

## Background

Exposure to environmental chemicals affects inflammation, immune function, hormone synthesis, and metabolism, as well as cellular mechanisms including cellular signaling and apoptosis. However, little attention has been paid to environmental exposures among cancer survivors, who are at increased risk of cancer, cardiovascular disease, and metabolic disease compared to the general population.

## Methods

- We recruited 17 Black and 8 Hispanic breast cancer survivors in Washington, DC and Hackensack, NJ.
- Survivors completed questionnaires about their demographics and breast cancer diagnosis and wore silicone wristbands for 7 days.
- The wristbands passively sampled participants' exposome, including ambient air and dermal sources of exposure.
- After deployment, the wristbands were extracted and extract samples were analyzed to provide quantitative data on >1,500 chemicals by using automated deconvolution software to compare spectra from a gas chromatograph-mass spectrometer with compound libraries.
- Sample concentrations were adjusted for wear time and wristband size.

## Discussion

- Passive sampling using silicone wristbands is a feasible and well-tolerated approach to gather data on cancer survivors' personal exposome.
- Breast cancer survivors' exposures to flame retardants and pesticides – classes which include biologically active chemicals – warrant additional study.
- Several of the most commonly detected chemicals have the potential for carcinogenicity, genotoxicity, or endocrine disruption, so chronic exposure may have implications for survivors' long-term health.

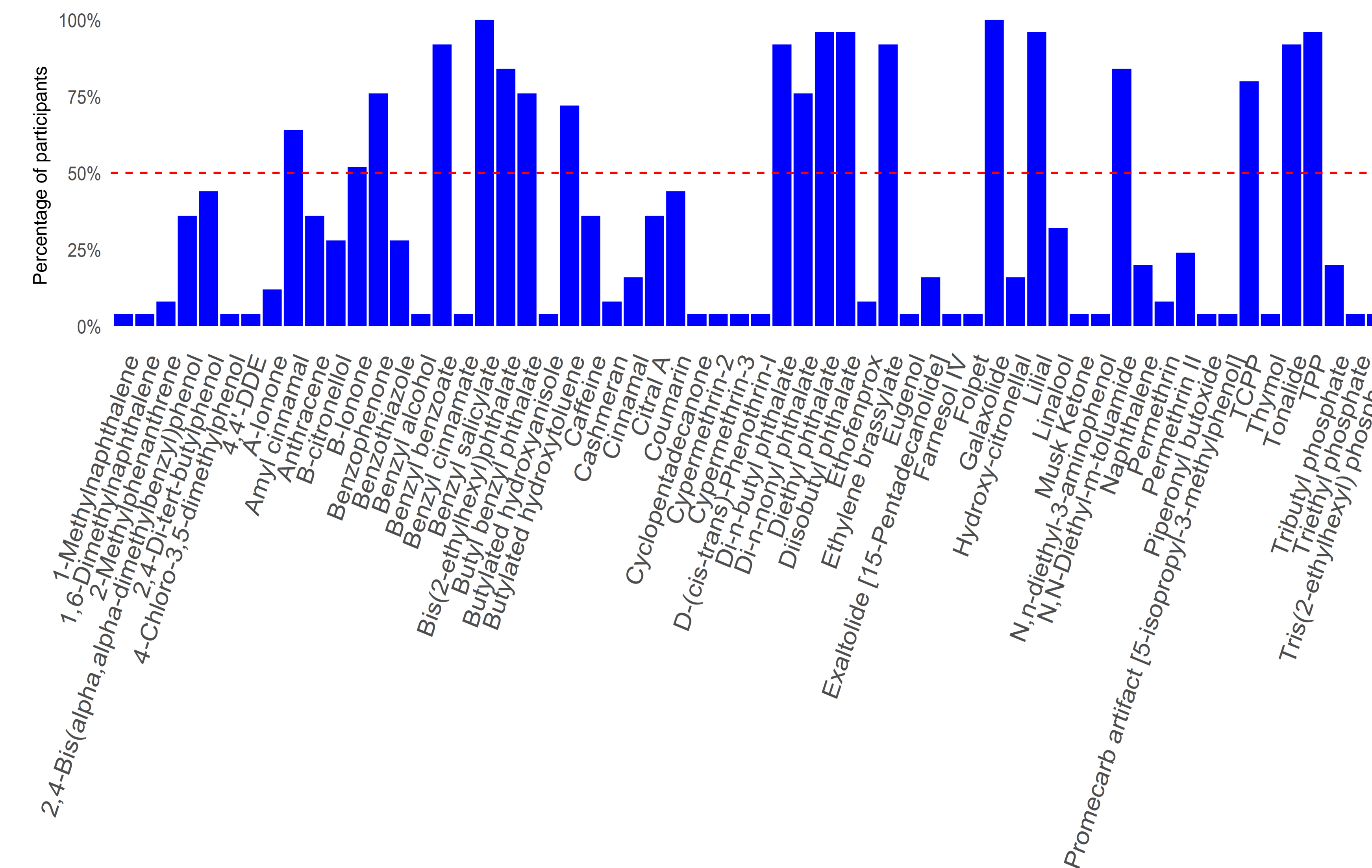
- Survivors had a mean age of 58 years (range: 38-75 years) and most had been diagnosed with Stage I or II breast cancer (84%).
- Participants were satisfied or very satisfied with their experience using the silicone wristbands (88%), found the wristbands easy to use (96%), and reported that the wristband did not interfere with their daily activities (92%).

Table 1. Prevalence of chemical classifications among Black and Hispanic breast cancer survivors (N=25)

Classification	N	%
Chemicals in Commerce	25	100%
Consumer Products	22	88%
Flame Retardants	25	100%
Personal Care Products	25	100%
Pesticides	25	100%
Pharmacological Compounds	13	52%
Polycyclic Aromatic Hydrocarbons	14	56%
Volatile Organic Compounds	5	20%

## Results

Figure 1. Prevalence of 60 chemicals detected among Black and Hispanic breast cancer survivors (N=25)



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