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Menopause Health Center

Chemicals Linked to Early Menopause

Study Suggests Exposure to Chemicals Called PFCs May Be Associated With Earlier Menopause

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WebMD Health News

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March 25, 2011 -- Women exposed to high levels of chemicals called perfluorocarbons (PFCs) may enter menopause earlier, new research suggests.

PFCs are man-made chemicals found in many household products such as food containers and stain-resistant clothing as well as in water, soil, and plants.

"Before this study, there was strong evidence from animal research that PFCs were endocrine disruptors," says researcher Sarah Knox, PhD, professor of epidemiology at the West Virginia University School of Medicine, Morgantown.

For the study, she evaluated the levels of two PFCs, called PFOS (perfluorooctane sulfonate) and PFOA (perfluorooctanoate) in nearly 26,000 women, ages 18 to 65.

Overall, she found, "the higher the perfluorocarbons, the earlier the menopause." Women between ages 42 and 64 with the highest [blood](#) levels of the PFCs were more likely to have experienced menopause than those with the lowest levels.

One of the chemicals, PFOS, affected levels of the hormone estradiol, a form of estrogen. "The higher the levels of PFOS, the lower the levels of estradiol," she says. As estradiol declines, menopause approaches.

The research is published in the *Journal of Clinical Endocrinology & Metabolism*.

PFCs and Menopause

The 26,000 women were participants in the C8 Health Project. It collected information on more than 69,000 people from six public water districts contaminated by PFOAs from the DuPont Washington Works Plant near Parkersburg, W. Va., between August 2005 and August 2006. (C8 is another name for PFOA).

The work was funded by the settlement agreement arising from the water contamination case, *Leach vs. E.I. DuPont de Nemours & Co.*

Knox asked each woman about her menopausal status and then looked at blood levels of the PFCs. She found an association between high blood levels and menopause onset, she says, but not cause and effect.

For instance, women in the over 42 to 51 age group with the highest levels of PFCs were 40% more likely to have experienced menopause compared to those women in the same age group with the lowest levels of PFCs.

She also compared their blood levels of PFCs with those in the general population, using data from the NHANES survey (National Health and Nutrition Examination Survey), which reflects the U.S. population.

While PFOA levels were higher in her research participants, their PFOS levels were similar to those in the general population.

The median age of menopause is 51 (half of women go through earlier, half later), Knox says. Early menopause before the age of 40 is linked with increased risks of [heart disease](#) and with bone loss, which can raise the risk of osteoporosis.

A reverse association is possible, Knox says. Monthly menstruation eliminates some of the PFCs from the body. Early menopause may cause PFC levels in the blood to rise, she says, as monthly menstruation stops.

However, she says, even if the association is reversed, the levels are a concern, she says.

Among the study limitations is its "snapshot in time" factor, as it looked only at exposure at one point.

Perspective of Environmental Experts



PFCs have been a concern of environmentalists for years, says Olga Naidenko, PhD, a senior scientist at the Environmental Working Group, Washington. She reviewed the study findings for WebMD.

"This is the first study to our knowledge that looks specifically at menopause timing. It really demonstrates that these kinds of chemical are very toxic."

One strength of the study is its size, says Jennifer Sass, PhD, senior scientist for the Natural Resources Defense Council, who also reviewed the findings.

"This study raises some red flags regarding a common chemical pollutant that is found in the bodies of most Americans," says Sass. "I hope that more research can be done to understand the effect better."

Industry Perspective

A spokeswoman for DuPont took exception with using the term PFCs. The term PFCs "is not well defined and is overly broad," says Janet E. Smith of DuPont. "There are many chemicals that could potentially fall under that umbrella and they have very different properties and health profiles."

DuPont does not make PFOS or use it in its processes or product, she says. She points out that Knox found no link between PFOA and hormone levels. The company does make products with PFOA, she says.

3M decided in May 2000 to phase out production of PFOA, PFOS and PFOS-related products after research found PFOS was widely dispersed in wildlife and found in low levels in people, according to the company's web site.

To avoid exposure, Knox suggests avoiding stain-resistant, water-resistant, and fire-retardant products. Some food containers may also have PFCs.

"Eventually we are going to have to have a policy about reducing these," she says. However, "we need more data before setting policy."

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women's health newsletter

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SOURCES:

Knox, S. *Journal of Clinical Endocrinology & Metabolism*, June 2011.

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Olga Naidenko, PhD, senior scientist, Environmental Working Group, Washington, D.C.

Janet E. Smith, spokeswoman, DuPont Chemicals & Fluoroproducts.

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