

Legacy Per- And Polyfluoroalkyl Substances exposure and Domain-specific Cognitive Vulnerability in U.S. Older Adults

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Higher mixed exposure to legacy PFAS is associated with domain-specific cognitive vulnerability in older adults.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Per- and polyfluoroalkyl substances (PFAS) are persistent environmental pollutants with suspected neurotoxic effects. While experimental studies suggest PFAS may impair cognition through mechanisms including neuroinflammation and vascular dysfunction, epidemiological evidence in human populations remains limited and inconsistent. This study aimed to investigate the association between mixed PFAS exposure and domain-specific cognitive function in a nationally representative sample of U.S. adults.	I analyzed data from 1,913 U.S. adults aged 60 and older participating in the National Health and Nutrition Examination Survey. Serum concentrations of seven key PFAS were summarized using principal component analysis. Cognitive outcomes assessed were verbal memory, processing speed and language fluency. Survey-weighted multivariable linear regression models were used to estimate associations between PFAS and log-transformed cognitive scores, adjusting for key demographic, socioeconomic, dietary factors, lifestyle, and cardiometabolic covariates.	After full adjustment, higher PFAS composite exposure was significantly associated with poorer cognitive performance in specific domains. Each unit increase in PFAS_PC1 was associated with a 1.27% decrease in immediate verbal memory score ($\beta=0.0127$, $P=0.020$) and a 1.84% decrease in language fluency score ($\beta=0.0180$, $P=0.034$). A borderline significant association was observed with delayed verbal memory (1.82% decrease, $\beta=0.0182$, $P=0.082$).	Given the near-ubiquitous nature of these exposures, these modest individual-level associations suggest significant potential population-level implications for cognitive aging and dementia risk. These findings show urgent need for longitudinal studies to clarify the temporal relationships and neurobiological mechanisms linking environmental chemical exposures and late-life cognitive health.	Güzel, B. Recent Advancements on Per- and Polyfluoroalkyl Substances (PFAS) in the Environment for Human Health: A Comprehensive Review. Water Air Soil Pollut.2025, 236, 526 Nayak, S. K.; Yamijala, S. S. R. K. C. Computing Accurate Bond Dissociation Energies of Emerging Per- and Polyfluoroalkyl Substances. J. Hazard. Mater. 2024, 468, 133804.
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