Researchers show nonstick chemicals may be linked to osteoporosis in women

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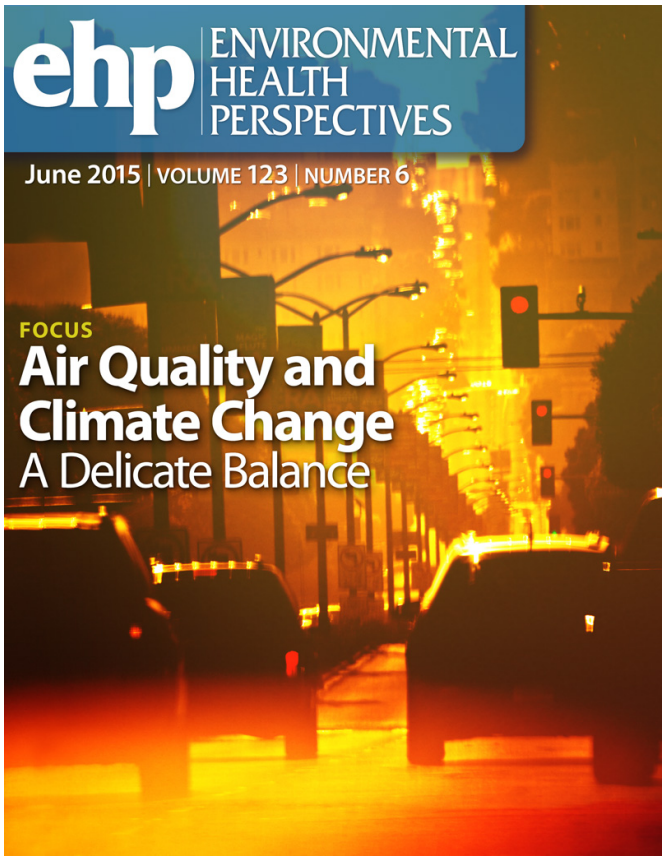

Researchers at the Wright State University Boonshoft School of Medicine report that women with higher blood levels of certain chemicals tended to have slightly lower bone density and a higher prevalence of osteoporosis.

These chemicals, called perfluoroalkyl substances (PFASs), have been widely used for more than 60 years in applications such as nonstick cookware, stain-resistant and waterproof fabrics, furnishings, carpets and food packaging.

"These environmental chemicals are detectable in humans worldwide and are in the blood of 95 percent of the U.S. population," said first author Naila Khalil, Ph.D., assistant professor of community health at the Boonshoft School of Medicine. "We found significant negative associations between bone health and some of the PFAS compounds in post-menopausal women."

Osteoporosis is a condition in which the bones become weak and brittle and are prone to fracture.

Led by Khalil and senior author Kurunthachalam Kannan, Ph.D., professor of environmental health sciences at the University at Albany School of Public Health, the team of researchers assessed the association between blood PFAS concentrations in 1,914 U.S. participants and their bone density using the Centers for Disease Control and Prevention's National Health and Nutrition Examination Survey 2009-2010 data.

The team of researchers from the Boonshoft School of Medicine included James Ebert, M.D., chair and associate professor of community health; Stefan Czerwinski, Ph.D., professor of community health and director of Lifespan Health Research Center; and Miryoung Lee, Ph.D., associate professor of community health and pediatrics, in addition to researchers from other institutions.

Their article "Association of Perfluoroalkyl Substances, Bone Mineral Density and Osteoporosis in the U.S. Population in NHANES 2009-2010" was published online in *Environmental Health Perspectives*,a monthly peer-reviewed journal of research and news published with support from the National Institute of Environmental Health Sciences, National Institutes of Health and the U.S. Department of Health and Human Services.

Although the changes in bone health were relatively small, the authors pointed out that the public health implications could be significant if it turns out

PFASs were responsible.

"These exploratory results will help assess and understand the toxicity of PFASs," said Khalil. "Further research is needed to confirm the study findings and determine what they may mean for public health."

More information: "Association of Perfluoroalkyl Substances, Bone Mineral Density, and Osteoporosis in the U.S. Population in NHANES 2009–2010." *Environ Health Perspect*; DOI: 10.1289/ehp.1307909

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