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How Chemical Regulation Can Reduce Breast Cancer

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In the United States and worldwide, breast cancer is the most common cancer in women. Despite millions of dollars spent on awareness campaigns and the search for a cure, breast cancer is the leading cause of death for women 30 to 50 years old in the U.S. Because most women diagnosed with the disease have no previous history of family risk, researchers are also considering the impact of environmental risks – associated not only with the foods we eat and the air and water we take in, but also with the everyday products in our homes. Too often, such products contain untested and unregulated chemicals that may increase the risk of cancer.

Untested Chemicals on the U.S. Market

In the U.S., more than 80,000 chemicals are currently on the market and most have never been tested for their health effects. These chemicals are in cleaners, building materials, cosmetics, furniture, clothing, electronics, and toys – and many are, or may be, causes of cancer. A study by Silent Spring Institute, of which Dr. Brody is the executive director, identified 102 chemicals that people are, or were, commonly exposed to that have caused mammary tumors in animal studies by the National Toxicology Program, the International Agency for Research on Cancer, and other authoritative bodies. Chemicals can cause harm through direct damage to genetic building blocks (DNA), promoting tumor growth, or altering mammary gland development in ways that increase susceptibility to cancer. For chemicals whose impact on both animals and humans has been adequately studied, our research team at Silent Spring Institute found that chemicals that increase the risk of breast cancer in rodents usually do the same for women.

Even while snuggling up to watch a movie on the sofa, most Americans come into contact with dozens of toxic chemicals. Most furniture contains flame retardant chemicals, which migrate out of chairs and sofas and enter the indoor environment, where we are exposed to them on a regular basis. Some of these chemicals are harmful to development, reproduction, and brain function, and some are carcinogenic. After years of scientists and activists advocating for better methods of fire safety, policy will soon allow furniture to be made without these chemicals. However, flame retardant use continues in many other textiles, electronics, building materials, and plastics.

Lax Regulation and Insufficient Research

American consumers have become increasingly aware of certain kinds of chemical risks – and they can wield purchasing power to avoid risks from food grown with pesticides, for example. But it is nearly impossible for even the most aware consumer to avoid potentially dangerous chemicals used in unlabeled products. As researchers have discovered, even products labeled as “free” of certain chemicals may still contain them – either intentionally or from unintentional contamination. Weak oversight by manufacturers and lax or nonexistent government regulation has exposed millions of Americans to chemicals with known carcinogenic properties.

Equally if not more problematic is the proliferation of chemicals whose health effects have not been fully explored by scientists. Potential effects on breast cancer are a case in point. All too often, researchers are left to study issues after the fact – to try to learn whether women with breast cancer had greater exposure to risky chemicals than women free of cancer. Alternatively, researchers investigate whether a chemical is harmful by following people who have been exposed to see if they eventually get sick. But these approaches are backwards and very costly. People suffer through treatments and disruption of work and family, and lives are needlessly cut short if we fail to address chemical dangers in advance. Taxpayers and consumers pay too much for after-the-fact research and for cancer treatments funded through private health insurance, Medicare, and Medicaid.

Chemical regulation and research have gained sudden new visibility lately – but only after non-regulation allowed a massive January 2014 chemical spill in West Virginia to leave 300,000 people with no drinking water. That crisis also revealed that the chemicals spilled had never been adequately assessed for human risks. Too

often, Americans delay action until highly visible crises happen. Across the country people face chronic threats beyond risks from the sudden episode in West Virginia. Many less visible dangers come from toxic chemicals seeping into our homes and bodies day after day.

Are we condemned to relearn lessons we should have learned long ago? Leaded gasoline and lead-based paint were phased out beginning in the 1970s, but only after it was known that children were being poisoned. It is now estimated that lead exposure resulted in a total drop of 23 million IQ points in the U.S. population. Similarly, thousands of workers who used asbestos died from lung cancer before asbestos was banned from many uses. Women may now be getting breast cancer from earlier exposure to chemicals that were banned too late, or have yet to be banned, as we wait for invisible threats to mount. Updating U.S. laws could help us uncover and act on threats, such as these. The Toxic Substances Control Act passed in 1976 supposedly allowed the Environmental Protection Agency to regulate toxic chemicals. But this law "grandfathered" 62,000 chemicals, freeing them from oversight. Only 200 chemicals have been assessed for safety and fewer than a dozen have been regulated. More than three quarters of American citizens – and a similarly overwhelming percent of small business owners – agree that U.S. chemicals need better regulation. This is not really a left versus right issue. Most Americans do not care about ideological debates and simply want to update policies to protect human health. Today's technologies are starting to make it feasible to screen chemicals for health effects before products containing them go on the market. The law should give the Environmental Protection Agency the authority to 1) require and use toxicological data to make scientific decisions about risk, 2) regulate harmful chemicals and also encourage marketplace innovation to develop safer alternatives, and 3) allow states to regulate chemicals, even if they have not yet been regulated by the Agency. Mandating this would allow the U.S. to head off many chemical cancer risks – in the process reducing the numbers of women who will suffer from breast cancer.

Read more in Julia G. Brody, Kristen B. Moysich, Olivier Humblet, Kathleen R. Attfield, Gregory P. Beehler, and Ruthann A. Rudel, "Environmental Pollutants and Breast Cancer: Epidemiologic Studies." *Cancer* 109, no. S12 (2007): 2667-2711; Ruthann A. Rudel, Janet M. Ackerman, Kathleen R. Attfield, and Julia G. Brody, "New Exposure Biomarkers as Tools for Breast Cancer Epidemiology, Biomonitoring, and Prevention: A Systematic Approach Based on Animal Evidence." *Environmental Health Perspectives* (2014); and Robin E. Dodson, Marcia Nishioka, Laurel J. Standley, Laura J. Perovich, Julia G. Brody, and Ruthann A. Rudel, "Endocrine Disruptors and Asthma-Associated Chemicals in Consumer Products." *Environmental Health Perspectives* 120, no. 7 (2012): 935-943.