# PFAS CHEMICALS IN FIRE STATION DUST

Results of Research Study in Massachusetts

## What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a group of over 4,700 different types of chemicals used to repel water, oil, and stains. They are:

- **IN EVERYONE** — Found in the blood of >98% of Americans, with some at higher levels in firefighters
- **EVERYWHERE** — Long-lasting in the environment for millennia (nicknamed "Forever Chemicals")
- **IN PRODUCTS** — Added to furniture, carpet, non-stick pans, disposable food packaging, and clothing
- **IN FIRE GEAR** — In turnout gear and some aqueous film-forming foams (AFFF) for hydrocarbon fuel fires
- **HARMFUL TO HEALTH** — Associated with high cholesterol, suppressed immune function, thyroid disease, impaired fetal development, and possibly kidney cancer, testicular cancer, obesity, and diabetes

## What did we research?

We vacuumed floor dust samples in various rooms within 15 career fire stations in eastern Massachusetts and measured levels of 24 PFAS in the 39 dust samples. We also measured PFAS in 6 wipes of turnout gear. The fire stations reported that they do not use any AFFF that contains PFAS or only rarely use it.

**Why study dust?**

Dust is a reservoir in which chemicals accumulate indoors. PFAS can leach out of products and get into the dust and air we breathe.

## What did we find?

The dust samples from turnout gear locker areas had higher levels of several PFAS than the dust from the station living areas, and those PFAS were also detected on the turnout gear based on the wipe samples. **Turnout gear may be an important source of exposure to certain PFAS for firefighters,** due to the intentional use of PFAS in gear, the contamination of gear from smoke of burning products, and/or contamination from any PFAS-containing AFFF. We need more research on how, and how much, firefighters are exposed to PFAS from their gear – routes of exposure may include skin absorption, inhalation, and dust ingestion.

Our findings align with previous research that found PFAS in even unused turnout gear jackets, suggesting that PFAS are intentionally added to gear sometimes (Peaslee et al. 2020). Another study found that firefighters whose turnout gear was not professionally cleaned within the previous year had significantly higher blood levels of two PFAS compared to those whose gear was (Dobraca et al. 2015).

## What do we recommend to stations and firefighters?

- Keep turnout gear stored separate from living spaces
- After firefighting activities: remove gear promptly, change/clean clothes, and shower thoroughly
- Wash gear regularly after fires or training and make sure to have more than one set of gear per person
- Wash hands after handling turnout gear
- Frequently clean floors, especially in gear storage areas, with HEPA-filtered vacuum or wet microfiber mop

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Read the full paper: Young A, Sparer-Fine E, Pickard H, Sunderland E, Peaslee G, Allen J. Per- and polyfluoroalkyl substances (PFAS) and total fluorine in fire station dust. 2021. Journal of Exposure Science & Environmental Epidemiology. https://www.nature.com/articles/s41370-021-00288-7.