Exposure to chemicals in environment associated with onset of early menopause

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A recent study accepted for publication in The Endocrine Society's *Journal of Clinical Endocrinology & Metabolism* (JCEM) found that higher levels of perfluorocarbons (PFCs) in the body are associated with increased odds of having experienced menopause in women between 42 and 64 years old. Women in this age group with high levels of PFCs also had significantly lower concentrations of estrogen when compared to women who had low levels of PFCs.

PFCs are man-made chemicals used in a variety of household products including food containers, clothing, furniture, carpets and paints. Their broad use has resulted in widespread dissemination in water, air, soil, plant life, animals and humans, eve in remote parts of the world. A probability sample of U.S. adults, found measurable concentrations of PFCs in 98 percent of the participants tested.

"The current study is the largest ever to be done on the endocrine-disrupting effects of perfluorocarbons in human women," said Sarah Knox, PhD, of the West Virginia University School of Medicine in Morgantown and lead author of the study. "Our data shows that after controlling for age, women of perimenopausal and menopausal age in this large population are more likely to have experienced menopause if they have higher serum concentrations of PFCs than their counterparts with lower levels."

In this study of 25,957 women aged 18 to 65 years, researchers ascertained menopausal status of participants and then measured their

serum concentration levels of PFCs and estradiol. They found that there was an association between PFC exposure, decreased estradiol and early menopause in women over age 42. There was also an inverse association between PFC levels and estradiol in women of child bearing age but this association was not statistically significant.

"There is no doubt that there is an association between exposure to PFCs and onset of menopause, but the causality is unclear," said Knox. "Part of the explanation could be that women in these age groups have higher PFC levels because they are no longer losing PFCs with menstrual blood anymore, but, it is still clinically disturbing because it would imply that increased PFC exposure is the natural result of menopause."

PFCs are known to have multiple adverse health outcomes including increased cardiovascular risk and impairment of the immune system.

"Our findings suggest that PFCs are associated with endocrine disruption in women and that further research on mechanisms is warranted," said Knox.

More information: The article, "Implications of Early Menopause in Women Exposed to Perfluorocarbons," appears in the June 2011 issue of *JCEM*.

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