



Toxic chemical exposure during pregnancy linked to serious health issues by elementary school

By Sandee LaMotte, CNN

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(CNN) — Chemical toxins are everywhere — in our water, food, air and soil. Exposure to those toxins during pregnancy can create serious health issues in elementary school children that can affect their lives for years to come, a new study found.

Children born to European mothers exposed to four families of chemicals that disrupt the body's

endocrine (hormone) system had elevated levels of metabolic syndrome at ages 6 to 11. Metabolic syndrome can include obesity, elevated blood pressure, and abnormally high cholesterol and insulin resistance, which is a precursor to type 2 diabetes.



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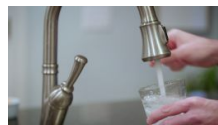
Within the group of children exposed to the highest levels of chemicals, 62% were overweight or obese, compared with 16% of children within the low-risk group, said first author Nuria Güil-Oumrait, a Fulbright scholar at the Icahn School of Medicine at Mount Sinai in New York City.

“Moreover, the levels of blood insulin and triglycerides, as well as systolic and diastolic blood pressure, were significantly higher in the high-risk group than in the low-risk group,” Güil-Oumrait said in an email. “In contrast, HDL-cholesterol levels were lower in the high-risk group than in the low-risk group.” HDL cholesterol is considered a “good” blood fat as it helps clear arteries.

Metabolic syndrome is typically associated with adult cardiovascular disease, type 2 diabetes and stroke, but the growing epidemic of childhood obesity has seen symptoms appearing in kids at younger and younger ages. Having metabolic syndrome as a child is highly predictive of chronic disease as an adult, experts say.

“This research stands out as one of the most comprehensive endeavors delving into early-life environmental origins of metabolic risk, further bolstering prior toxicological and epidemiological evidence in this area,” said Vicente Mustieles, Mariana Fernández and Carmen Messerlian in an editorial published with the study that appeared Thursday in the journal JAMA Network Open.

Mustieles and Fernández are investigators at the Biomedical Research Center at the University of Granada, Spain. Messerlian is an assistant professor of environmental reproductive, perinatal, and pediatric epidemiology at the Harvard T.H. Chan School of Public Health in Boston.



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CNN reached out to the International Council for Chemical Associations for comment but did not hear back before publication. A spokesperson for the American Chemistry Council, however, provided the following statement.

“We will review the details of this study once it’s released. ACC’s members are serious about their responsibility to produce chemistries that offer important safety, product performance and durability benefits and that can be used safely. Our members undertake extensive scientific analyses to evaluate potential risk of their chemicals, from development through use and safe disposal.”

Dangers of endocrine-disrupting chemicals

Dangers of endocrine-disrupting chemicals

The research team behind the new study performed blood and urine tests on 1,134 mothers during their pregnancies and later repeated those tests on their children between the ages of 6 and 11. The tests were looking for mixtures of nine chemical classes of endocrine-disrupting chemicals commonly found in the environment.

Endocrine-disrupting chemicals are environmental pollutants with the “ability to cross the blood-placenta barrier and interfere with human metabolism and hormonal balance,” the study said.

These and other chemicals “end up in the blood, tissue, and organs of fetuses and infants through maternal transplacental and breastfeeding pathways in a never-ending cycle,” Mustieles, Fernández and Messerlian wrote.



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The study tested for pesticides; heavy metals; flame retardants; plasticizers such as phthalates and phenols; and PFAS (perfluoroalkyl and polyfluoroalkyl substances), which are found in surface and groundwaters around the world at levels much higher than many international regulators allow.

Called “forever chemicals” because they fail to break down fully in the environment, PFAS have been used since the 1950s to make consumer products nonstick, oil- and water-repellent, and resistant to temperature change. Some of the most studied PFAS, such as PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonic acid), have been linked to serious health problems such as cancer, obesity, thyroid disease, high cholesterol, decreased fertility, liver damage and hormone disruption, according to the EPA.

Toxic heavy metals in the soil and water include lead and arsenic — studies have found alarming levels in manufactured baby food. There is no safe level of lead, while arsenic, mercury and other heavy metals can harm the body and brain at relatively low doses, experts say.



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A December 2014 meta-analysis of studies on arsenic found that a 50% increase in arsenic levels in urine would be associated with a 0.4-point decrease in the IQ of children between the ages of 5 and 15.

Flame retardants have been linked to a 300% higher risk of cancer. These chemical toxins are the greatest

contributor to intellectual disability in children worldwide, resulting in a total loss of 162 million IQ points and more than 738,000 cases of intellectual disability, according to an [August 2020 study](#).

[Phthalates](#), found in hundreds of consumer products such as food storage containers, shampoo, makeup, perfume and children's toys, have been connected to premature death among people ages 55 to 64 in the United States. Prior research has connected phthalates with [reproductive problems](#), such as [genital malformations](#) and undescended testicles in baby boys and [lower sperm counts](#) and testosterone levels in adult males. Phthalates are also linked in studies to [childhood obesity](#), [asthma](#), [cardiovascular issues](#) and [cancer](#).

In the study, phthalates were the only group of chemicals that were associated with a lower level of metabolic syndrome. All of the other chemical families increased risk.



Pregnancy and childhood are especially important times to limit exposure to chemicals as the brain and body are in key stages of development. kjekol/iStockphoto/Getty Images

People are exposed to a mixture of chemicals daily

Chemicals may vary in their impact on the body. For example, certain PFAS compounds tend to accumulate in the liver, contributing to fatty liver disease and high cholesterol. And flame retardants and other chemicals may be stored in body fat, contributing to obesity and the development of type 2 diabetes, according to the editorial.

Since people are exposed to numerous types of potentially toxic substances each day, designing a study that could capture the cumulative impact on different parts of the body would provide a more realistic picture of any potential health impact.

By focusing on metabolic syndrome, which combines measurements of blood sugars, lipids such as cholesterol, the existence of fat tissue and the impact on the heart, the current study was one of the first to accomplish this goal, the editorial said.



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“We almost always consider health risks from single chemicals, one at a time, as if we are exposed to just one chemical at a time,” said Jane Houlihan, the national director of science and health for Healthy Babies Bright Futures, a coalition of advocates committed to reducing babies’ exposures to neurotoxic chemicals.

“Here the research team shows that children’s risk for cardiovascular disease and diabetes later in life can be driven by the complex mixtures of endocrine-disrupting chemicals in the body at any moment and it highlights the particular risk of chemical exposures during pregnancy,” she said.

Healthy Babies Bright Futures [published a report in 2019](#) that found toxic metals in 95% of the baby foods randomly pulled off supermarket shelves, which led to the introduction of [The Baby Food Safety Act of 2024](#), a bill that would allow the US Food and Drug Administration to set stricter standards and allow the FDA to monitor these standards through access to the records of food suppliers and manufacturers.

“Given the steep rise in metabolic syndrome in the US, health officials and companies should be doing all they can to tighten safety standards and to get these chemicals out of commerce and out of our everyday products,” Houlihan said.

How to limit exposure

There are ways to minimize exposure to plastics and other toxins, which is especially critical during [pregnancy and childhood](#) as developing fetuses and small bodies are more easily damaged, Houlihan said.

Reduce rice intake for infants and children, and be sure to rinse grains well before using as this removes up to 60% of the arsenic, she said. Limit juice and be sure to carefully wash and peel vegetables and fruits, and if possible, buy organic.

Stay away from stain-resistant carpets and upholstery, and don’t use waterproofing sprays.



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Check your local area for levels of PFAS and other chemicals in your drinking water [The Environmental](#)

Check your local area for levels of PFAS and other chemicals in your drinking water. The Environmental Working Group, an advocacy nonprofit, has created a national tap water database [searchable by zip code](#) that lists PFAS and other concerning chemicals, as well as a [national map](#) that illustrates where PFAS has been detected in the US.

If your drinking water is of concern, consider purchasing a reverse osmosis filter, the most effective kind, EWG said. NSF, formerly the National Sanitation Foundation, has [a list of recommended filters](#).

Tap water is often a better choice than bottled water, however, which is packed with nanoplastics that can invade cells and tissues and leach toxic chemicals into the body.

At home, one easy change is to use glass or ceramic containers instead of plastic ones when heating food. If possible, try to cook with ceramic, cast iron, or stainless-steel pans and avoid cookware treated with chemicals to avoid food sticking. Another good choice is to use stainless steel or glass bottles instead of plastic ones.

“Choose cosmetics that are free from endocrine disruptors such as parabens, benzophenone, triclosan, and phthalates,” Güil-Oumrait suggested.

Consider the same for food, sunscreens, household cleaners and other everyday products encased in plastic. The EWG has several consumer databases that provides links to consumer products with fewer chemicals, including [food scores](#), [personal care products](#), [suntan](#) recommendations and a healthy living app.

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