SILENT SPRING INSTITUTE

RESEARCHING THE ENVIRONMENT AND WOMEN'S HEALTH

29 Crafts Street, Newton, MA 02458 617 332 4288 fax 617 332 4284
115 Enterprise Road, Hyannis, MA 02601 508 778 1942
email info@silentspring.org www.silentspring.org

Household Exposure to Environmental Pollutants Targeted in Breast Cancer Study

Questions and Answers

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In 1999-2003, a "Household Exposure Study" was conducted by Silent Spring Institute (SSI) to gather information about exposure to endocrine disrupting compounds (EDCs) – chemicals that can mimic or interfere with hormones – and mammary carcinogens. SSI tested 120 homes on Cape Cod, MA, for 89 chemicals. Results were published in the October 2003 issue of the peer-reviewed journal *Environmental Science & Technology*. For a fact sheet about results, go to silentspring.org/pdf/our_publications/EST_2003_article_summary.pdf.

The homes originally selected for testing were from the 2100 women who participated in the SSI Cape Cod Breast Cancer and Environment Study in 1999-2000. Half of the women in that study were chosen because they were diagnosed with breast cancer between 1988-1995; the other half were controls of similar age. This week, SSI is reporting to participants on levels of chemicals detected in their own homes and offering to retest in 14 homes.

Why is Silent Spring Institute retesting some of those homes?

SSI and Massachusetts Department of Public Health (MDPH) selected for retesting those homes that had levels of a contaminant that were unusually high and exceeded a federal health guideline, or homes with higher-than-expected levels of a contaminant for which the federal government has not yet set a health guideline. All of the homes that contained a breakdown product of tris (2,3-dibromopropyl) phosphate (a flame retardant) were selected for retesting because this chemical is a potent carcinogen that was banned in the 1970s. With further testing, SSI hopes to determine where and why it is still present in some homes.

How can people reduce the levels of chemicals in their homes?

To reduce chemical levels in homes, choose less toxic alternatives when shopping for common household products. We must also work together to develop more protective public health policies, for example through organizations such as Massachusetts Breast Cancer Coalition and Alliance for a Healthy Tomorrow.

Research on indoor air pollution identifies some steps to reduce exposure:

- Reduce or eliminate use of pesticides.
- Avoid tracking pollutants into your home by placing a rug at each entry; remove outdoor shoes there.
- Improve indoor air quality by opening windows.
- Choose a vacuum cleaner that contains the dust from the floor, rather than spreading it. *Consumerreports.org* lists the best ones.
- Don't smoke indoors.
- Vent your gas stove, broiler, grill, or fireplace.
- Avoid using wood-burning fireplaces and stoves.
- Choose fuel-efficient vehicles, because auto exhaust contains mammary carcinogens.
- Choose fragrance-free cleaning products and cosmetics and try to avoid cosmetics and personal care products with phthalates and parabens. For details about which products contain these chemicals, go to www.safecosmetics.org.

- Don't store gas-powered engines, gasoline, or solvents in your basement or an attached garage. If you must, open the space to the outdoor air, ventilate, and consider storing hazards in an airtight box.
- Use glues, paints, solvents, and fingernail polish outside or in a well-ventilated area.
- Shop for electronics and furniture that don't contain the flame retardant, PBDE.

For additional details: http://www.epa.gov/iaq/pubs/insidest.html, http://www.checnet.org/healthehouse/home/index.asp, http://toxtown.nlm.nih.gov and http://www.safecosmetics.org/.

What are the links between low exposures to these chemicals and cancer?

You may hear different assessments from different sources, because there isn't enough evidence yet for scientists to agree on whether some of these chemicals at low levels are linked to disease. For about 30 of the chemicals in this study, the SSI measurements are the first ever reported from indoor environments. For 28 of the chemicals, no health-based federal guideline has yet been developed for evaluating health risk associated with exposures.

SSI selected these chemicals for testing based on laboratory studies that show they can affect the hormone system or cause mammary tumors in animals. Many of the chemicals mimic estrogen, resulting in the growth of human breast cancer cells in laboratory studies. Scientists have not yet investigated a link between most of these chemicals and breast cancer in women, and the few previous studies have yielded conflicting results. But given that we do know that natural estrogen and pharmaceutical hormones, like hormone replacement therapy (HRT), cause breast cancer, the hypothesis that estrogen-mimicking chemicals from other sources also increase breast cancer risk is strong enough that many would want to reduce exposure as a precaution.

Additionally, there is little known about the cumulative effects of multiple chemicals since most are tested singly. However, people are exposed to chemicals in combinations, not singly. SSI found 26 target chemicals per home, on average.

Are these findings relevant beyond Cape Cod? Is Cape Cod more contaminated than other areas?

This research is important and relevant to women and families everywhere, not just on Cape Cod. The chemicals SSI measured come from common products and are also in air pollution, so it is expected they would be found across the US.

Some of the results do have particular significance for Cape Cod. For a few of the chemicals Cape Cod results may be compared to other places. For DDT, chlordane, carbaryl, methoxychlor, pentachlorophenol and propoxur, the levels found in Cape Cod homes were higher than in studies done in Long Island, Seattle, Detroit, Los Angeles, Iowa or Arizona. Cape Cod homes did not have the highest levels of chemicals such as PAH, PCBs, diazinon, chlorpyrifos and permethrin. These regional differences could be due to differences in product use or air pollution.

SSI is beginning new research that will compare Cape Cod homes with homes in Richmond, CA, and Pittsburgh, PA, to learn more about pollutant levels on Cape Cod that could be studied as a potential factor in higher breast cancer risk on the Cape.

Why spend money on this research when no one knows the relationship between these contaminant levels and breast cancer?

Understanding exposure is a critical first step toward evaluating health effects, including breast cancer risk. The Massachusetts Breast Cancer Coalition founded Silent Spring Institute specifically to do this kind of research, because most breast cancer studies are focused on diagnosis and treatment and not placing an emphasis on science that can lead to prevention.