

## LAY ABSTRACT

**TITLE:** A comprehensive analysis of how environmental risks of breast cancer are portrayed on the Internet.

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**Background:** Effective online communication about the environmental risk factors of breast cancer is essential because of the multitude of environmental exposures and debate regarding the conclusiveness of scientific evidence.

**Purpose:** The aim of this study was to assess the content, readability, and cultural sensitivity of online resources focused on the environmental risks factors of breast cancer.

**Methods:** A purposive sample of webpages focused on environmental risk factors of breast cancer was obtained through a Google search using 17 search terms. Using nonparametric statistics, we assessed the content, readability, and cultural appropriateness of 235 webpages.

**Results:** Eighty-two percent of webpages referred to research studies in their content. National- and state-level websites were found to communicate accurate messages about environmental risks, but the majority of commercial websites or those intended for the general public did not often provide relevant and accurate information with appropriate references. Our analysis found that the majority of online content corresponded with the current science on breast cancer and environmental risk. Regarding the relationship between environmental exposures and breast cancer risk,

75% (n=27) of the webpages discussing aluminum exposure from deodorant mentioned an inconclusive or non-significant relationship to breast cancer risk, while 25.0% (n=9) suggested increased risk; of websites focused on polychlorinated biphenyls (PCB), 56.3% (n=9) suggested a non-significant or inconclusive relationship, while 43.8% (n=7) showed increased risk; of webpages focused on polyaromatic hydrocarbons (PAH), 54.6% (n=6) mentioned non-significant or inconclusive findings, while 45.5% (n=5) discussed increased breast cancer risk. For the majority of sites, readability was at a high-school reading grade level. Webpages were not explicitly intended for specific racial/ethnic groups.

**Discussion:** Technical language and non-culturally specific messages may hinder users' attention to and comprehension of online breast cancer information. Additional research is needed to examine in-depth the accuracy of this online content.

**Translation to Health Education Practice:** Findings suggest that collaborations between scientists, health educators, website designers/media professionals, and the community will be critical to the delivery of accurate, up-to-date, plain-language, and culturally sensitive information about breast cancer and the environment.

**Keywords:** Breast cancer, environmental risk factors, readability, website content