# Quantitative Analysis of Per- and Polyfluoroalkyl Substances in Tinian's Drinking Water Supply Using a Novel β-Cyclodextrin-based Capture Filter

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# Introduction

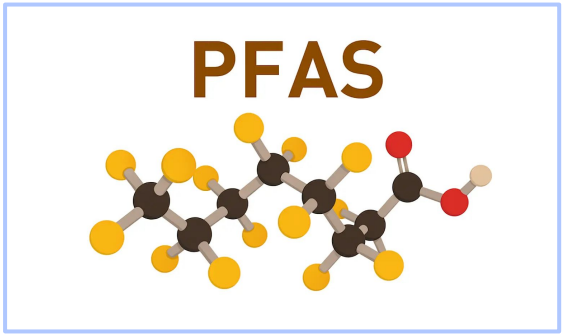
## Importance of Drinking Water

- Hydration
- Cooking
- Agriculture
- Livestock

# Threats to Our Drinking Water

General Pollution

Microplastics



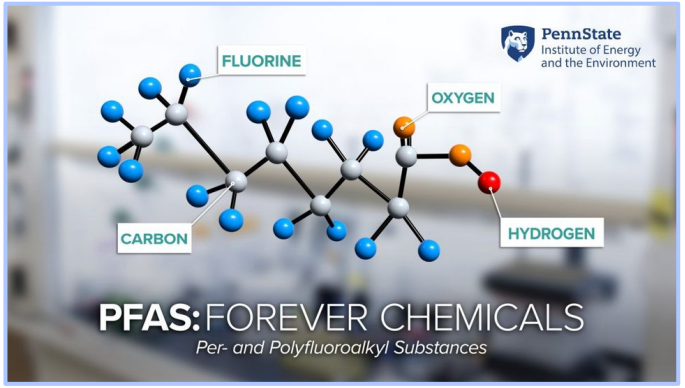

Per- and Polyfluoroalkyl Substances (PFAS)

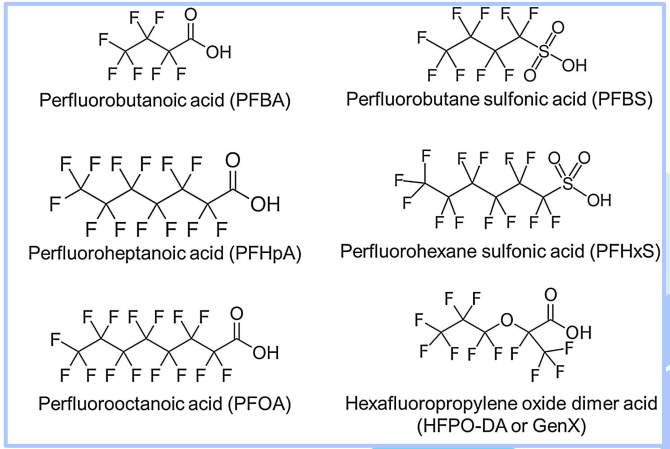
# What is PFAS?

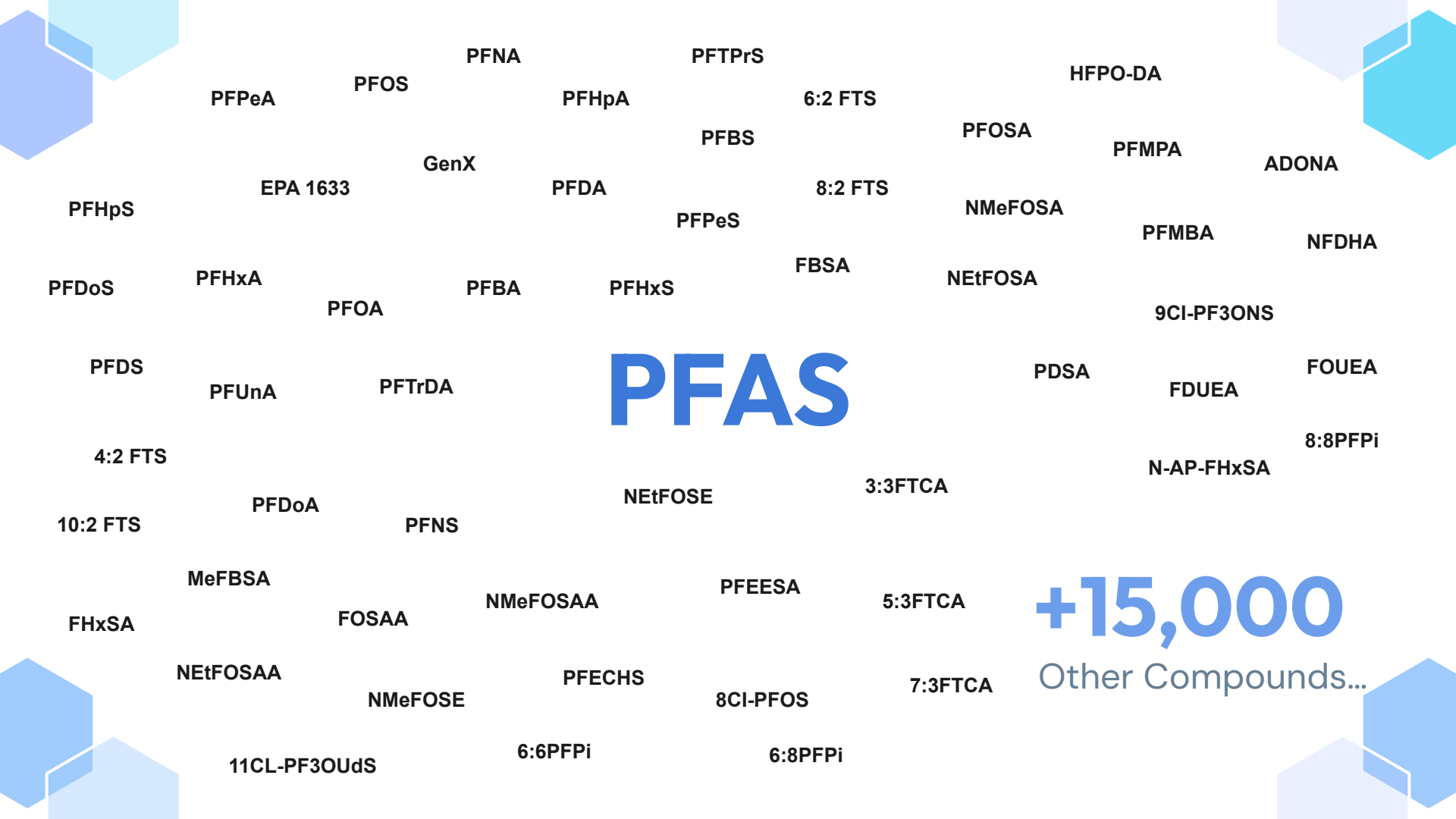
## Per and Polyfluoroalkyl Substances

- Classified as *forever chemicals*.
  – Resists degradation and decomposition in the environment.

- Linked to harmful health issues both to humans and animals.




PFNA
PFTPrS
HFPO-DA
PFOS
PFPeA
PFHpA
6:2 FTS
PFOSA
PFBS
PFMPA
GenX
ADONA
EPA 1633
PFDA
8:2 FTS
PFHpS
NMeFOSA
PFPeS
PFMBA
NFDHA
FBSA
PFDoS
PFHxA
NEtFOSA
PFBA
PFHxS
PFOA
9Cl-PF3ONS
PFDS
PDSA
FOUEA
PFUnA
PFTrDA
FDUEA
PFAS
8:8PFPi
4:2 FTS
N-AP-FHxSA
3:3FTCA
NEtFOSE
PFDoA
10:2 FTS
PFNS
MeFBSA
PFEESA
NMeFOSAA
5:3FTCA
FHxSA
FOSAA
+15,000
NEtFOSAA
PFECHS
7:3FTCA
Other Compounds...
NMeFOSE
8Cl-PFOS
6:6PFPi
6:8PFPi
11CL-PF3OUdS

# Sources of PFAS

Aqueous
Fire Fighting Foam

Waterproof Textiles

Nonstick Cookware
(Teflon)

LOCAL

# BECQ Official: Saipan Ranks Among Worst in US for PFAS Contamination

Mark Rabago • June 11, 2025 • 4 min read

BY VARIETY NEWS STAFF UPDATED 3 MONTHS AGO MARCH 18, 2026
COMMENTS

# Local review finds gaps in PFAS data across seven years

# EPA Announces $9.5 Million for Northern Mariana Islands to Address PFAS in Drinking Water

May 19, 2026

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# Research Questions

Are the levels of PFAS in Tinian's drinking water above the Environmental Protection Agency (EPA) concentration limits of 4 parts per trillion?

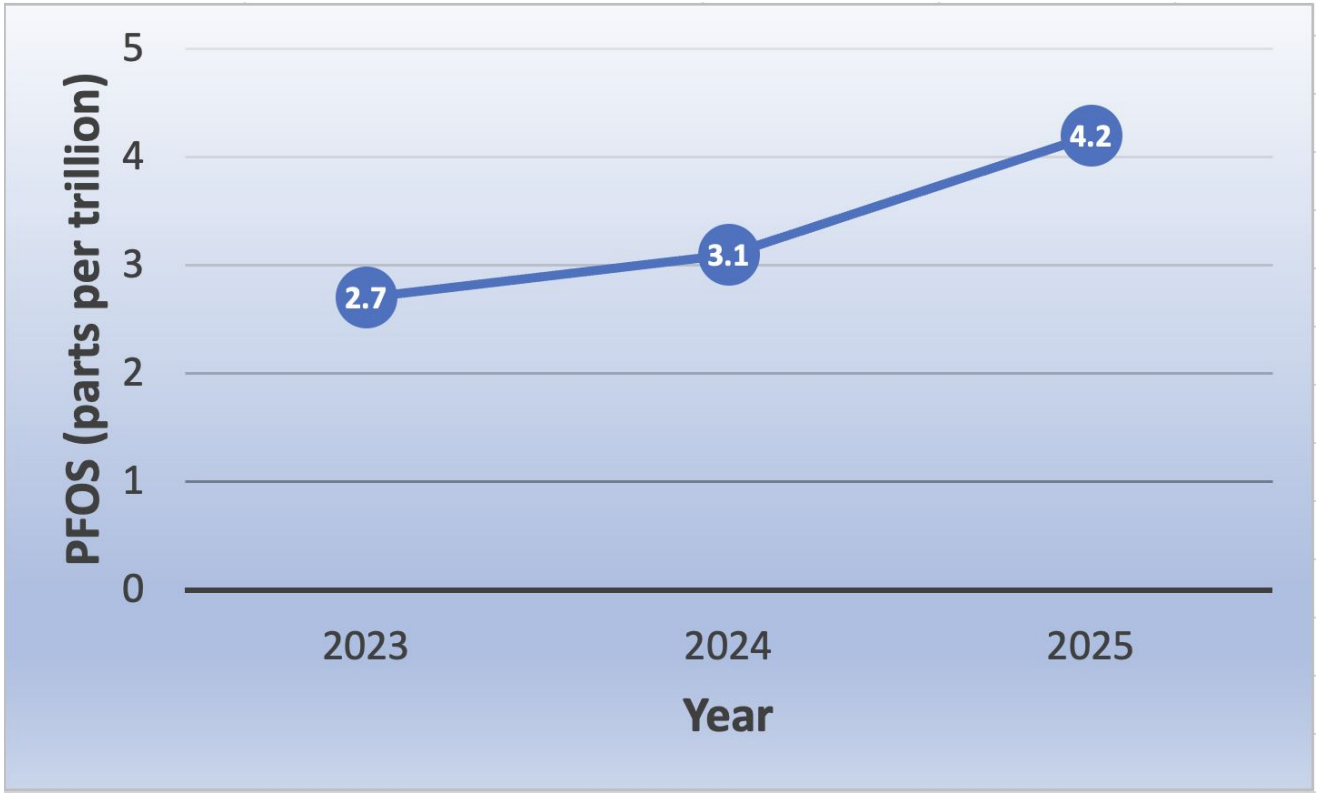
What are the identities and quantities of the different compounds of PFAS in Tinian?

Are current filtration/purification systems in commercial water bottling companies able to remove PFAS from our drinking water?

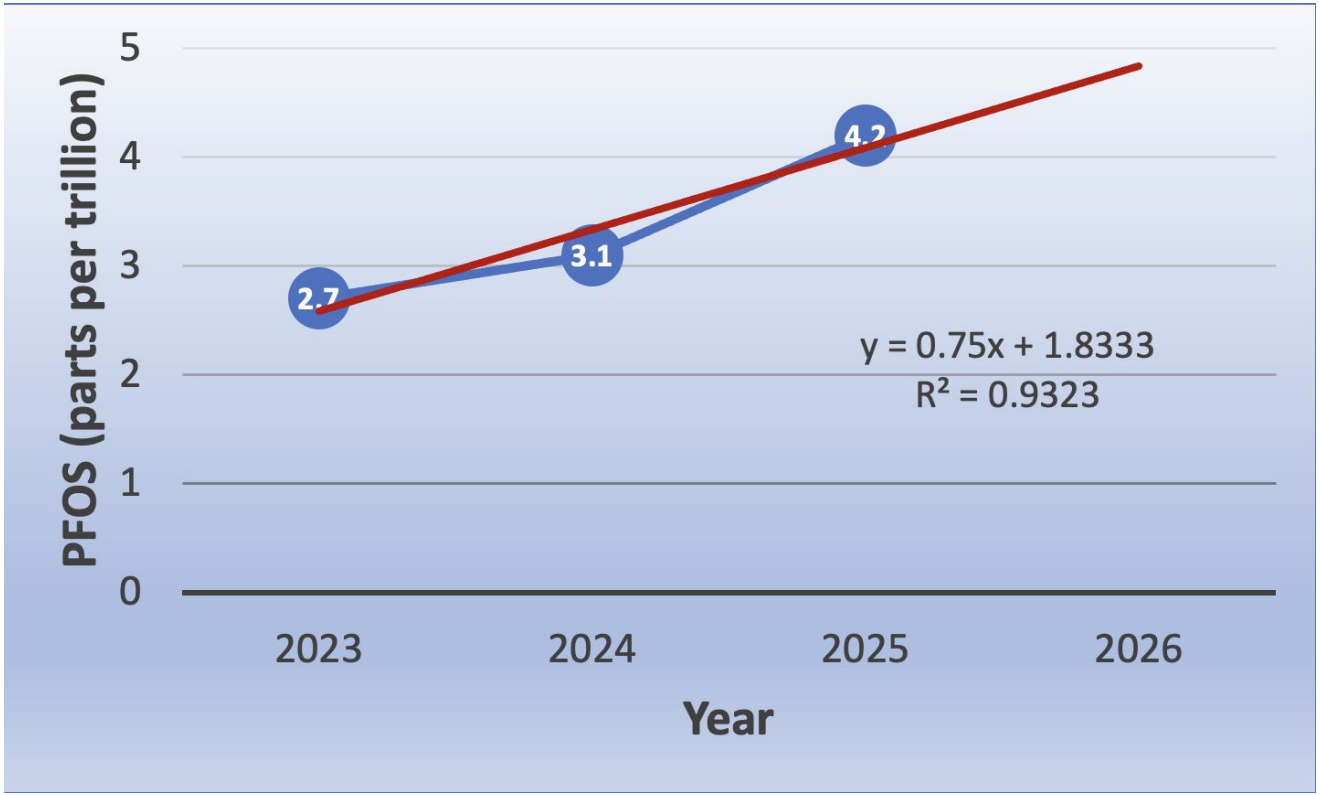
# Hypothesis

We hypothesize that total PFAS concentrations exceeds the current limits set by the EPA in Tinian’s drinking water sources.

# CUC - Tinian PFAS Water Quality Report

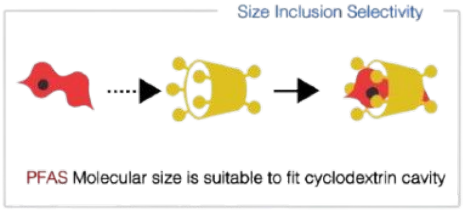


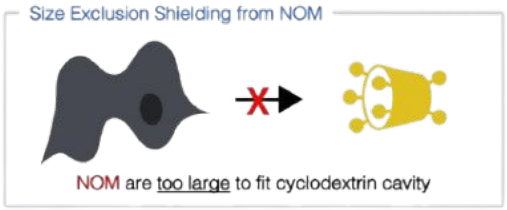
# CUC - Tinian PFAS Water Quality Report



# Cyclopure's Water Test Kit

- Tests up to 55 PFAS compounds.
- Utilizes DEXSORB® filter to capture PFAS.
- Samples will be ran through high-performance liquid chromatography and tandem mass spectrometry (HPLC-MS/MS).

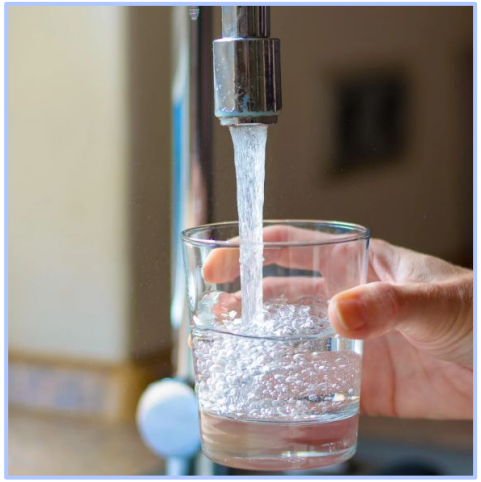



# Methods

## Tinian's Drinking Water Sources

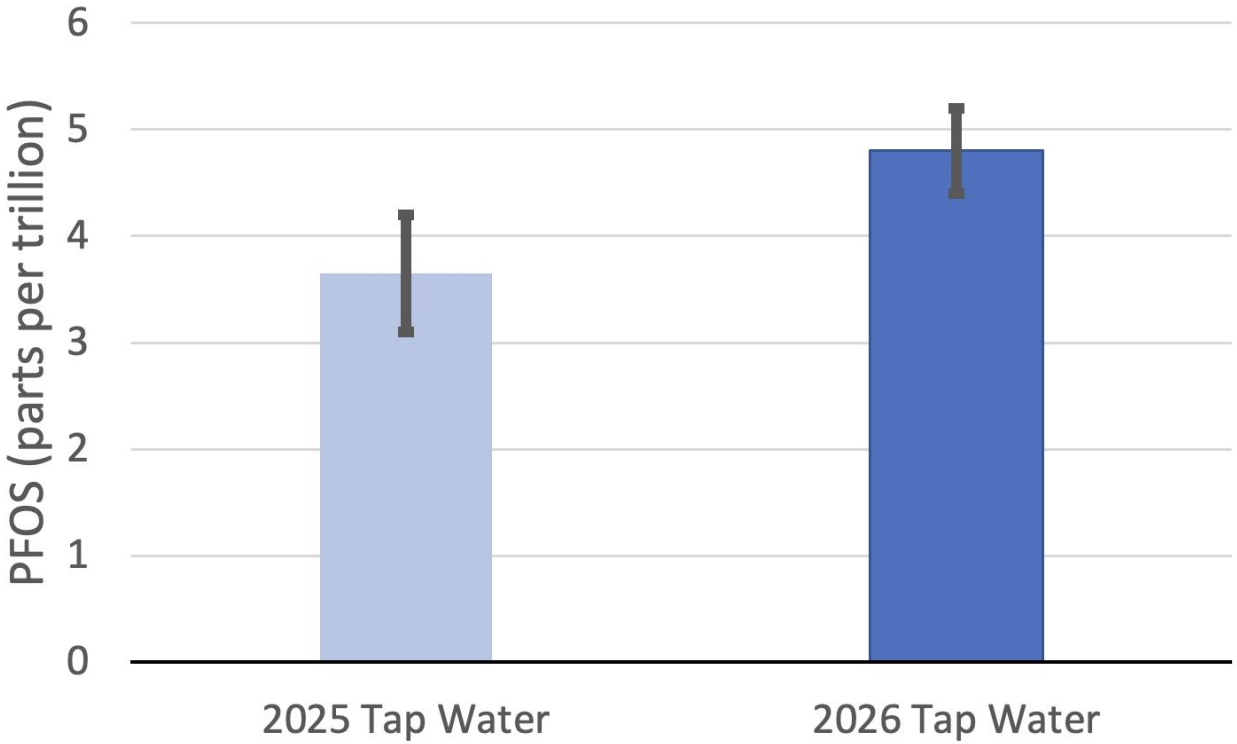
1) Tinian's Tap Water
2) Local Bottled Water
3) Absolute Distilled Drinking Water



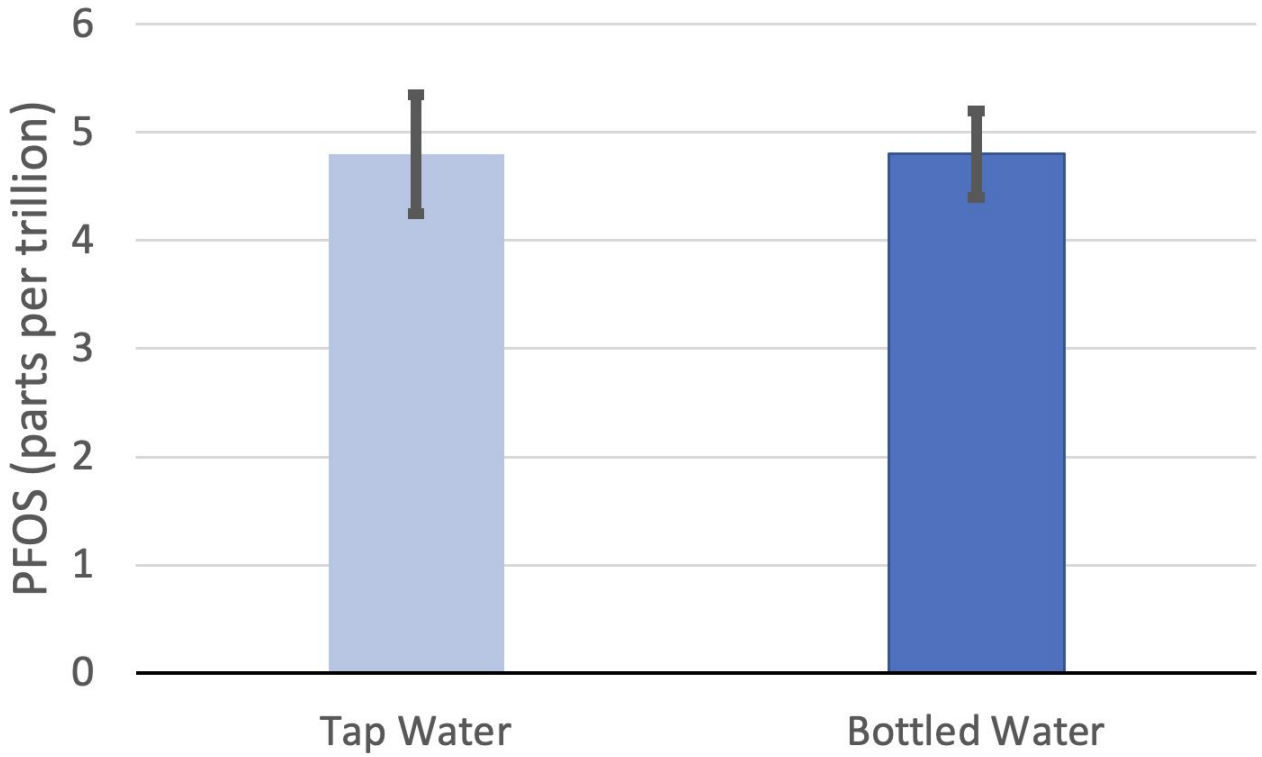
The Ohala Foundation

Never Lose Hope

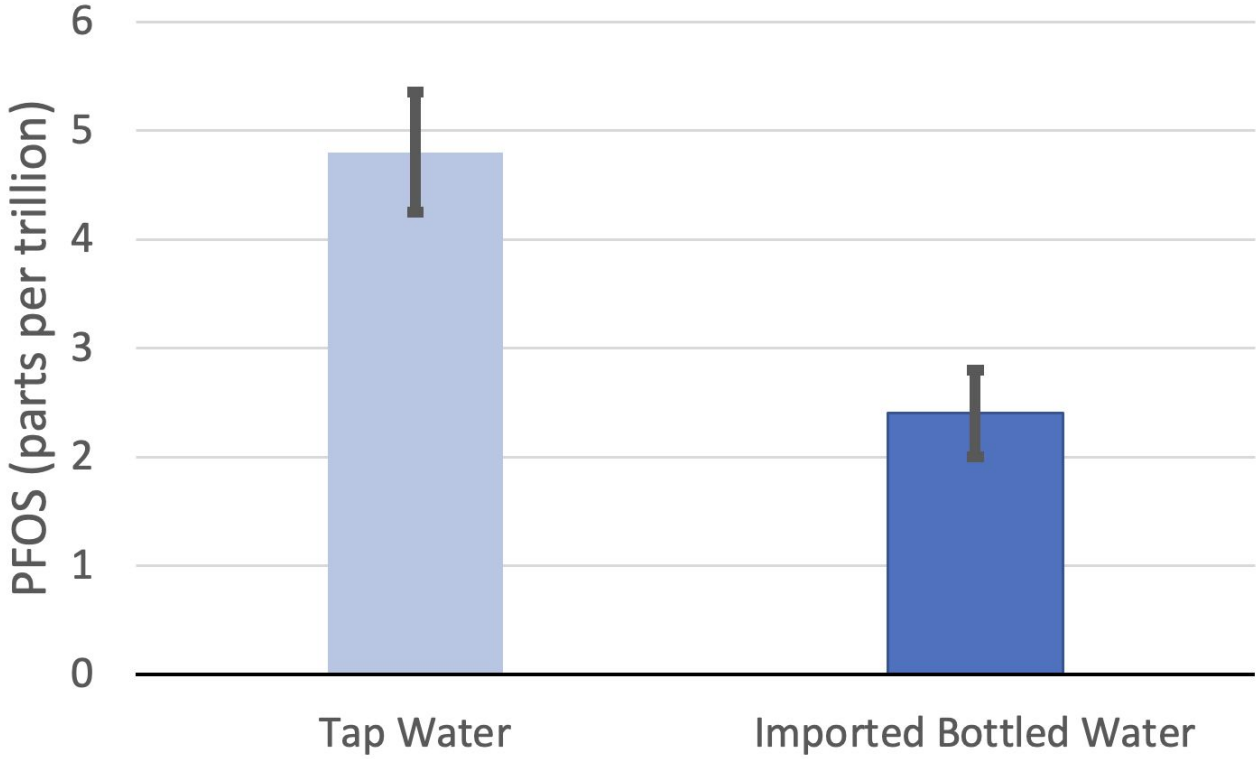

# Increased PFOS levels in Tinian drinking water from previous year (pending)



# Tinian water bottling filtration systems are inadequate in PFOS removal (pending)



# Imported distilled water show a significant reduction in PFOS levels (pending)

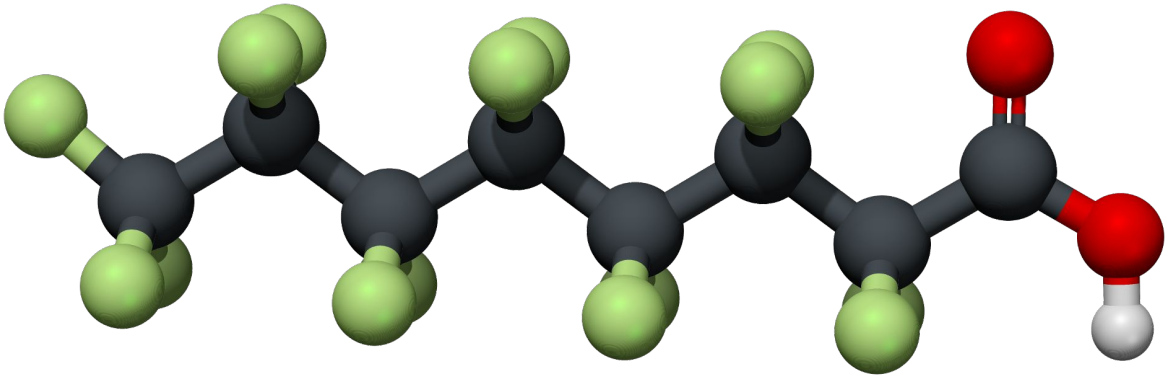


# Predicted Conclusions

- There is an increasing level of perfluorooctane sulfonate (PFOS) in Tinian's local water source over time.
- Due to inadequate filtering systems in local water bottling companies, Tinian's local bottled water is expected to have similar levels of PFOS as Tinian's tap water.
- Based on Absolute's water quality claims of reducing PFAS levels, we are expecting a reduction of PFOS levels compared to Tinian's tap water.

# Future Directions

We will report the presence and quantity of other PFAS compounds, such as PFOA.



# Future Directions

There is a community health concern for accumulation of PFAS in local food sources.

We would like to test for PFAS levels in our local food sources. (Ex: fruits, vegetables, livestock, and seafood).


# Selected References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# Thank You!

Questions or comments?