

A California Roadmap For Identifying Chemicals That Affect Breast Cancer Risk

Symposium co-organizers:

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US Mortality, 2006

Rank	Cause of Death	No. of deaths	% of all deaths
1.	Heart Diseases	631,636	26.0
2.	Cancer	559,888	23.1
3.	Cerebrovascular diseases	137,119	5.7
4.	Chronic lower respiratory diseases	124,583	5.1
5.	Accidents (unintentional injuries)	121,599	5.0
6.	Diabetes mellitus	72,449	3.0
7.	Alzheimer disease	72,432	3.0
8.	Influenza & pneumonia	56,326	2.3
9.	Nephritis*	45,344	1.9
10.	Septicemia	34,234	1.4

*Includes nephrotic syndrome and nephrosis.

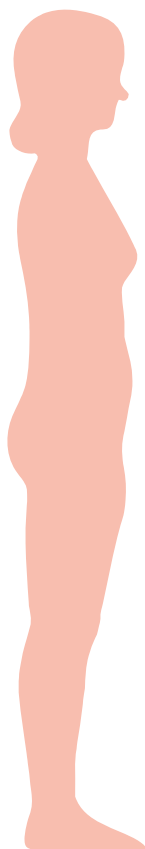
Source: US Mortality Data 2006, National Center for Health Statistics, Centers for Disease Control and Prevention, 2009.



2009 Estimated US Cancer Cases*

Men
766,130

Women
713,220



- 27%** **Breast (1 in 8 women)**
- 14%** **Lung & bronchus**
- 10%** **Colon & rectum**
- 6%** **Uterine corpus**
- 4%** **Non-Hodgkin lymphoma**
- 4%** **Melanoma of skin**
- 4%** **Thyroid**
- 3%** **Kidney & renal pelvis**
- 3%** **Ovary**
- 3%** **Pancreas**
- 22%** **All Other Sites**

*Excludes basal and squamous cell skin cancers and in situ carcinomas except urinary bladder.

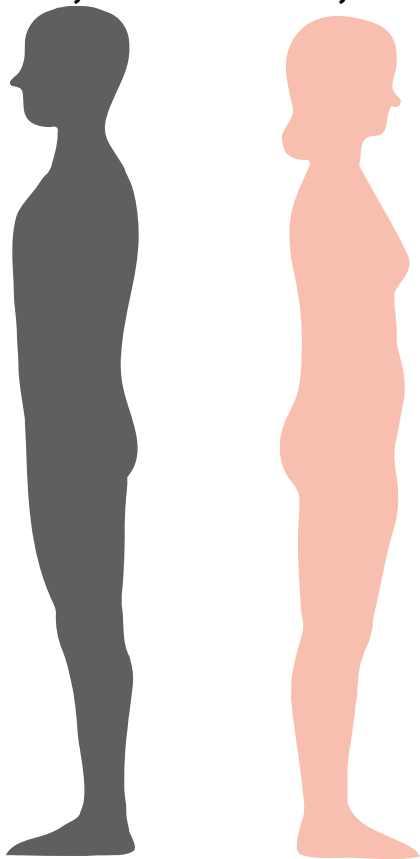
Source: American Cancer Society, 2009.



2009 Estimated US Cancer Deaths*

Men
292,540

Women
269,800



- 26% Lung & bronchus
- 15% Breast**
- 9% Colon & rectum
- 6% Pancreas
- 5% Ovary
- 4% Non-Hodgkin lymphoma
- 3% Leukemia
- 3% Uterine corpus
- 2% Liver & intrahepatic bile duct
- 2% Brain/ONS
- 25% All other sites

2005= 41,116
2006= 40,821

ONS=Other nervous system.

Source: American Cancer Society, 2009.



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BREAST CANCER AND CHEMICALS POLICY PROJECT





Why focus on breast cancer?

- Most breast cancer is not caused by inherited genes
- Increasing recognition that environmental exposures contribute to the development of disease
- Over 200 chemicals have been associated with mammary (breast) cancer in laboratory studies.



California Breast Cancer Research Program (CBCRP)

- Established by the California Legislature in 1993 to administer funding for breast cancer research in the State of California.
- Largest state-funded research effort in the nation
- Funded through the tobacco tax, voluntary tax check-off on personal income tax forms, and individual contributions
- Make grants for California scientists and community researchers to find better ways to prevent, treat and cure breast cancer
- Supports new approaches that other agencies may be reluctant to support.
- Since 1994, the CBCRP has awarded over \$205 million in 860 grants to 98 institutions across the state..

A \$23 million research effort to find answers to:

- What role does the environment play in breast cancer?
- Why do some groups of women bear a greater burden of disease?





Project goals

1. Develop an approach to chemical hazard identification based on currently available methods for detecting chemicals that may raise the risk of breast cancer;
2. Identify data gaps and research needs to improve chemical decision-making, including informing a shift toward rapid screening methods performed without laboratory animals.
3. Pilot a project model that could be applied to other disease endpoints, with the ultimate goal of producing a comprehensive approach to chemical hazard identification.



Process

- Core and Expert Panel created.
- Identification of Biological Pathways Relevant to Development of Breast cancer
- Identification of Toxicity Assays
- Development of a Toxicity Testing Approach
- Prioritizing Chemicals for Testing



End products

- Publicly available report to funder intended for state of California to inform Green Chemistry Initiative Process
- Peer-reviewed publications
- Pilot a model that can be used for other disease endpoints – creating a comprehensive toxicity testing approach.

BCCP Panel members

- **Sarah Janssen***, MD, PhD, MPH University of California San Francisco & Natural Resources Defense Council
- **Megan Schwarzman***, MD, MPH University of California Berkeley & University of California, San Francisco
- **Susan Braun, MA** Commonweal
- **Vincent James Cogliano, PhD** WHO International Agency for Research on Cancer
- **Shanaz Dairkee ***, PhD California Pacific Medical Center Research Institute
- **Suzanne Fenton, PhD** National Institute of Environmental Health Sciences
- **William H. Goodson III, MD** California Pacific Medical Center Research Institute
- **Joe Guth ***, PhD, JD Science and Environmental Health Network
- **Dale Johnson, PharmD, PhD** University California Berkeley & Emiliem
- **Jean Latimer, PhD** School of Medicine University of Pittsburgh
- **Ron Melnick, PhD** National Institute of Environmental Health Sciences
- **Rachel Morello-Frosch, PhD, MPH** University of California Berkeley
- **Ruthann A. Rudel, MS** Silent Spring Institute
- **Gina Solomon***, MD, MPH University of California San Francisco & Natural Resources Defense Council
- **Carlos Sonnenschein, MD** Tufts University School of Medicine
- **Lauren Zeise***, PhD Cal/EPA Office of Environmental Health Hazard Assessment
- **Catherin Thomsen, MPH** Funding Liaison, CBCRP



Symposium speakers

- **Sarah Janssen, MD, PhD, MPH** – moderator
- **Megan Schwarzman, M.D., M.P.H.**
“Reflecting Science in Policy: A Perspective on the California Green Chemistry Initiative”
- **Suzanne E. Fenton, Ph.D.**
“Early Life Exposures: Lifelong Impact on Mammary Gland Development and Function.”
- **Lauren Zeise, PhD**
“Identifying potential breast carcinogens: UC-Berkeley Expert Panel Findings.”