

## Background Information



Research is showing that interactions between genetic and environmental factors may play a part in who gets breast cancer and who does not. “Environmental factors” include the air we breathe, the food we eat, the water we drink, and things we touch and put on our skin. Environmental factors are not predetermined for life and can be influenced by individual behavior, parental protective measures, or public health policies. This raises the possibility that breast cancer risk and breast cancer rates could be lowered through control of environmental factors.

One focus of research into breast cancer and the environment is the timing of puberty for girls. Girls who enter puberty early may be at a greater risk for developing breast cancer later in life. Research funded by the National Institute of Environmental Health Sciences (NIEHS) and the National Cancer Institute (NCI) is examining the possible links between girls’ exposure to certain chemicals, or diets contributing to unhealthy weight, and the early onset of puberty.

Certain chemicals are known as “endocrine disruptors” because they may interfere with the endocrine system and produce adverse effects in laboratory animals, wildlife, and humans. *Phthalates* (THAL-ates) are chemicals in some detergents; personal care products, like fragrances, nail polish, deodorant, hair care products, and body lotions; food and beverage containers; and plastic or vinyl toys. *BPA* (or bisphenol A) is a chemical in some plastic bottles, food and beverage containers, some cash register receipts, and the lining of cans. Young girls can be exposed to these chemicals directly, or if they are present in the mother’s bloodstream during pregnancy or milk during breastfeeding. There is evidence that exposure to BPA or phthalates may affect how girls’ bodies mature.

Girls with a higher body mass index (BMI) are more likely to have an early first period (or menarche), and there is also a relationship between BMI and other indications of the beginning of puberty. BMI is a number calculated from a child’s height and weight. It provides a reliable indicator of body fatness for most children and teens and is often used to screen for overweight and obesity, which may lead to health problems. Girls who begin puberty early may be at a greater risk of developing breast cancer later in life.

It is important not to overstate the results of current research. The “cause” of breast cancer is not known. The relationship between environmental factors such as chemicals and diet and breast cancer risk is suspected but not proven. Much more research is needed before a direct relationship can be proven.

Still, parents, caregivers, community members, and health professionals are being advised that there are certain precautionary steps that can be taken to lower girls’ risk of breast cancer later in life. These include limiting girls’ or their own exposure to BPA and phthalates, and helping girls to maintain a healthy lifestyle throughout their lives.

*Made possible by the Breast Cancer and the Environment Research Program (BCERP) grants U01 ES012770, U01 ES012771, U01 ES012800, U01 ES012801, U01 ES019453, U01 ES019435, U01 ES019454, U01 ES019457, U01 ES019471, U01 ES019466, U01 ES019434, U01 ES019480, U01 ES019482, U01 ES019459, U01 ES019472, and U01 ES019458 from the National Institute of Environmental Health Sciences (NIEHS) and the National Cancer Institute (NCI). NIH. DHHS.*