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Scientists Identify Highest Priority Toxic Chemicals to Target for Breast Cancer Prevention
Peer-Reviewed Study Advances Prevention Efforts and Shows that Animal Tests Predict Likely Human Breast Carcinogens

A new peer-reviewed study advances breast cancer prevention efforts by identifying the most important chemicals women should reduce exposure to, and documenting how to test for their presence in women’s bodies. The study was conducted by scientists at the Silent Spring Institute and was published today in a National Institutes of Health (NIH) journal, Environmental Health Perspectives.

The study also demonstrates that when chemicals are shown to cause mammary cancer in rats, studies often confirm those same chemicals are associated with breast cancer in women. This validates and extends findings from other leading authorities, including the International Agency for Research on Cancer (IARC), which has declared that “it is biologically plausible that agents for which there is sufficient evidence of carcinogenicity in experimental animals also present a carcinogenic hazard to humans.” In fact, IARC has demonstrated that every known human carcinogen that has been extensively tested is also carcinogenic in animals.

“The study provides a road map for breast cancer prevention by identifying high-priority chemicals that women are most commonly exposed to and demonstrates how to measure exposure. This information will guide efforts to reduce exposure to chemicals linked to breast cancer, and help researchers study how women are being affected,” said study author Ruthann Rudel, MS, Research Director of the Silent Spring Institute.

The study, funded by the Avon Foundation for Women, identifies 17 types of chemicals as a high priority because they cause mammary tumors in animals and many women are exposed to them. These include chemicals in gasoline, diesel and other vehicle exhaust, flame retardants, stain-resistant textiles, paint removers, and disinfection byproducts in drinking water.

This is the first study to comprehensively compile and recommend methods for measuring the presence of these potential breast carcinogens in women’s bodies. By summarizing these methods, and providing an evidence-based prioritization of chemicals based on animal evidence, this study can greatly expand future research into breast cancer. Previous breast cancer studies have not tested women for many chemicals linked to breast cancer, due to a lack of knowledge both about which chemicals to focus on, and about how best to test for them.

Three authoritative government panels (the President’s Cancer Panel, the Institute of Medicine, and the Interagency Breast Cancer & Environmental Research Coordinating Committee) have pointed to environmental chemicals as a promising direction for breast cancer prevention.

The National Institutes of Health will incorporate the study’s recommendations as it prepares to test samples from around 50,000 women in its closely watched study of sisters to evaluate causes of breast cancer. “This paper is a thorough review of toxicology data and biomarkers relevant to breast cancer in humans. It’s a terrific
resource for epidemiologists thinking about studying environmental contributors to breast cancer or trying to understand the associations they see in their questionnaire data,” said Dale Sandler, PhD, Chief of Epidemiology at NIH’s National Institute of Environmental Health Sciences (NIEHS). “This is a valuable compendium that should help me in my work with the Sister Study cohort.” In addition, UC Berkeley and the Silent Spring Institute, in partnership with San Francisco Firefighters Cancer Prevention Foundation and United Fire Service Women, will conduct a study of office workers and firefighters focusing on the target chemicals and using the testing methods recommended in today’s study.

“Every woman in America has been exposed to chemicals that may increase her risk of getting breast cancer. Unfortunately, the link between toxic chemicals and breast cancer has largely been ignored,” said Julia Brody, PhD, study author and Executive Director at Silent Spring Institute. “Reducing chemical exposures could save many, many women’s lives. When you talk to people about breast cancer prevention, chemical exposure often isn’t even on their radar. Studies that address toxic chemical exposure account for just a drop in the bucket of money spent on breast cancer.”

“It’s impossible to pinpoint why I got breast cancer at 35 years old and with no family history, but like all women I’ve been exposed to harmful chemicals. We can’t afford to ignore any of the causes of breast cancer. It is imperative that industry and the government reduce exposure to the most problematic chemicals. In the meantime, women can create little changes and choose wiser to reduce their exposure and become advocates for their own bodies,” said Kristi Marsh, author of the book “Little Changes” and advocate for women's environmental health.

Gasoline and chemicals formed by combustion (e.g., benzene and butadiene) are among the largest sources of mammary carcinogens in the environment. People are exposed from vehicles, lawn equipment, tobacco smoke, and charred or burned food. Other mammary carcinogens include solvents, such as methylene chloride and other halogenated organic solvents used in spot removers, specialty cleaners, and industrial degreasers; pharmaceutical hormones such as hormone replacement therapy; certain flame retardants; a chemical used in stain-resistant textiles and nonstick coatings; and styrene, which is in tobacco smoke and is also used to make Styrofoam. Drinking water can contain mammary carcinogens, such as byproducts of disinfection or solvents that are common well water contaminants.

Steps Individuals Can Take:

- Lessen exposure to fumes from gasoline. Limit exposure to exhaust from diesel or other fuel combustion, for example from vehicles or generators. Don’t idle your car. Use electric rather than gas powered lawn mowers, leaf blowers and weed whackers.
- Use a ventilation fan when you cook and limit consumption of burned or charred food.
- Don’t buy furniture with polyurethane foam or ask for foam not treated with flame retardants. California’s decision to repeal its requirement that foam in furniture be flame resistant is expected to result in an increased availability of flame retardant-free furniture across the U.S.
- Avoid stain-resistant rugs, furniture and fabrics.
- Find a dry-cleaner who doesn’t use PERC or other solvents; ask for “wet cleaning.”
- Purchase a solid carbon block drinking water filter.
- Reduce exposure to chemicals in house dust by removing shoes at the door, using a vacuum with a HEPA filter, and cleaning with wet rags and mops.

*Silent Spring Institute is a scientific research organization the studies links between the environment and women's health. www.silentspring.org*