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## Increased BPA Exposure Linked to Reduced Egg Quality in Women

***A small-scale University of California, San Francisco-led study has identified the first evidence in humans that exposure to bisphenol A (BPA) may compromise the quality of a woman's eggs retrieved for in vitro fertilization (IVF). As blood levels of BPA in the women studied doubled, the percentage of eggs that fertilized normally declined by 50 percent, according to the research team.***

The chemical BPA, which makes plastic hard and clear, has been used in many consumer products such as reusable water bottles. It also is found in epoxy resins, which form a protective lining inside metal food and beverage cans.

"While preliminary, the data indicate the negative effect of BPA on reproductive health and the importance of allocating more funding to further investigate why such environmental contaminants might be disrupting fertility potential," said Victor Y. Fujimoto, MD, Lead Study Author and Professor in the UCSF Department of Obstetrics, Gynecology, and Reproductive Sciences, who also is on the faculty of the UCSF Center for Reproductive Health.

Findings are available online in the journal *Fertility and Sterility*.

In the study, BPA levels and fertilization rates were analyzed for 26 women undergoing IVF during 2007 and 2008 at the UCSF Center for Reproductive Health. The women were a subgroup of a larger study evaluating the effect on reproductive health of trace exposures to toxic metals -- mercury, cadmium and lead.

"Given the widespread nature of BPA exposure in the U.S., even a modest effect on reproduction is of substantial concern," said Michael S. Bloom, Ph.D, Senior Author and an Assistant Professor in the departments of Environmental Health Sciences, and Epidemiology and Biostatistics at the School of Public Health of the University at Albany, State University of New York. The Centers for Disease Control and Prevention found BPA in the urine of nearly everyone tested in a 2004 analysis of the U.S. population.

BPA is gaining global attention as an environmental contaminant that impacts health owing to its widespread exposure and endocrine-disrupting properties, according to the researchers. An endocrine disruptor is a synthetic chemical that when absorbed into the body either mimics or blocks hormones and interferes with the body's normal functions.

Previous studies in mouse models have indicated that BPA levels alter the DNA of eggs, and a 2010 study in humans demonstrated BPA urinary concentrations to be inversely associated with the number of eggs retrieved during an IVF cycle.

"Unfortunately, at this time there is no clinically-available test to determine BPA levels in women," Fujimoto said. "Despite the limited evidence, a cautious approach for women who are considering IVF treatment would be to reduce their exposure to BPA through modifications in lifestyle and diet."

Earlier this year, an alliance of partners led by the UCSF Program on Reproductive Health and the Environment launched an online resource called Toxic Matters (available at <http://prhe.ucsf.edu/prhe/toxicmatters.html>) to help consumers make smarter decisions about substances that can harm general and reproductive health.

The brochure and web page include tips on reducing exposure to metals and synthetic chemicals in everyday life -- at home, at work, and in the community -- and provide links to other sources with more detailed information.

Study co-authors are Dongsul Kim, of the Department of Environmental Health Sciences, University at Albany, State University of New York; Frederick S. vom Saal, Ph.D and Julia A. Taylor, Ph.D, of the Division of Biological Sciences, University of Missouri; and Julie D. Lamb, MD, Department of Obstetrics, Gynecology, and Reproductive Sciences, UCSF.

Victor Y. Fujimoto, Dongsul Kim, Frederick S. vom Saal, Julie D. Lamb, Julia A. Taylor, Michael S. Bloom. Serum unconjugated bisphenol A concentrations in women may adversely influence oocyte quality during in vitro fertilization. *Fertility and Sterility*, 2010; DOI: 10.1016/j.fertnstert.2010.11.008