

Agenda

Tuesday, April 23, 2024

- **Overview (30 minutes)**
- **Group questions (30 minutes)**

Individual questions:

coscope@cuanschutz.edu

719-425-8828 | co-scope.org

colorado school of
public health
Public Health Elevated

UNIVERSITY OF COLORADO
COLORADO STATE UNIVERSITY
UNIVERSITY OF NORTHERN COLORADO



Meeting follow up

Available on co-scope.org:

- Recording of the online presentation
- Presentation slides
- Frequently asked questions



CO SCOPE

Colorado Study on Community Outcomes from PFAS Exposure

www.co-scope.org

Dr. John Adgate and Dr. Anne Starling
April 23, 2024



Objectives

- **CO SCOPE progress and summary**
- **Summary of blood PFAS levels in this community**
- **How to interpret your PFAS results**
- **How to reduce your exposure**
- **Next steps for the study**

Who are we?

- Colorado School of Public Health
- Key Partners:
 - Colorado School of Mines
 - Colorado Department of Public Health and the Environment (CDPHE)



Community Advisory Panel (CAP)

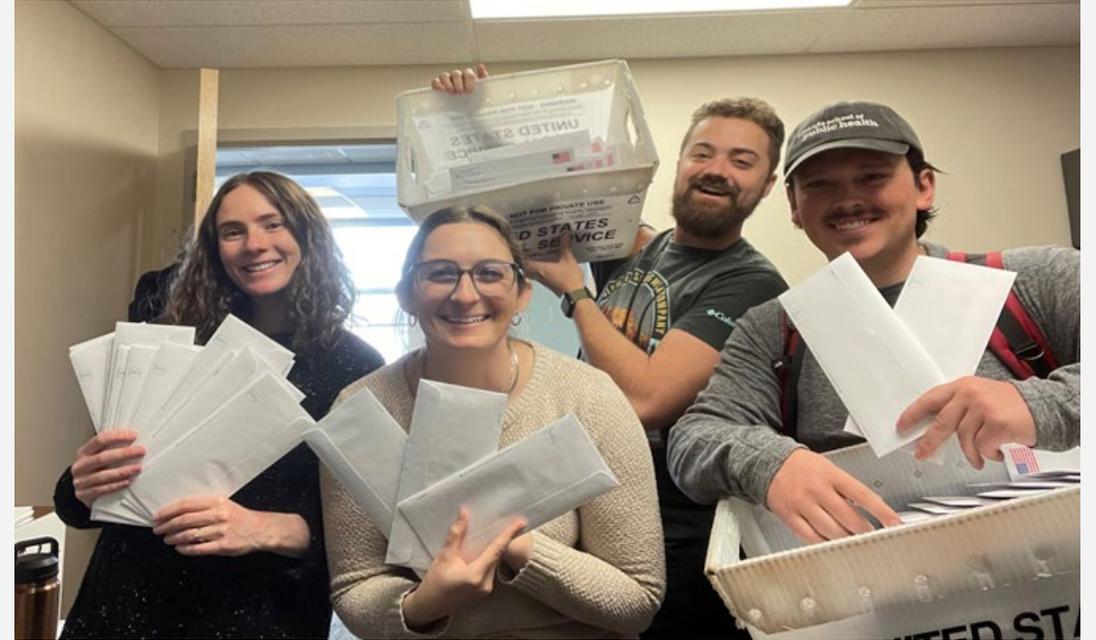
Member	Community Role
Robin and Carrie Bell	Local business owners
Roy Heald/Brandon Bernard	Security Water District
Suzanne Carmody	Teacher
Geof Clark	Retired Reporter, Fountain Valley News
Pat Edelmann	Retired USGS
Tamara Estes	Fountain City Council
James Flowers	Local business owner/Chamber of Commerce
Suzanne Foster	Retired School Board Leader
Rick Giles	Local professional
Greg and Molly Miller	Fountain Valley Clean Water Coalition
Kat McGarvy	El Paso County Public Health
Sarah McKinney	Parent/Local business owner
Taylor Murphy	City of Fountain Water Quality
Carola Rafferty	Local professional
Charlize Rafferty	Youth community leader
Liz Rosenbaum	Fountain Valley Clean Water Coalition

Short history of PFAS studies in the area

2016	2018-2019	2020	2021-2023
Discovery of PFAS in drinking water	PFAS AWARE pilot study	CDC's exposure assessment	CO SCOPE

CO SCOPE

- Finishing data collection, moving on to laboratory and data analysis
- Individual blood PFAS results delivered by mail in the last few weeks.

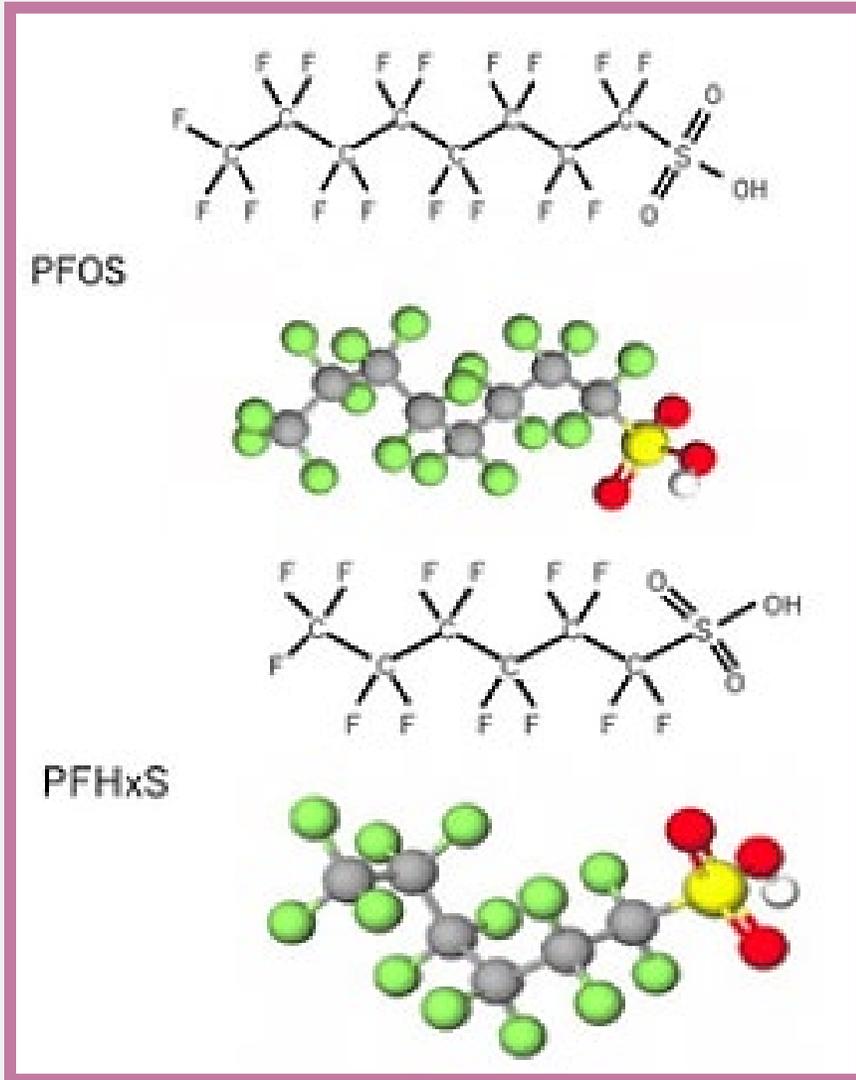


If you did not get your results or have questions, please call/text 719-425-8828 or email coscope@cuanschutz.edu

Multi-Site Study Participants

State	Participant	Adults	Children
California	435	400	35
Colorado	1066	925	141
Massachusetts	779	689	90
Michigan	450	423	27
New Jersey	857	771	86
New York	512	468	44
Pennsylvania	1341	1251	89

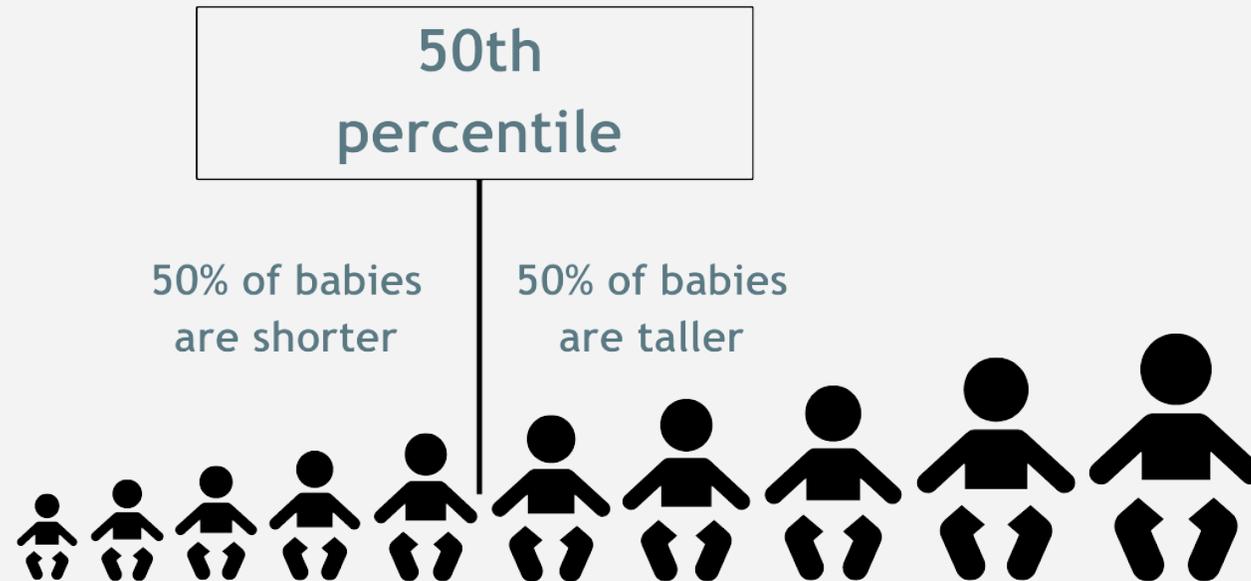
Some terms we will use



- Total PFAS – Includes 7 different PFAS
- PFOA – cookware, fast food packaging
- PFOS – Fish, water repellent for clothing
- PFHxS – Firefighting foams
- PFNA – Fast food packaging

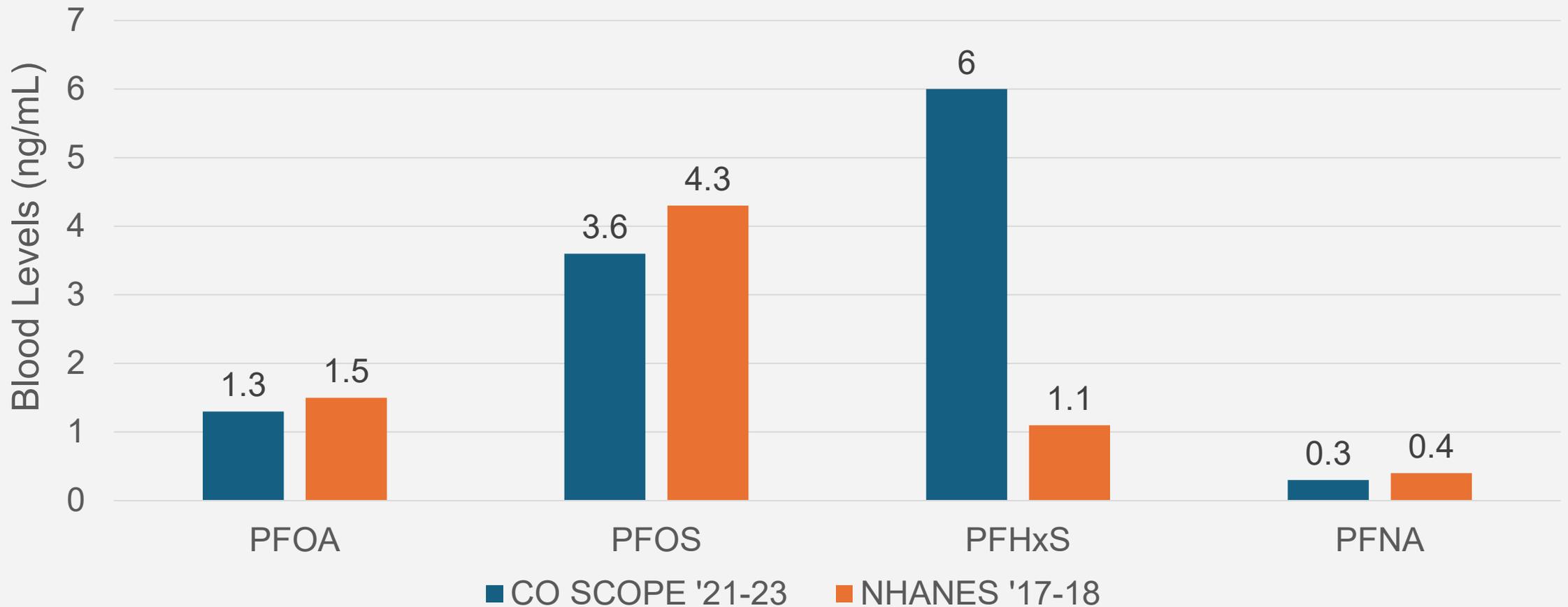
Some terms we will use

- **NHANES** – National Health and Nutrition Examination Survey. Measures different chemicals in blood among US residents.
- 50th Percentile



How do PFAS levels in the Fountain Valley communities compare to national levels?

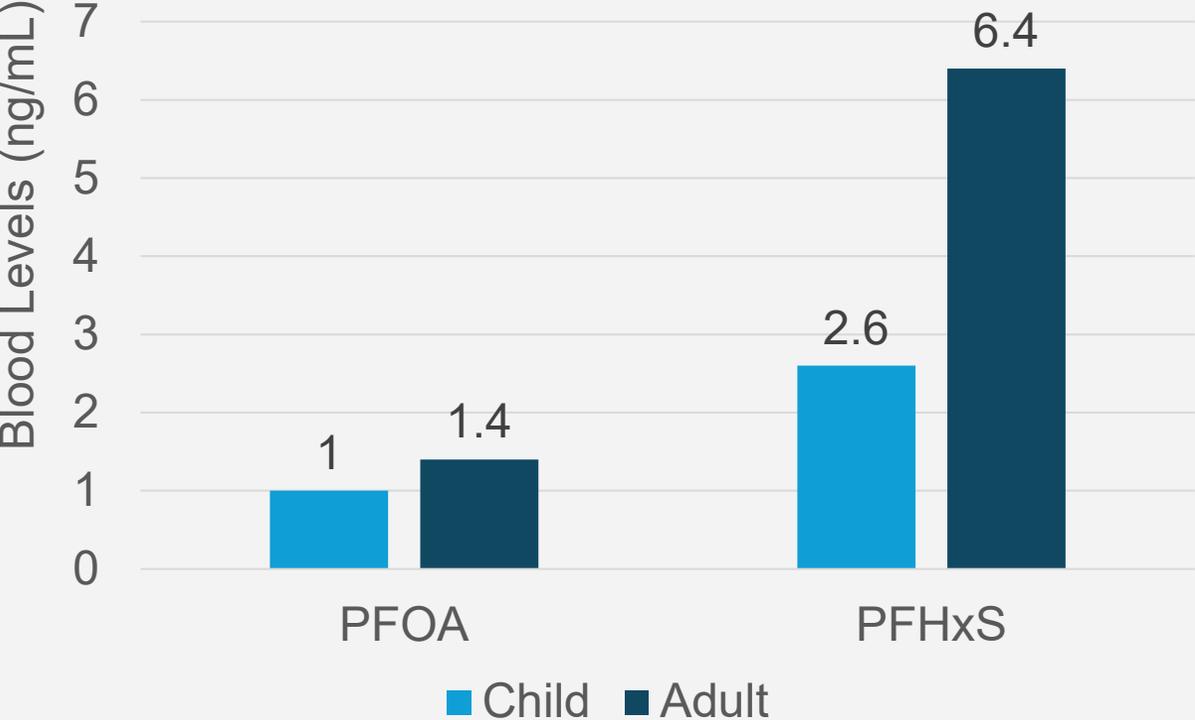
50th Percentile Comparison between Fountain Valley Community and NHANES



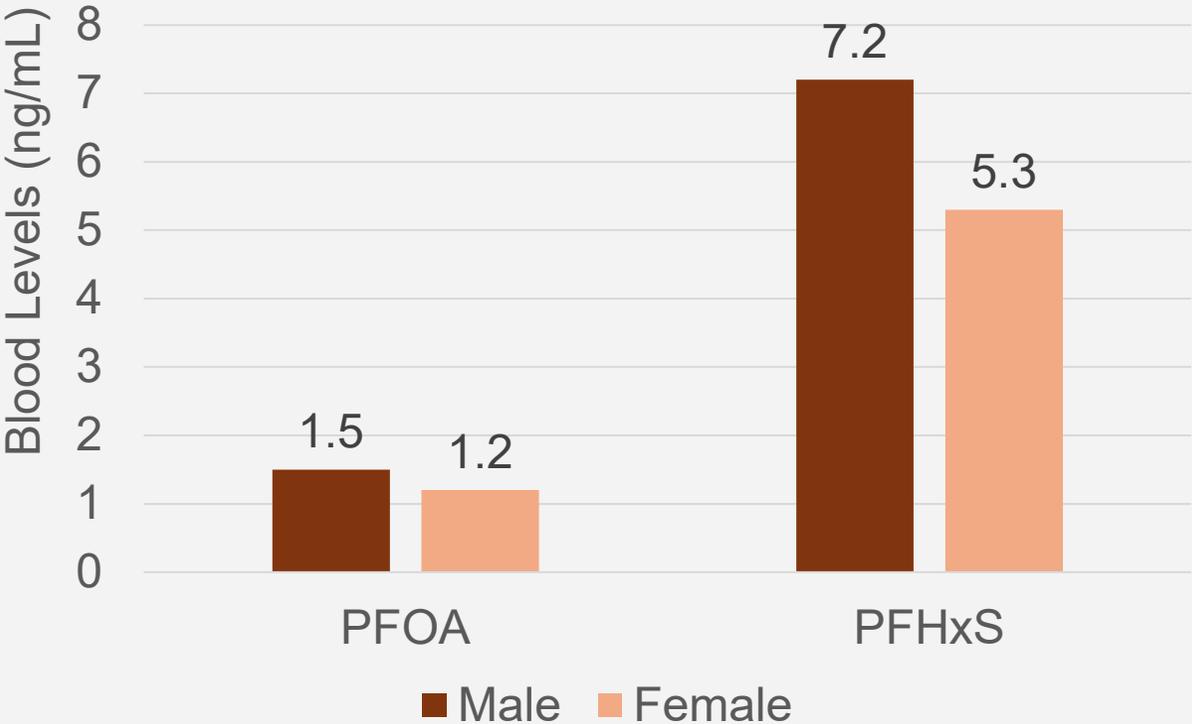
Number participants aged 12 or older
CO SCOPE '21-23 - 1000

Comparing PFAS among different groups in CO SCOPE

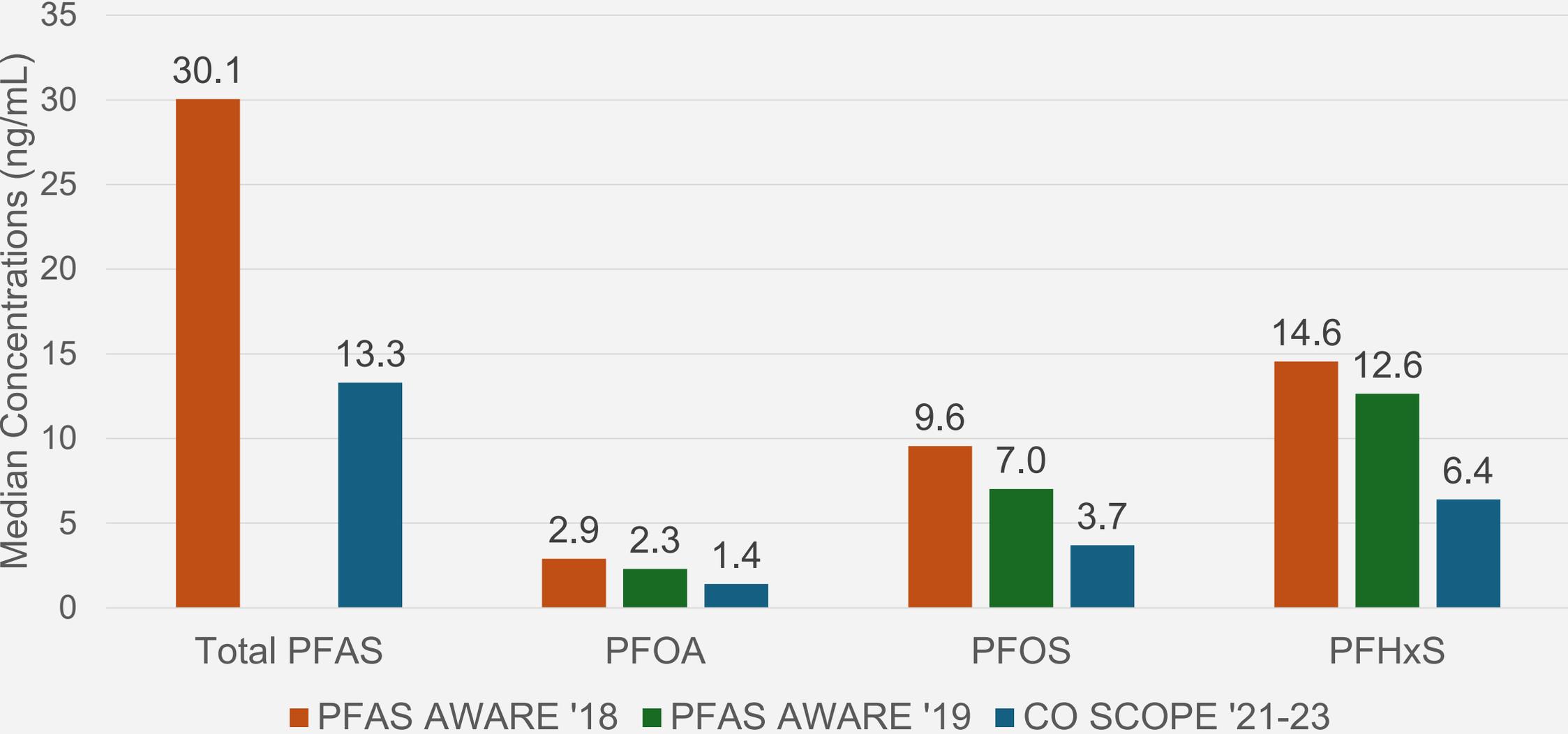
PFOA and PFHxS in Adults and Children – 50th Percentile



PFOA and PFHxS in Males and Females – 50th Percentile



How have PFAS levels changed over time in the Fountain Vally communities?



Your PFAS results letter

The shortened name of the compound

The full name of the compound

Half of the US population have levels below this

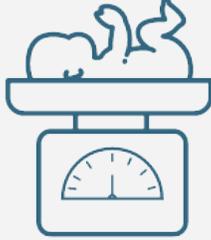
95% of the US population have values below this

Table 1. Your PFAS test results compared to people in your age group.

Test Name	Your Result (µg/L)	NHANES Reference Range ¹⁻² (µg/L)	
<i>Per- and Poly-fluoroalkyl Substances (PFAS)</i>		Age Group (years):	50 th to 95 th %
<i>PFOA - perfluorooctanoic acid</i> ‡		3-5:	1.80 – 5.58
		6-11:	1.94 – 3.84
		12-19:	1.17 – 2.34
		20+:	1.47 – 3.87

Compare your result to your age group.

PFAS health effects summary

	Increase in cholesterol levels		Pregnancy-induced hypertension and preeclampsia
	Lower antibody response to vaccines		Small decrease in birth weight
	Changes in liver enzymes		Kidney and testicular cancer

Source: <https://www.atsdr.cdc.gov/pfas/health-effects/index.html#print>

Health recommendations based on total PFAS levels

- A report from the National Academies of Science, Engineering and Medicine (NASEM) includes information and recommendations to ATSDR about PFAS blood levels
 - View the report here: bit.ly/NASEM-PFAS
- The report recommends that clinicians offer additional health screenings to patients based on their total blood levels of seven commonly tested PFAS:

Below 2 ng/mL	Adverse health effects not expected
Between 2 ng/mL and 20 ng/mL	Potential for adverse effects, especially in sensitive populations
Above 20 ng/mL	Increased risk of adverse effects in all populations

Example Person

Table 1. Your PFAS test results compared to people in your age group.

Test Name	Your Result (µg/L)
<i>Per- and Poly-fluoroalkyl Substances (PFAS)</i>	
PFOA - perfluorooctanoic acid†	5.1
• <i>n</i> -PFOA - linear isomer of perfluorooctanoic acid (PFOA) CAS Number 335-67-1	4.5
• <i>Sb</i> -PFOA - branched isomer of PFOA	0.6
PFOS - perfluorooctane sulfonic acid†	1.2
• <i>n</i> -PFOS - linear isomer of perfluorooctane sulfonic acid (PFOS) CAS No. 1763-23-1	1.2
• <i>Sm</i> -PFOS - branched isomer of PFOS	<LOD
PFHxS - perfluorohexane sulfonic acid CAS No. 355-46-4	15.0
Me-FOSAA - 2-(<i>N</i>-methyl-perfluorooctane sulfonamido) acetic acid CAS No. 2355-31-9	0.4
PFNA - perfluorononanoic acid CAS Number 375-95-1	0.2
PFDA - perfluorodecanoic acid CAS Number 335-76-2	<LOD
PFUnDA - perfluoroundecanoic acid CAS Number 2058-94-8	<LOD

Tips for adding up Total PFAS

1. Add all the bolded numbers to get “total PFAS”
2. Use “0” for “<LOD”
3. To calculate your total PFAS: bit.ly/COSCOPE-Dash

$$\underline{\text{PFOA}} + \underline{\text{PFOS}} + \underline{\text{PFHxS}} + \underline{\text{Me-FOSAA}} + \underline{\text{PFNA}} + \underline{\text{PFDA}} + \underline{\text{PFUnDA}} = \underline{\text{Total PFAS}}$$



$$5.1 + 1.2 + 15.0 + 0.4 + 0.2 + 0 + 0 = 21.9$$

How to calculate your total PFAS from your results letter

Table 1. Your PFAS test results compared to people in your age group.

Test Name	Your Result (µg/L)
Per- and Poly-fluoroalkyl Substances (PFAS)	
PFOA - perfluorooctanoic acid#	5.1
• n-PFOA - linear isomer of perfluorooctanoic acid (PFOA) CAS Number 335-67-1	4.5
• Sb-PFOA - branched isomer of PFOA	0.6
PFOS - perfluorooctane sulfonic acid#	1.2
• n-PFOS - linear isomer of perfluorooctane sulfonic acid (PFOS) CAS No. 1763-23-1	1.2
• Sm-PFOS - branched isomer of PFOS	<LOD
PFHxS - perfluorohexane sulfonic acid CAS No. 355-46-4	15.0
Me-FOSAA - 2-(N-methyl-perfluorooctane sulfonamido) acetic acid CAS No. 2355-31-9	0.4
PFNA - perfluorononanoic acid CAS Number 375-95-1	0.2
PFDA - perfluorodecanoic acid CAS Number 335-76-2	<LOD
PFUnDA - perfluoroundecanoic acid CAS Number 2058-94-8	<LOD

Total PFAS: 21.9

NASEM's recommendations for >20 ng/mL:

- Ask doctor to screen for high cholesterol
- At wellness checkups request tests to check for signs and symptoms of:
 - thyroid function (>18 yrs)
 - kidney cancer (>45 yrs)
 - testicular cancer/ulcerative colitis (>15 yrs)
- For more information: bit.ly/nasem-pfas-info

Health recommendations based on total PFAS levels

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As a reminder...

- The public water systems for Fountain, Security, Stratmoor Hills and Widefield all treat the water to remove PFAS to nondetectable levels.



How can I avoid additional exposure to PFAS?

- Handout: “How to Reduce your Exposure to PFAS” available for more details

Avoid

Avoid buying stain and water-resistant products when possible.

Limit

Limit eating at fast food restaurants or eating microwave meals that use packaging that may be grease repellent.

Use

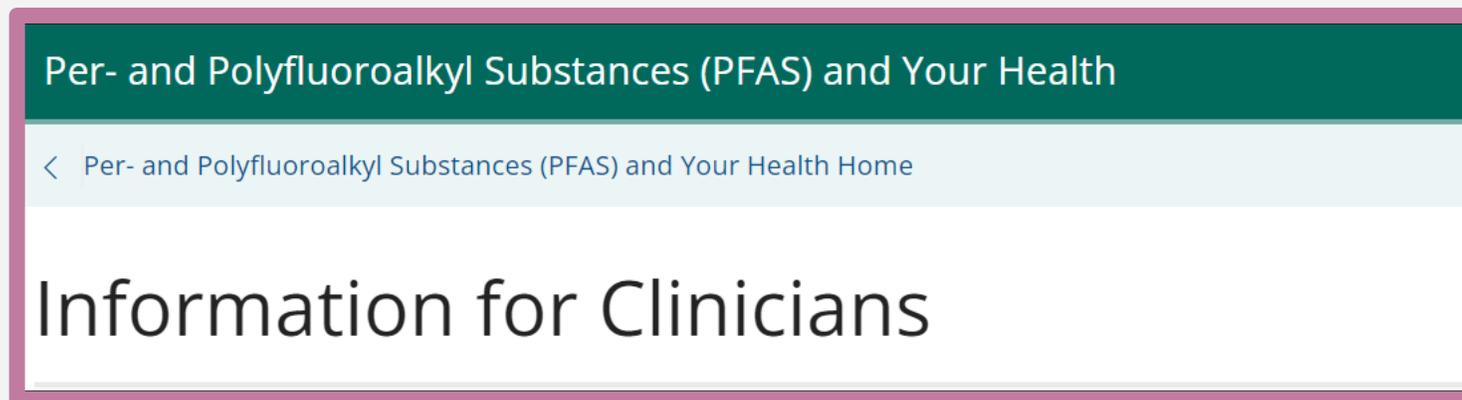
When cooking, use cast iron, stainless steel, glass, or enamel pots and pans.

Where to go for more information

We are now analyzing the data from this community and others to describe how PFAS exposure is related to a larger set of health outcomes. Until we finish these reports, here are some other sources of information you can use.

Handouts:

- ATSDR: Information for patients and guidance for clinicians to inform patient and clinician decision making
- CDPHE: Talking to your health care provider
- Website: bit.ly/atcdr-pfas-for-docs



What's next?

- Organizing all the data CO SCOPE collected
- Looking at the relationship between PFAS and health outcomes for a) Colorado and b) all sites combined
- Reporting results to scientific and public communities
- Over the next 2 years, we will begin to present results in official reports, scientific papers, and public meetings



Environmental Protection Agency (EPA) action on PFAS

- As of April 10, 2024, EPA set enforceable limits for the maximum levels of 6 PFAS in drinking water: PFOA, PFOS, PFNA, PFHxS, PFBS, HFPO-DA (GenX)
- Also working on controlling sources and cleaning up existing contamination
- EPA PFAS website: bit.ly/EPA_SDWA_PFAS

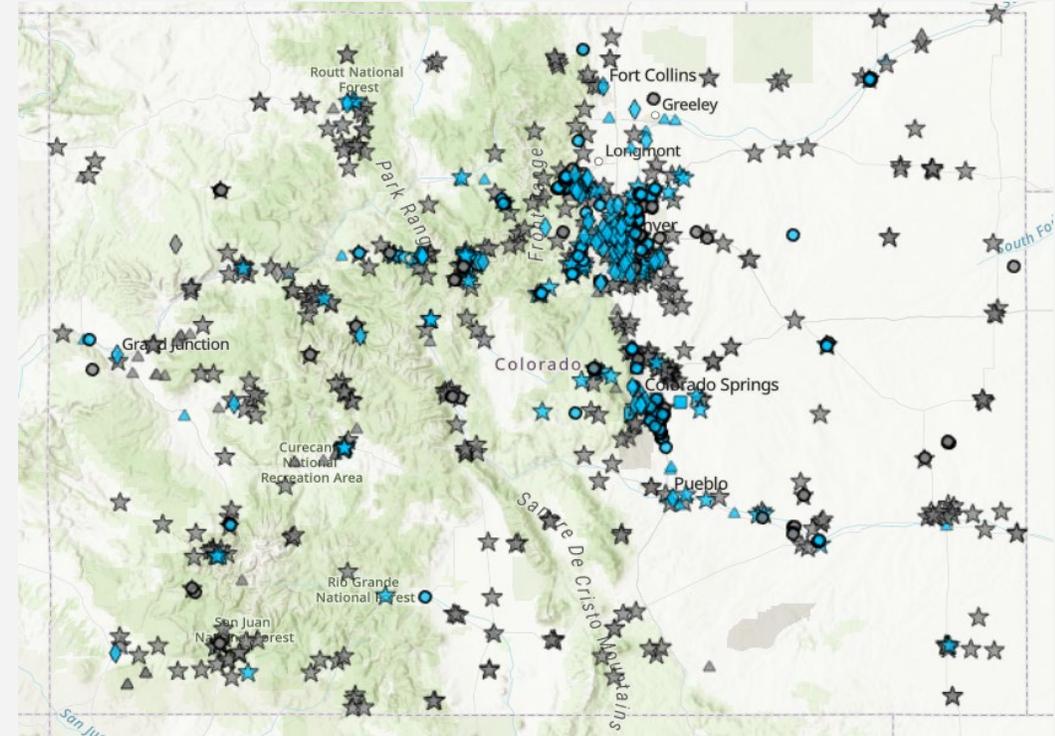


Region 8 EPA PFAS contact:

Karen Simpson – Simpson.Karen@epa.gov

CDPHE - PFAS actions in Colorado to date

- Sampling & investigation
- Mapping to inform stakeholders & guide decision-making
- Regulations, policies, & legislation
 - Limit PFAS entering state waters
 - Allow investigation and cleanup
 - Prevent releases from firefighting foam
- Actionable & accessible information
- CDPHE PFAS website:
cdphe.colorado.gov/pfas



**PFOS detections in Colorado
(July 2022)**

Resources

- How to reduce your exposure to PFAS
- PFAS blood testing: What you need to know
- PFAS and drinking water: choosing a filter
- PFAS definitions and descriptions
- PFAS Exposure: Information for patients and guidance for clinicians to inform patient and clinician decision making
- CDPHE: Talking to your health care provider
- CDPHE: Understanding your ATSDR PFAS Results Letter



CO-SCOPE.org

PFAS-FVC.org

Contact Us

About your PFAS blood Results or Study:

coscope@cuanschutz.edu | 719-425-8828 | co-scope.org

About PFAS and your Health:

cdphe_toxcall@state.co.us | 303-692-2606

Study team



Thank you for listening!

If you would like questions answered about your specific results, please contact

Dr. Adgate or Dr. Starling via e-mail or phone:

John.Adgate@cuanschutz.edu | 720.335.5059

Anne.Starling@cuanschutz.edu

Any opinions, findings conclusions, or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the funders.

Additional Slides

Additional PFAS health effects summary resource:

- **Fenton SE, Ducatman A, Boobis A, DeWitt JC, Lau C, Ng C, Smith JS, Roberts SM. Per- and Polyfluoroalkyl Substance Toxicity and Human Health Review: Current State of Knowledge and Strategies for Informing Future Research.** Environ Toxicol Chem. 2021 Mar;40(3):606-630. doi: 10.1002/etc.4890. Epub 2020 Dec 7. PMID: 33017053; PMCID: PMC7906952.
- Article found online at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7906952/>