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- Front Page
- Column One
- Inside "A"
- California
- Business
- Sports
- Calendar
- Opinion
- Weekly**
- Food
- Health
- Highway 1
- Home
- Sunday**
- Books
- Calendar
- Magazine
- Current
- Real Estate
- Travel
- NEWS
- California | Local
- National
- World
- Entertainment News
- Business
- Sports
- Politics **4 NEW**
- Opinion
- Columnists
- Print Edition
- Calendarlive
- Travel
- West Magazine
- Home & Garden
- Health
- Food
- L.A. Wheels
- Books
- Image
- Obituaries
- Crossword, Sudoku
- All Sections
- Corrections
- BUY, SELL & MORE
- Jobs
- Cars
- Real Estate
- Apartments
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Scientists issue warning on chemical

Bisphenol A, a compound found in plastics, may be causing reproductive disorders, the statement says.

By Marla Cone, Times Staff Writer
August 3, 2007

In an unusual effort targeting a single chemical, several dozen scientists on Thursday issued a strongly worded consensus statement warning that an estrogen-like compound in plastic is likely causing an array of serious reproductive disorders in people.

The compound, bisphenol A or BPA, is one of the highest-volume chemicals in the world and has found its way into the bodies of most human beings.

Used to make hard plastic, BPA can seep from beverage containers and other materials. It is used in all polycarbonate plastic baby bottles as well as other items, including large water cooler containers, sports bottles and microwave oven dishes, along with canned food liners and some dental sealants for children.

The scientists — including four from federal health agencies — reviewed about 700 studies before concluding that people are exposed to levels of the chemical exceeding those that harm lab animals. Infants and fetuses are most vulnerable, they said.

The statement, published online by the journal Reproductive Toxicology, was accompanied by a new study from researchers from the National Institutes of Health that found uterine damage in newborn animals exposed to BPA. That damage is a possible predictor of reproductive diseases in women, including fibroids, endometriosis, cystic ovaries and cancers.

It is the first time BPA has been linked to disorders of the female reproductive tract, although earlier studies have found early-stage prostate and breast cancer and decreased sperm counts in animals exposed to low doses.

The scientists' statement and the new study — accompanied by five scientific reviews summarizing the 700 studies — intensify a contentious debate over whether the plastic compound poses a public threat. So far no government agency here or abroad has restricted its use.

Representatives of the plastics industry on Thursday lambasted the scientists as alarmist and biased, and said their conclusions were based on inconsistent and uncertain science.

"Considering many of these people have made their views known in the past, is there any surprise? Is there really anything new?" said Steve Hentges of the American Chemistry Council's polycarbonate/BPA group.

Hentges said that the scientists who signed the consensus statement were self-selected, leaving out many experts, and that many had conflicts of interest because they had either studied BPA and reported effects or had "already taken a very clear advocacy position."

"They are completely at odds with the findings of every governmental scientific body that has reviewed the same science," he said.

Two government scientific committees in Europe and Japan recently decided there was insufficient evidence to restrict the compound. Europe's food safety agency decided in January that the data were inconclusive, largely because of metabolic differences between mice and humans, and because it is uncertain that the amounts people are exposed to pose a health threat.

Next week, a U.S. expert panel convenes to decide whether to declare BPA a human reproductive toxin, which could be a first step toward federal regulation. The review by the panel of the federal Center for the Evaluation of Risks to Human Reproduction, part of the National Institutes of Health, has been controversial. The Times reported in March that the center's preliminary report on BPA was written by a consulting firm with financial ties to the chemical industry that has since been fired.

Frederick vom Saal, a reproductive toxicologist at the University of Missouri-Columbia, said the scientists' statement on BPA "is very different than any other approach to any chemical."

"We now have, without a doubt, the most comprehensive set of documents covering every aspect of bisphenol A, and the hope here is that government panels will actually look at this information, digest it and incorporate it into their decision-making," Vom Saal said.

No studies have been conducted looking for effects in people, and one goal of the scientists who signed the statement is to generate human research.

Jerrold Heindel, a scientist with the National Institute of Environmental Health Sciences who organized a meeting last fall to begin drafting the statement, said even though there have been no human studies of BPA, there is now so much animal data that the 38 experts believe that human damage is likely. More than 150 studies have found health

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effects in animals exposed to low doses.

"We know what doses the animals were given, and when we look at humans, we see blood levels within that range or actually higher, which is a cause of concern and should stimulate more human research," he said.

In their statement, the 38 scientists say they are confident that BPA, which mimics the female hormone estrogen, alters cells to switch genes on and off, programming a fetus or child for reproductive disorders later in life, and that the levels that harm lab animals "are well within the range of ... BPA levels observed in human fetal blood."

They concluded that "early life exposure ... may result in persistent adverse effects in humans."

"There is essentially no difference in the way that rat or mouse cells respond to BPA and the way that humans respond to it," Vom Saal said. Though the amount in humans "may seem like an incredibly small amount, it causes effects in human cells at the part-per-trillion level," he said.

In the newest animal study, the lead scientist, Retha Newbold of the National Institute of Environmental Health Sciences, said BPA caused reproductive tract damage similar to the anti-miscarriage drug DES (diethylstilbestrol), a synthetic estrogen that was prescribed to pregnant women from the 1940s until the late 1970s. The drug led to "DES daughters," who were born with reproductive defects that caused infertility and cancers.

Newbold said it was "quite possible that endometriosis, in particular fibroids," could be a result in women exposed to low levels of BPA as infants or fetuses.

"Fibroids is one of our major concerns because they affect 70% of U.S. women" and often lead to hysterectomies, she said.

Hentges of the plastics industry said the study had no relevance to humans because the mice were injected with high doses of BPA. He said other animal studies were inconsistent.

The various articles in Reproductive Toxicology are available through the following paid website:

<http://www.sciencedirect.com/science/journal/08906238> --

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