

Latest News

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Toxicology

More Concerns Over Bisphenol A

Human exposures are usually as high as those causing profound effects in rodents

Bette Hileman

THE SUSPECTED LINK between low levels of human exposure to bisphenol A (BPA), a monomer widely used to make polycarbonate plastic and epoxy resins, and adverse health effects was bolstered last week with the publication of four toxicology studies that investigated the link.

The most significant paper is a consensus statement from 38 scientists released online in *Reproductive Toxicology* (DOI: 10.1016/j.reprotox.2007.07.005). It concludes that human exposure to BPA, primarily from food containers, is within the range shown to be biologically active in animal studies. In rodents, low BPA exposures in the womb cause increases in the rates of prostate and breast cancer, reproductive abnormalities, lowered sperm counts, early onset of puberty in females, and obesity and insulin-resistant diabetes.



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Bisphenol A blocked methylation in the coat-color gene in some of these agouti mice, causing normally brown animals to have yellow fur.

A second paper in *Reproductive Toxicology* echoes those conclusions (DOI: 10.1016/j.reprotox.2007.07.010). It compiles an array of published data on BPA's effects and concludes that BPA levels in human tissues are higher than levels sufficient to cause adverse effects in lab animals. The analysis reports that many people are exposed to more than 50 µg per kg of body weight per day, the safety threshold set by EPA in 1984.

A third *Reproductive Toxicology* paper found that when BPA is administered to newborn female mice for five days, they develop ovarian cysts and uterine abnormalities (DOI: 10.1016/j.reprotox.2007.07.006).

The fourth study, published in the *Proceedings of the National Academy of Sciences* (DOI: 10.1073/pnas.0703739104) finds that exposure to BPA in the womb alters the coat colors of genetically identical agouti mice. By preventing methylation of DNA, which normally silences genes, BPA causes a change in the fur color of the mice from the normal brown to yellow. Yellow agouti mice always become obese and develop diabetes as adults, says Randy L. Jirtle, a geneticist who led the study at Duke University Medical Center.

Despite growing evidence of toxic effects in lab animals, manufacturers of BPA insist that their product is safe. Steven Hentges, executive director of the polycarbonate/BPA group at the American Chemistry Council, an industry group, disputes the new research in *Reproductive Toxicology*. He says it is not credible, pointing to a European Food Safety Authority report that indicated no adverse effects of BPA.

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