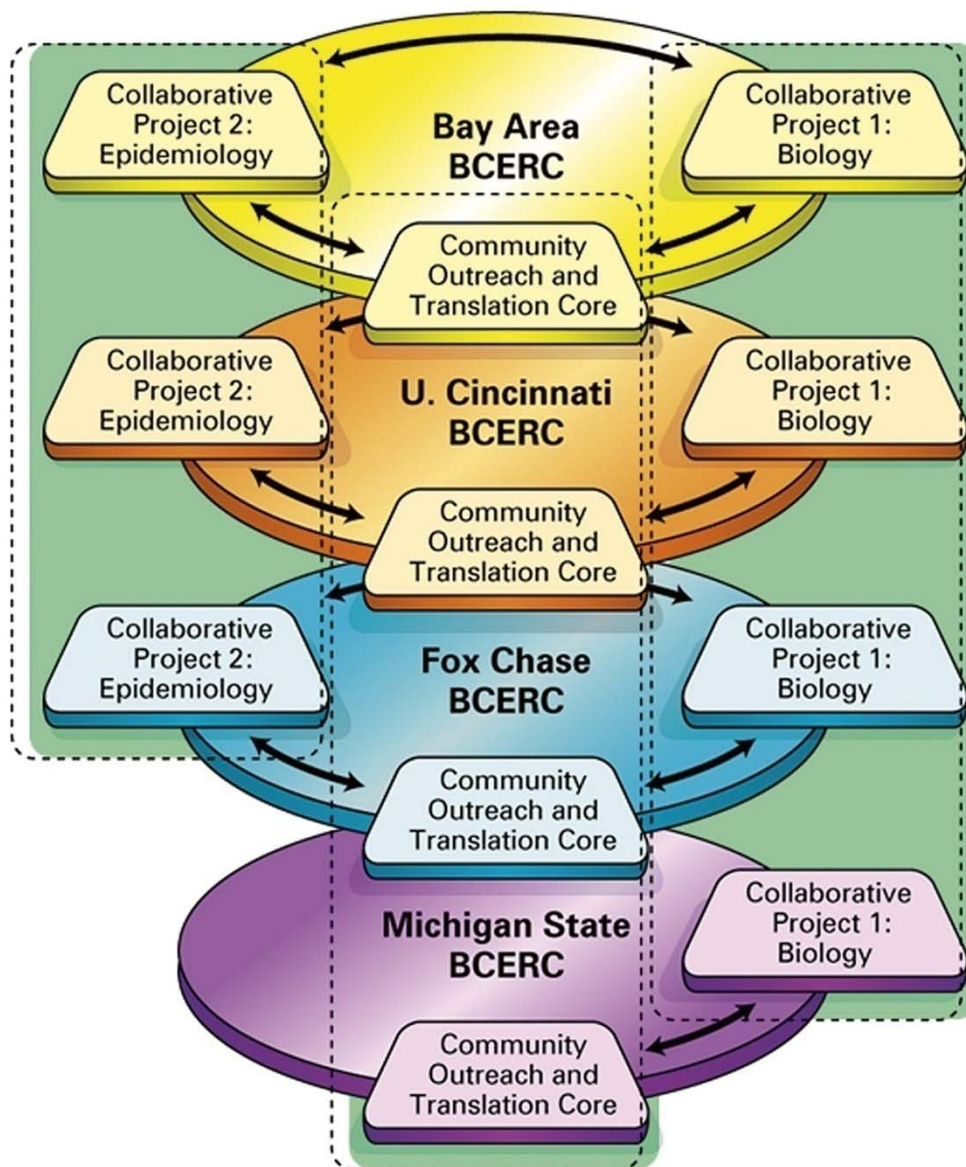
**Robert L. Bornschein, Ph.D.**

### Collaborator

Cincinnati Children's Hospital Medical Center

### Community Partners

Breast Cancer Alliance of Greater Cincinnati  
Breast Cancer Registry of Greater Cincinnati  
Patterns, Inc.  
Pink Ribbon Girls  
Susan G. Komen Breast Cancer Foundation, Greater Cincinnati Affiliate  
American Cancer Society, Cincinnati Area Office  
Breast and Cervical Cancer Screening Project  
National Breast Cancer Coalition  
Sisters Network Cincinnati  
The Wellness Community  
YWCA Breast and Cervical Health Network







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