

## Phenols and Breast Cancer Risk among Residents of Long Island, NY

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It is unknown whether the phenols that are frequently used in personal care products increase breast cancer risk. Prior laboratory studies have shown that some of these chemicals have estrogenic properties. We investigated the association between breast cancer risk and urinary concentrations of parabens, triclosan, and benzophenone-3 (BP-3) among women living in Long Island, NY from 1996-1997.

**Methods:** The Long Island Breast Cancer Study Project is a population-based case-control study with 1508 newly diagnosed cases and 1556 controls. Comprehensive risk factor information was collected through in-person interviews. A random sample (400 cases and 400 controls) was selected for analysis of urinary phenol compounds by solid phase extraction coupled to high performance liquid chromatography-isotope dilution tandem mass spectrometry. Creatinine-corrected biomarker concentrations were quantiled according to the control distribution (tertiles or non-detect/<median/≥median). Odds ratios (OR) and 95% confidence intervals (CI) were estimated using logistic regression. All models were adjusted for age (at diagnosis for cases or at identification for controls). A wide range of known and suspected breast cancer risk factors was assessed as potential confounders; none changed the estimates of effect by more than 10%.

**Results:** Phenol concentrations measured in urine collected over a decade ago from these women were similar in magnitude to recent US National Health and Nutrition Examination Survey measurements; however absolute differences between population medians suggest that paraben concentrations may have been slightly higher while BP-3 and triclosan concentrations may have been slightly lower. Women with the highest methyparaben concentrations were at increased risk of breast cancer compared to those with the lowest concentrations (OR<sub>age-adj</sub>=1.50, 95% CI=1.07-2.12, p<sub>trend</sub>=0.02). Similarly, higher triclosan concentrations were associated with increased breast cancer risk (OR<sub>age-adj</sub>=1.49, 95% CI=1.06-2.10, p<sub>trend</sub>=0.02). No association between breast cancer risk and BP-3 was observed. Results for quantiles based on uncorrected biomarker concentrations were similar.

**Discussion:** Few modifiable breast cancer risk factors are known. The chemicals examined in this study are found in commonly used personal care products. Should these findings be confirmed, reduced use of such phenol-containing products could potentially lead to decreased breast cancer risk.

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**Disclaimer:** The findings and conclusions in this presentation are those of the authors and do not necessarily represent the official position of the CDC.