

# Phthalates: Study links chemicals widely found in plastics, processed food to elevated blood pressure in children, teens

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Plastic additives known as phthalates (pronounced THAL-ates) are odorless, colorless and just about everywhere: They turn up in flooring, plastic cups, beach balls, plastic wrap, intravenous tubing and—according to the Centers for Disease Control and Prevention—the bodies of most Americans. Once perceived as harmless, phthalates have come under increasing scrutiny. A growing collection of evidence suggests dietary exposure to phthalates (which can leech from packaging and mix with food) may cause significant metabolic and hormonal abnormalities, especially during early development.

Now, new research published this Wednesday in the *Journal of Pediatrics* suggests that certain types of phthalates could pose another risk to children: compromised heart health. Drawing on data from a nationally representative survey of nearly 3,000 children and teens, researchers at NYU Langone Medical Center, in collaboration with researchers at the University of Washington and Penn State University School of Medicine, have documented for the first time a connection between dietary exposure to DEHP (di-2-ethylhexylphthalate), a common class of phthalate widely used in industrial food production, and elevated systolic blood pressure, a measure of pressure in the arteries when the heart contracts.

"Phthalates can inhibit the function of [cardiac cells](#) and cause oxidative stress that compromises the health of arteries. But no one has explored

the relationship between [phthalate exposure](#) and [heart health](#) in children" says lead author Leonardo Trasande, MD, MPP, associate professor of pediatrics, [environmental medicine](#) and [population health](#) at NYU Langone Medical Center. "We wanted to examine the link between phthalates and childhood blood pressure in particular given the increase in elevated blood pressure in children and the increasing evidence implicating exposure to [environmental exposures](#) in early development of disease."

Hypertension is clinically defined as a [systolic blood-pressure](#) reading above 140 mm Hg. It's most common in people over 50 years old, although the condition is becoming increasingly prevalent among children owing to the global obesity epidemic. Recent national surveys indicate that 14 percent of American adolescents now have pre-hypertension or hypertension. "Obesity is driving the trend but our findings suggest that environmental factors may also be a part of the problem," says Dr. Trasande. "This is important because phthalate exposure can be controlled through regulatory and behavioral interventions."

Researchers from NYU School of Medicine, the University of Washington and Penn State University School of Medicine examined six years of data from a nationally representative survey of the U.S. population administered by the National Centers for Health Statistics of the [Centers for Disease Control and Prevention](#). Phthalates were measured in urine samples using standard analysis techniques. Controlling for a number of potential confounders, including race, socioeconomic status, body mass index, caloric intake and activity levels, the researchers found that every three-fold increase in the level of breakdown products of DEHP in urine correlated with a roughly one-millimeter mercury increase in a child's blood pressure. "That increment may seem very modest at an individual level, but on a population level such shifts in blood pressure can increase the number of children with

elevated blood pressure substantially," says Dr. Trasande. "Our study underscores the need for policy initiatives that limit exposure to disruptive environmental chemicals, in combination with dietary and behavioral interventions geared toward protecting cardiovascular health."

Provided by New York University School of Medicine

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