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# Can Food Packaging Lead to Breast Cancer?

## Exploring the Risks

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Exposure to asbestos can lead to lung cancer. Benzidine has been associated with bladder cancer. **Tobacco** is known to cause lung and other cancers. UCI researcher Hannah Lui Park, PhD, wonders if there is a link between breast cancer and bisphenol A (BPA), which is used in plastics, receipts, food packaging, and other products. Your UCI Anti-Cancer Challenge contributions are helping her investigate a possible relationship.

BPA and its related compounds, bisphenol F (BPF) and bisphenol S (BPS), are thought to be potential endocrine disruptors that may play a role in the development of breast cancer and other hormone-related cancers. Park's Anti-Cancer Challenge-funded study seeks to identify DNA-based biomarkers that could be used in large epidemiologic studies to explore the connection between exposure to these compounds and cancer risk.

"The Anti-Cancer Challenge is really important because it gives investigators an opportunity to do pilot studies," says Park, an associate professor in the UCI School of Medicine departments of Pathology and Epidemiology. "For me, it was investigating a factor that most of us are exposed to on a daily basis. There is a lot of data out there that makes BPA and related compounds suspicious and thus important to study.

"We're still analyzing the data but we hope it will lead to a bigger study looking at BPA, BPF and BPS exposure and breast cancer risk."

Ultimately, this research may improve risk prediction for cancer and other diseases that have a potential environmental trigger.

Park's first research studies were in the lab of a professor studying mammary cancer in animal models as an undergraduate. Throughout her training, she gravitated to breast cancer research.

"We've seen a lot of progress in cancer research, and for breast cancer specifically. But there are still so many unanswered questions," she says. "I'm especially interested in environmental factors associated with breast cancer."

Park and her research team are examining the relationships between lifestyle and environmental exposures with disease risks, as well as the interactions with genetics and epigenetics.

"We believe that the more we know about individuals, the better we can predict their disease risk and prognosis and the better their chances for disease prevention and survival," says Park.

In addition to her BPA research, Park is principal investigator on the Markers for Environmental Exposures (MEE) Study, which focuses on identifying biomarkers for exposures to organophosphate pesticides (OPs), the most commonly used U.S. insecticides, and glyphosate, the most commonly used herbicide.

She expects findings to be published this year. Support for this study came from the California Breast Cancer



Research Program, the largest state-funded breast cancer research effort in the nation.

As biomarkers for environmental exposures are identified, Park says it will make possible cost-effective, large scale analysis of samples collected in prospective studies, as well as in previously established cohorts. Ultimately, if these pesticides are found to affect breast cancer risk, Park seeks to enable women to make more informed decisions about pesticide exposures for themselves and their loved ones.

"A lot of money has gone into treating cancer, and thank goodness we have therapies," she says. "But if we can find ways to prevent cancer, that is a more effective and healthier way to go in the long run."