

Chemical C8 not associated with birth defects or pregnancy complications

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(PhysOrg.com) -- A study conducted by researchers at the University of Pennsylvania School of Medicine and colleagues, and published in *Reproductive Toxicology*, found that maternal exposure to C8, a chemical used in the manufacture of non-stick surfaces, was not associated with an increased risk of birth defects and pregnancy complications. These findings are based on an examination of the vital records of babies and mothers residing in Little Hocking, Ohio, who were exposed to significant amounts of C8 through residential drinking water.

Although C8 was not associated with either outcome, the authors noted that additional research is required to confirm their findings and to investigate other potentially adverse health effects of C8. The authors reviewed data from 1,548 birth records, which were stratified by C8 exposure category: 168 fully exposed; 209 partially exposed; and 1171 not exposed.

This study builds upon a series of investigations conducted by Penn researchers in the Little Hocking community since 2005. To date, their analyses have shown that blood concentrations of C8 in Little Hocking public water users were approximately 80 times greater than the general U.S. population and that maternal exposure to increased levels of C8 during pregnancy did not increase the risk of low birth weight or premature birth. Their current investigation is the first to examine the associations between C8 and congenital anomalies and pregnancy complications using medically validated data provided by the Ohio Department of Health (ODH). As such, the researchers were able to



examine the risk of anomalies and complications such as spina bifida, <u>cleft lip</u>, meconioum and others individually and in aggregate.

C8 is the commonly used name for perfluorooctanoic acid, or PFOA - a chemical used in the production of fluoropolymers. This chemical is used to manufacture non-stick surfaces for cookware as well as to make clothing, carpeting, and other products resistant to grease, water, and stains. According to manufacturers, C8 is not present in the final products. However, C8 is very persistent in the environment and is not biodegraded. Once inside the human body, it is slowly eliminated. Since being found in Little Hocking water, C8 has been found to contaminate other water supplies in the Ohio Valley, as well as in Minnesota, New Jersey, and other states, in addition to other countries such as Germany and Japan.

C8 has now been removed from the public water supply in Little Hocking through a new water treatment facility. Most residents took advantage of an offer of free bottled water following the release of previous studies; however, prior to the implementation of these interventions in September 2005, Little Hocking Water District residents were found to have the highest blood C8 levels ever recorded in a general population. When researchers compared the risk of congenital anomalies in Little Hocking babies prior to September 2005 to unexposed controls, no significant differences were observed. Similarly, the overall likelihood of pregnancy complications was not significantly different among Little Hocking mothers although a small increase in the likelihood of anemia was observed.

"Maternal exposure to C8-contaminated water in Little Hocking during pregnancy did not affect the birth prevalence of any congenital anomaly," said co-author Edward Emmett, MD, MS, Deputy Director, Center of Excellence in Environmental Toxicology at Penn. "The likelihood of spina bifida, hydrocephalus, polydactyly, Down's syndrome



and every other congenital anomaly recorded in the ODH database were statistically identical across exposure categories." The same was true for all pregnancy complications except anemia which was found to have an elevated incidence among Little Hocking mothers. "Little Hocking mothers were found to be at greater risk for developing anemia," said Emmett, "but the number of reported cases was so small that it is difficult to assess whether the observed association is genuine or a statistical artifact."

Although C8 was not associated with an increased likelihood of congenital anomalies and most pregnancy complications, Emmett noted that additional research is still required to confirm these findings and to investigate the other potentially adverse health effects of C8 on fetal and childhood development. These results, however, do provide some level of assurance that the health effects of C8 exposure at levels observed in the environment may not lead to adverse birth outcome.

Additional study authors include lead authors Lynda Nolan, MSN, MPH, CRNP, a specialist perinatal researcher at Penn and epidemiologist John Nolan, MPH; Frances Shofer, Ph.D, an epidemiologist in the Department of Emergency Medicine Hospital of the University of Pennsylvania, now with the University of North Carolina School of Medicine; and Nancy Rodway, MD, MPH, a specialist in Occupational and Environmental Medicine, who previously practiced in Chillicothe, Ohio and is now an Assistant Professor at the Ohio State University.

This study - which was independent of any corporation, law firm, or class-action suit - arose out of research that had been funded through an Environmental Justice Partnership grant from the National Institute of Environmental Health Sciences, which was specifically designed as a collaborative initiative among environmental health scientists at the University of Pennsylvania's School of Medicine, the Decatur Community Association in Cutler, Ohio, and local community



physicians.

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