

Common Chemicals May Play a Role in Childhood Obesity

A variety of common everyday chemicals is adding to the current [obesity](#) epidemic among American children, and pediatricians need to educate and advocate against their use, according to Leonardo Trasande, MD, from NYU Langone Health in New York City.

"Synthetic chemical exposure in utero can scramble molecular and hormonal signals that can set children up to develop obesity and cardiovascular risks through a number of mechanisms,"

The most prominent of these potential mechanisms involves the direct metabolic disruption of several pathways, which "can literally make fat cells bigger or disrupt the function of proteins that protect the heart, for example," he explained.

"There are also sex-hormone effects from synthetic estrogens like bisphenol A [BPA], which can influence children's risk of obesity in a sex-specific way, especially during certain vulnerable windows of development, such as puberty," said Trasande, who discussed the topic at the Pediatric Academic Societies 2019 Meeting in Baltimore.

Categories of Chemicals Implicated

In recent years, three categories of synthetic chemicals have been identified as having the potential to exacerbate [childhood obesity](#) through metabolic disruption: bisphenols, phthalates, and per- and polyfluoroalkyl substances (PFASs).

Among the bisphenols, BPA – an industrial chemical that has been used to make plastics and resins for the past 5 decades and is found in a variety of consumer goods, such as plastic containers that store food and beverages has been the subject of extensive research

Some of these studies have demonstrated that BPA can seep from plastic containers into food or beverages, exposing consumers to potential deleterious effects.

BPA can mimic [estrogen](#) in the body and potentially change the timing of puberty, decrease fertility, increase body fat, and affect the nervous and immune systems. Nevertheless, the US Food and Drug Administration (FDA) has said that exposure to low levels of BPA is safe.

Phthalates, the group of chemicals used to soften and increase the flexibility of plastic and vinyl, are similarly ubiquitous and found in hundreds of consumer products, from vinyl flooring to detergents, raincoats to shampoos, and plastic wrap to children's toys.

Although various government agencies assert that the health effects from phthalate exposure are not known, Trasande is not so gratuitous in his assessment.

"In particular, phthalates influence the expression of certain receptors, called PPARs," he explained. "These receptors are highly influential in lipid and carbohydrate metabolism."

"Phthalates are also oxidative stressors," he said. "Oxidative stress is a key factor in the development of [insulin resistance](#) and another pathway by which these chemicals can induce obesity, diabetes, and cardiovascular risks."

There is emerging science that actually minimizes the importance of diet and physical activity in the obesity epidemic.