

# Study suggests possible association between cardiovascular disease, chemical exposure

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Exposure to perfluorooctanoic acid (PFOA), a manmade chemical used in the manufacture of some common household products, appears to be associated with cardiovascular disease and peripheral arterial disease in a study of 1,216 individuals, according to a report published Online First by *Archives of Internal Medicine*.

Surveys have suggested that PFOA (widely used in the manufacture of products such as lubricants, polishes, paper and textile coatings, and [food packaging](#)) is detectable in the blood of more than 98 percent of the U.S. population. Some evidence has suggested that an association may be biologically plausible between PFOA exposure and cardiovascular disease (CVD), according to the study background.

"Cardiovascular disease (CVD) is a major public health problem. Identifying novel risk factors for CVD, including widely prevalent [environmental exposures](#), is therefore important," according to the study background.

Anoop Shankar, M.D., Ph.D., and colleagues from the West Virginia University School of Public Health, Morgantown, examined the association between serum (blood) levels of PFOA and the presence of CVD and PAD, a marker of atherosclerosis, in a nationally [representative group](#) of adults. The study used merged data from the 1999-2000 and 2003-2004 National Health and [Nutrition Examination Survey](#) (NHANES).

The study suggests that increasing serum PFOA levels were positively associated with the presence of CVD and PAD, and the association appeared to be independent of confounders such as age, sex, race/ethnicity, smoking status, [body mass index](#), [diabetes mellitus](#), hypertension and serum cholesterol level, the authors comment.

"Our results contribute to the emerging data on health effects of PFCs [perfluoroalkyl chemicals], suggesting for the first time that PFOA exposure is potentially related to CVD and PAD. However, owing to the cross-sectional nature of the present study, we cannot conclude that the association is causal," the authors comment.

Compared with the reference level of PFOA in quartile 1, the multivariable odds ratio among participants in quartile 4 was 2.01 for CVD and 1.78 for PAD, according to the results.

"In summary, in a representative cross-sectional sample of the U.S. population, we found that higher PFOA levels are positively associated with self-reported CVD and objectively measured PAD. Our findings, however, should be interpreted with caution because of the possibility of residual confounding and reverse causality. Future prospective studies are needed to confirm or refute our findings," the authors conclude.

In a commentary, Debabrata Mukherjee, M.D., M.S., of Texas Tech University Health Sciences Center, El Paso, writes: "These results contribute to the evolving data on the adverse health effects of PFOA, suggesting that PFOA exposure may be potentially related to CVD."

"However, a major limitation is the cross-sectional nature of the study. Given this significant limitation, causality or the temporal nature of the association between PFOA and CVD cannot be concluded from the current analysis," Mukherjee continues.

"Although it seems clear that additional prospective research is needed to tease out the true adverse cardiovascular effects of PFOA, given the concerns raised by this and prior studies, clinicians will need to act now. From a societal point of view, it would make sense to limit or to eliminate the use of PFOA and its congeners in industry through legislation and regulation while improving water purification and treatment techniques to try and remove this potentially toxic chemical from our water supply," Mukherjee concludes.

**More information:**

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