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Phthalates Now Linked to Fat, Related Health Risks

Exposure to phthalates, a common chemical found in everything from plastics to soaps, already has been connected to reproductive problems and now, for the first time, is linked to abdominal obesity and insulin resistance in adult males, according to a study by the University of Rochester Medical Center.

The research adds to the growing suspicion that low-dose exposures to phthalates and other common chemicals may be reducing testosterone levels or function in men, and thereby contributing to rising obesity rates and an epidemic of related disorders, such as Type 2 diabetes, said lead author **Richard Stahlhut, M.D., M.P.H.**, a Preventive Medicine resident at the University of Rochester. The study was published in the online edition of the journal *Environmental Health Perspectives*.

“Substantial declines in testosterone levels and sperm quality have been observed in the United States and other countries over the last several decades which and it urgently requires explanation,” Stahlhut said. “While we can’t say yet that phthalates are a definite cause, I am certain they are on the list of chemicals that demands careful study.”

Phthalates have been widely used for more than 50 years, but only recently implicated as a possible health risk in people. Animal studies have shown consistently that phthalates depress testosterone levels. Recent human studies have found that phthalates are associated with poor semen quality in men and subtle changes in the reproductive organs in boy babies. This connection between phthalates and testosterone helped to establish a basis for the study, Stahlhut said.

Stahlhut’s group hypothesized that phthalates might have a direct link to obesity, since low testosterone appears to cause increased belly fat and pre-diabetes in men. They analyzed urine, blood samples and other data from the National Health and Nutrition Examination Survey. The NHANES is a large, multi-ethnic, cross-section sampling of the U.S. population acquired routinely by the Centers for Disease Control and Prevention. Researchers reviewed data from 1999 to 2002, the most recent years that phthalates levels were available. Of the adult men available in NHANES, 1,451 had data on phthalate exposures, obesity and waist circumference. Of these men, 651 also had fasting glucose and insulin levels required to calculate insulin resistance.

The analysis found that, as expected, several phthalate metabolites showed a positive correlation with abdominal obesity. Indeed, men with the highest levels of phthalates in their urine had more belly fat and insulin resistance. Researchers adjusted for other factors that could influence the results, such as the men’s age, race, food intake, physical activity levels and smoking.

The phthalate family of chemicals is used in a variety of products from cosmetics, shampoos, soaps, lotions, lubricants, paint, pesticides, and plastics. Phthalates soften plastic tubing, PVC, and are also used in the coating of some timed-release medicines.

More than 75 percent of the United States population has measurable levels of several phthalates in their urine, according to the study.

“Unfortunately, there’s still a lot to learn about phthalates,” Stahlhut said. “The more difficult issue is what combinations of common low-dose chemical exposures might be contributing to these problems.”

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