



PFASs and Drinking Water: Lessons from the CARE Study

The [California Regional Exposure \(CARE\) Study](#) measured levels of chemicals in adults from southern and eastern counties of California from 2018-2020. CARE participants completed exposure questionnaires and provided blood serum samples for analysis of perfluoroalkyl and polyfluoroalkyl substances (PFASs). **Over 99% of CARE participants had at least one PFAS detected in their body.** Serum PFAS levels in the CARE population were lower than national levels but may still pose potential health risks, especially for sensitive populations.

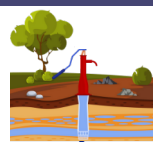
We linked CARE participants' home addresses to drinking water data from the California State Water Resources Control Board (SWRCB) to estimate the association between PFAS detections in drinking water and levels of PFASs in blood serum.

314 of 563 participants (56%) lived in a public water system service area with a detection of at least **1 of 18 monitored PFASs**.

Approximately half (54%) of the 563 participants reported drinking tap water most of the time versus other types of water.

PFAS drinking water concentrations were similar to other general population studies, and up to 100 times lower than areas highly impacted by major PFAS sources like manufacturing plants or military facilities.

Simplified water system diagram



Untreated source wells:
underground wells with no treatment

Drinking water treatment plant: drinking water treated to remove contaminants



Distribution system:
treated drinking water is distributed to the public

Key findings

We looked at PFAS levels in 563 participants living in the 70 public water system service areas with PFAS testing of **untreated source wells and/or treated drinking water**.



Participants whose public water system had **at least one perfluorohexane sulfonic acid (PFHxS) detection** had on average **32% higher serum PFHxS levels**.



Participants whose public water system had **PFHxS detections in more than half** of the sampling locations had on average **64% higher serum PFHxS levels**.

Twenty-nine of the 70 public water systems had PFAS testing in **treated drinking water**. We looked at PFAS levels in the subset of 235 participants living in these water system service areas.



Participants whose public water system had **at least one PFHxS detection** in treated drinking water had on average **80% higher serum PFHxS levels**.



For other PFASs analyzed (PFOA, PFOS and a sum of 5 PFASs), participants whose public water system had **at least one PFAS detection** in treated drinking water had **30-42% higher serum PFAS levels**.

Overall, PFAS contamination in drinking water may contribute to PFAS levels for adults in southern California.



Read the full article here: [Associations between PFAS in public water system drinking water and serum among Southern California adults](#)

What are PFASs?

PFASs are a large group of long-lasting synthetic chemicals used in industrial processes and consumer products to make them resistant to oil, stains, grease, and water. PFASs are often referred to as “forever chemicals”.



PERSONAL CARE
PRODUCTS



WATER RESISTANT
CLOTHING



STAIN RESISTANT
FURNITURE

PFASs have spread throughout the environment and can contaminate drinking water. **PFAS-contaminated drinking water is one of the ways people are exposed to PFASs.**

Researchers are still studying the health effects of PFASs, but we know that exposures:

- Can affect the immune system and liver function
- Can increase cancer risk
- May harm the fetus and child, including effects on growth and development
- May increase the risk of thyroid disease
- May interfere with the body's natural hormones

SWRCB PFAS monitoring

The [Water Boards](#) regulate public water systems to provide safe drinking water to all Californians. Since 2019, the SWRCB has been conducting testing of public water systems for PFASs. Monitoring from 2019-2022 focused on public water systems with source wells in areas with known PFAS contamination or suspected PFAS sources (such as airports, landfills, and military facilities). To learn more about current PFAS monitoring of California drinking water systems, visit [SWRCB's PFAS monitoring webpage](#).



Ways to reduce your PFAS exposures



Learn about PFASs in your water by looking at the annual drinking water quality reports on your local water agency website or by contacting your local water agency. If you are concerned about PFASs in your drinking water, consider using a water filter certified to remove or reduce PFASs. For more information about water filters, see [US EPA's fact sheet on Reducing PFAS in Your Drinking Water with a Home Filter](#).

To learn more about other sources of PFASs and how to reduce exposures, visit [Biomonitoring California's fact sheet on PFASs](#).

Why are these findings significant?

Data from the CARE Study highlights the importance of continued research and monitoring of PFASs in drinking water. Additional PFAS sampling mandated by the SWRCB and the US EPA can be used to expand our understanding of PFAS exposures in California. Our findings support efforts that could decrease PFASs in drinking water.

