

October 24, 2006Contact: Gwen Dwyer, Silent Spring Institute, 617-332-4288 ext. 26, dwyer@silentspring.org

No Link Identified between Breast Cancer and Historical Markers for Drinking Water Contamination

A new, peer-reviewed study by Silent Spring Institute found no consistent evidence of an association between indicators of wastewater (nitrate-nitrogen levels) in drinking water and breast cancer risk on Cape Cod, Massachusetts. The study was published in *Environmental Health: A Global Access Science Source*, <http://www.ehjournal.net/content/5/1/28>.

Study Methods:

As part of the Cape Cod Breast Cancer and Environment Study, this study assessed yearly exposures since 1972 to contaminated public drinking water for 824 Cape Cod women diagnosed with breast cancer in 1988-1995 and 745 controls. Eligible study participants lived in homes served by public drinking water supplies and never lived in a home served by a Cape Cod private well.

Drinking water contaminated by wastewater is a potential source of exposure to mammary carcinogens and endocrine disrupting compounds (EDCs). These contaminants are hypothesized to increase breast cancer risk. To investigate a woman's exposure, the study needed indicators to quantify exposure over many years. Because these contaminants are not routinely measured in drinking water, the study used two proxy indicators: nitrate levels in public supply wells (an established indicator of wastewater impact) and the extent of developed land in drinking water recharge zones.

Study Findings:

The study found no consistent evidence of an association between nitrate-nitrogen levels (an indicator of wastewater) in drinking water and breast cancer. The study found weak evidence of a possible link to increased breast cancer risk when total land use in recharge zones was considered. However, this intriguing finding was not statistically stable. An additional key finding was that nearly all the women in the study were exposed to wastewater-contaminated drinking water at some level.

Interpreting These Results:

While we found no association, it is important to point out that this study has limitations that may explain why we found no association, even where there may be one. For example, nearly everyone in the study had been exposed, and there were few women with no exposure for comparison – nearly all of the women in the study have been exposed at some level. Also – by using a proxy (nitrate-nitrogen in land use) to determine levels of exposure to endocrine disruptors, our measurement was inexact and requires further study.

Further Research:

Silent Spring Institute will continue to examine groundwater contaminants and routes of exposure to hormone-disrupting chemicals. A 2006 Silent Spring Institute study by Swartz et al., published in *Environmental Science & Technology*, found troubling estrogenic contamination of Cape Cod groundwater and documented that EDCs from septic systems leach into groundwater. Further research is needed to determine the levels at which women are exposed to these endocrine disruptors, which may contribute to increased risk of hormonally-responsive disease, including breast cancer.

Study Funders:

This research was supported by the Commonwealth of Massachusetts, Susan G. Komen Breast Cancer Foundation, National Institute of Environmental Health Sciences, and the National Cancer Institute.

Complete Citation:

Brody, J.G., A. Aschengrau, W. McKelvey, C.H. Swartz, T. Kennedy, R.A. Rudel: **Breast cancer risk and drinking water contaminated by wastewater: a case control study.** *Environmental Health: A Global Access Science Source* 2006, **5:28**.

For additional information about Silent Spring Institute, please visit www.SilentSpring.org.