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THE NATION

Study Cites Risk of Compound in Plastic Bottles

Report urges the EPA to restrict bisphenol A, found widely in liquid and food containers.

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Evidence is mounting that a chemical in plastic that is one of the world's most widely used industrial compounds may be risky in the small amounts that seep from bottles and food packaging, according to a report to be published this week in a scientific journal.

The authors of the report, who reviewed more than 100 studies, urged the U.S. Environmental Protection Agency to re-evaluate the risks of bisphenol A and consider restricting its use.

Bisphenol A, or BPA, has been detected in nearly all humans tested in the U.S. It is a key building block in the manufacture of hard, clear polycarbonate plastics, including baby bottles, water bottles and other food and beverage containers. The chemical can leach from the plastic, especially when the containers are heated, cleaned with harsh detergents or exposed to acidic foods or drinks.

The chemical is the focus of a contentious debate involving industrial compounds that can mimic sex hormones. Toxicologists say that exposure to man-made hormones skews the developing reproductive systems and brains of newborn animals and could be having the same effects on human fetuses and young children.

Since the late 1990s, some experiments have found no effects at the doses of BPA that people are exposed to, and others have suggested that the chemical mimics estrogen, blocks testosterone and harms lab animals at low doses. Plastics industry representatives say the trace amounts that migrate from some products pose no danger and are far below safety thresholds set by the EPA and other agencies.

In the new report, to be published online in Environmental Health Perspectives on Thursday, scientists Frederick vom Saal and Claude Hughes say that as of December, 115 studies have been published examining low doses of the chemical, and 94 of them found harmful effects.

In an interview Tuesday, Vom Saal, a reproductive biologist at University of Missouri in Columbia, said there is now an "overwhelming weight of evidence" that the plastics compound is harmful.

"This is a snowball running down a hill, where the evidence is accumulating at a faster and faster rate," Vom Saal said.

"You can't open a scientific journal related to sex hormones and not read an article that would just floor you about this chemical…. The chemical industry's position that this is a weak chemical has been proven totally false. This is a phenomenally potent chemical as a sex hormone."

In their study, Vom Saal and Hughes suggest an explanation for the conflicting results of studies: All 11 of those funded by chemical companies found no risk, while 90% of the 104 government-funded, non-industry studies reported harmful effects.

One report, released by the Harvard Center for Risk Analysis last fall and funded by the American Plastics Council, concluded that "the evidence is very weak" that BPA has estrogen effects on males.

The scientists at Harvard reviewed the results of 19 experiments on male animals published before April 2002 and found no consistent findings.

However, Vom Saal said, the Harvard report was prepared before at least 60 other studies found harmful effects in lab animals, and it was too narrowly focused because it looked at effects in males only.

Steven G. Hentges, executive director of the polycarbonate business unit of the American Plastics Council, said Tuesday that unlike the Harvard report, the new report lists numbers of studies and pieces of data without analyzing them to determine their strengths or weaknesses and whether they are relevant to human beings.

"The sum of weak evidence does not make strong evidence," Hentges said. "If you look at all the evidence together, it supports our conclusion that BPA is not a risk to human health at the very low levels people are exposed to. This paper does not change that conclusion. It has an opinion, not a scientific conclusion."

Vom Saal and the plastics industry have been in an escalating battle since 1997, when Vom Saal became the first researcher to reveal effects in mice exposed to low doses of BPA. His discovery triggered new scientific studies by industry and government.

The chemical, used in polycarbonate plastics manufacture for half a century, is not subject to any bans, even in Europe, which has prohibited many hormone-disrupting compounds. The EPA last evaluated its risks in the 1980s, and a review by the European Union was published in 2003.

In California, the Legislature is considering a bill, introduced by Assemblywoman Wilma Chan (D-Alameda), chairwoman of the Assembly's Health Committee, that would ban products intended for children that contain BPA or other compounds called phthalates, used in some plastic toys.

The plastics industry says there is no scientific basis for removing the chemicals from children's products.

Polycarbonate plastics, which are useful in items such as baby bottles because they are durable, lightweight and shatter-resistant, cannot be made without BPA. Hentges said the products have had "a strong and long safety record" for more than 50 years.

In addition to its use in hard plastics, BPA lines food and beverage cans and is found in dental fillings and sealants, including some used to prevent cavities in children.

Some government-funded tests on rodents exposed to low levels have reported decreased testosterone, enlarged prostates and lower sperm counts in newborn males and early puberty and disrupted hormonal cycles in females. They also have reported hyperactivity and other neurological changes in lab animals.
