Chemicals Linked to Early Menopause

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

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.

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