

# Improve chemical testing on mammary glands to reduce risk of breast cancer

October 24 2014, by Amabelle Ocampo

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A new commentary by Center for Occupational and Environmental Health (COEH) researchers, published in *Reproductive Toxicology*, covers the emerging evidence that chemical exposure may contribute to breast cancer risk. It recommends improving test protocols to investigate how chemicals increase breast cancer risk and alter mammary gland structure and function.

"A key challenge we face in understanding how mammary gland development can be altered by chemical factors is the lack of data for thousands of commonly used chemicals," says COEH research scientist,

Megan Schwarzman, a coauthor of the commentary. "We hope that increased chemical testing will help bridge that data gap."

Evidence suggests that [mammary gland](#) (MG) development is a complex process that extends from gestation through fetal and neonatal growth, puberty, and pregnancy; altered MG development increases the risk of [breast cancer](#) and other adverse outcomes; and chemical exposures during susceptible windows of development may alter the MG in ways that increase risk for later disease.

"In general, people encounter hundreds of chemicals in the home and workplace," says Schwarzman. "They are in the air that we breathe, the water we drink, in our cosmetics, electronics, toys, clothing, packaging, and indoor environment."

While inherited factors likely contribute to a third of breast cancer cases, it is unknown what causes the remaining cases, and researchers suspect that environmental factors, including chemical exposures, may play a significant role.

In addition, altered MG development is also associated with non-cancer effects, such as impaired lactation or male gynecomastia. Further, [breast cancer risk](#) is elevated by extended exposure to high levels of some hormones, which can occur in women who had early puberty, are obese, delayed their first pregnancy until age 30 or older, or experienced late menopause.

"Traditional toxicology tests are likely missing many important effects on the MG," the commentary concludes. "A greater understanding of these mechanisms will help to clarify the risks of environmental exposures, provide evidence to reduce exposure, and ultimately reduce the burden of disease."

**More information:** Gwendolyn Osborne, Ruthann Rudel, Megan Schwarzman, "Evaluating chemical effects on mammary gland development: A critical need in disease prevention, *Reproductive Toxicology*," Available online 1 August 2014, ISSN 0890-6238, [dx.doi.org/10.1016/j.reprotox.2014.07.077](https://doi.org/10.1016/j.reprotox.2014.07.077).

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