TOOL

Learn about the Hazard Index

EPA's tool for regulating PFAS in drinking water

PFNA

PFHxS

PFBS

GenX

Hazard index: Background

In 2024, the U.S. set drinking water standards for six PFAS chemicals

Four chemicals (PFNA, PFHxS, PFBS, and GenX) are regulated using a hazard index

While hazard indexes have been used in assessing risks at contaminated sites, they have never been applied in U.S. drinking water standards before

Hazard index: Basics

Defined: The hazard index measures the safety of mixtures. It appears in technical risk assessments.

Formula: Measure the amount of PFNA, PFHxS, PFBS, and GenX in water sample and apply formula:

$$\frac{\text{PFNA}}{10\text{ ppt}} + \frac{\text{PFHxS}}{10\text{ ppt}} + \frac{\text{PFBS}}{2{,}000\text{ ppt}} + \frac{\text{GenX}}{10\text{ ppt}}$$

Check the units: ppt is parts per trillion. This is the same nanograms per liter, or ng/L.

Conversion factor: If your test results are in micrograms per liter (ug/L), multiply the results by 1,000 to convert to ppt.

Non-detect: Use zero if the chemical was not detected (appears as “ND”) in results.

Hazard index: Interpretation

Hazard index is less than 1.0

The sample meets the drinking water standard for these four PFAS chemicals.

Hazard index is at or is greater than 1.0

The sample does not meet the drinking water standard for four PFAS chemicals and poses a risk for harmful health effects. Take steps to reduce exposures.

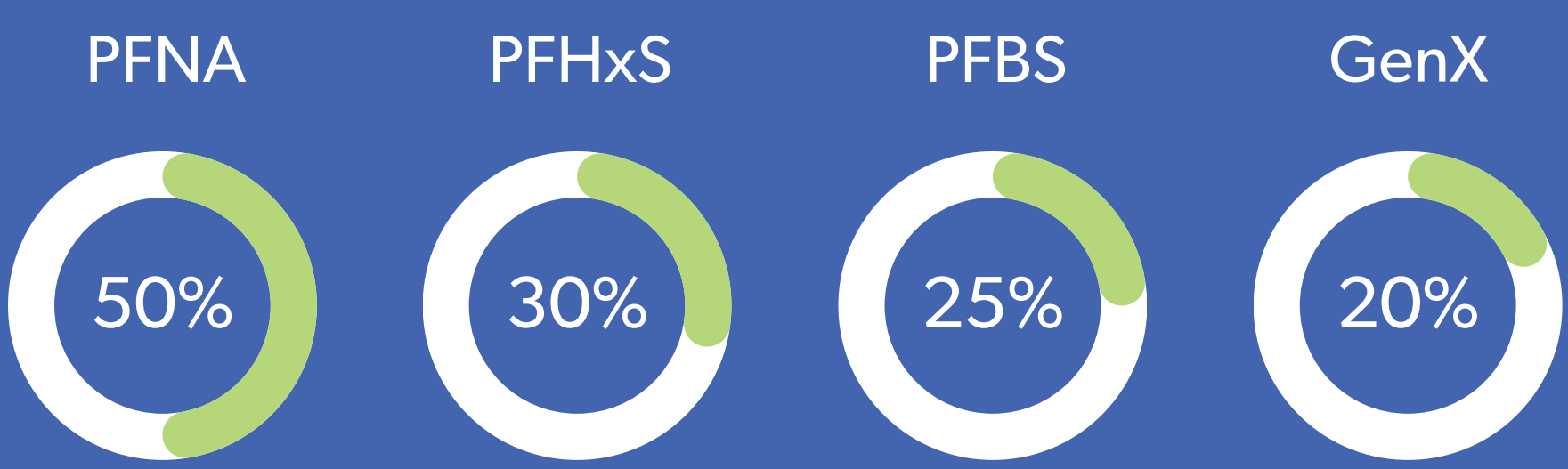
Be careful with interpretation. The hazard index is NOT the same as a 1 ppt level.

Do not assume that just because PFNA, PFHxS, PFBS, and GenX are below their safety levels that the hazard index standard will be met.

Hazard index: Example

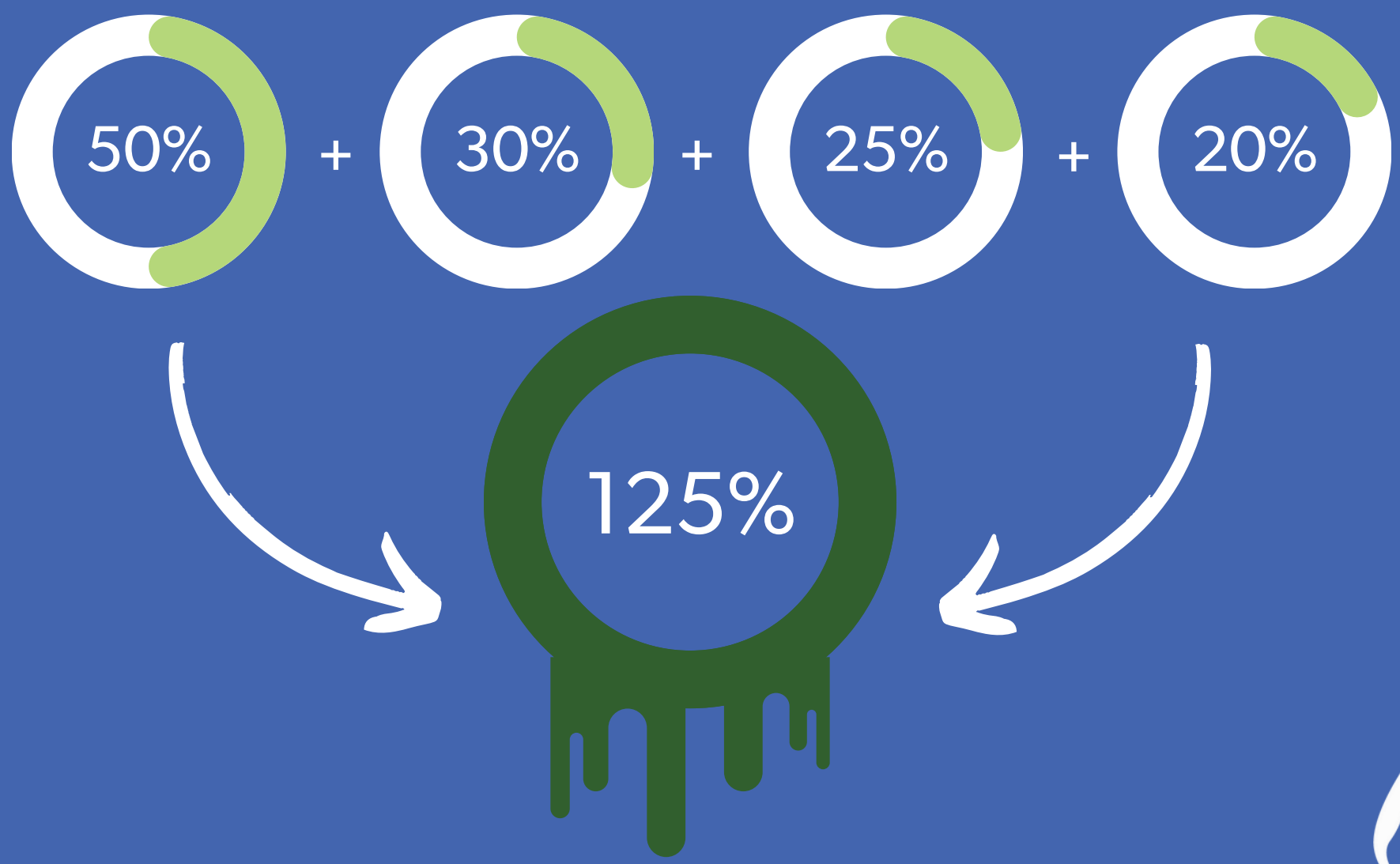
Imagine you collected a water sample and had it tested for PFAS. Your results were 5 ppt PFNA, 3 ppt PFHxS, 500 ppt PFBS, and 2 ppt GenX. PFNA was 50% of its safety level, PFHxS was 30%, PFBS was 25%, and GenX was 20%.

None of these exceed standards for individual PFAS.

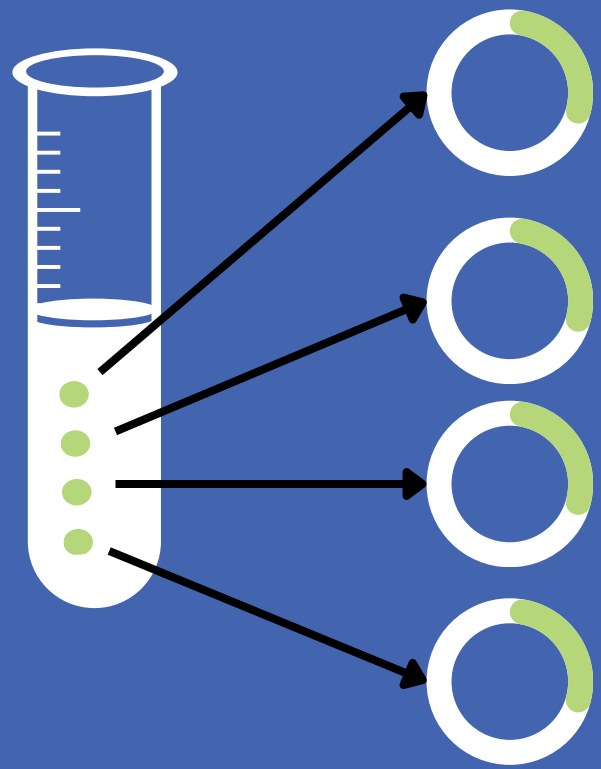


Hazard index: Example

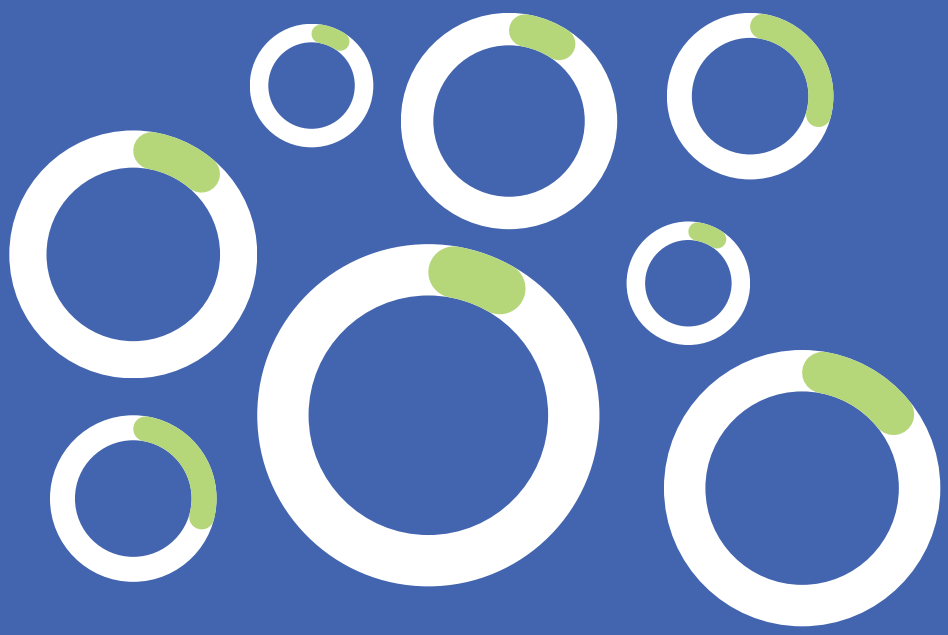
However, even if each PFAS in a sample is below its safety level, the sample may still exceed the drinking water standard.



Hazard index: Towards regulating PFAS as a class

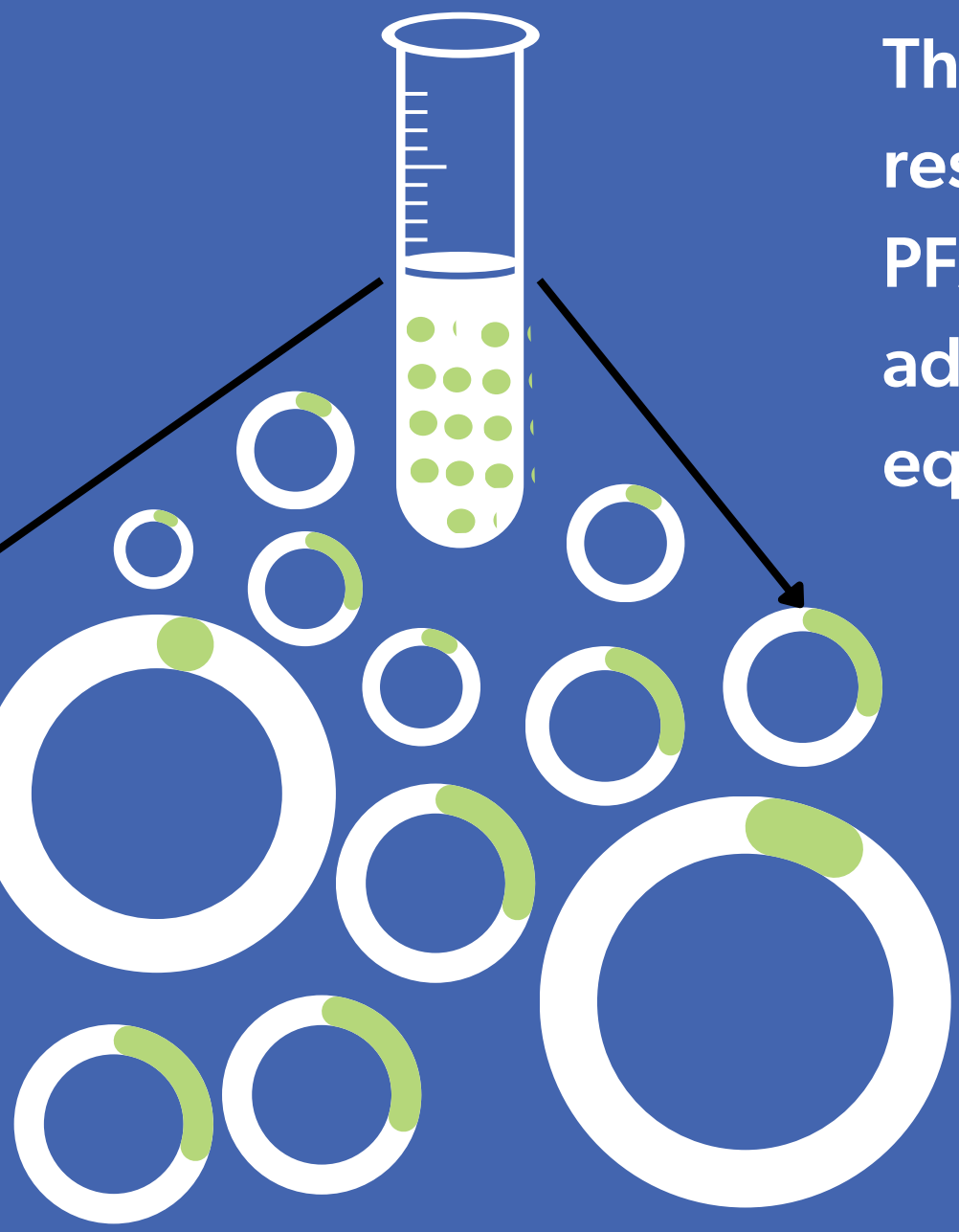


The hazard index currently applies to four out of thousands of PFAS chemicals that could co-occur in the environment.



EPA's PFAS standards use a hazard index, which is set specifically at a limit of "1.0" for a group total rather than separate limits for individual PFAS chemicals.

Hazard index: Towards regulating PFAS as a class



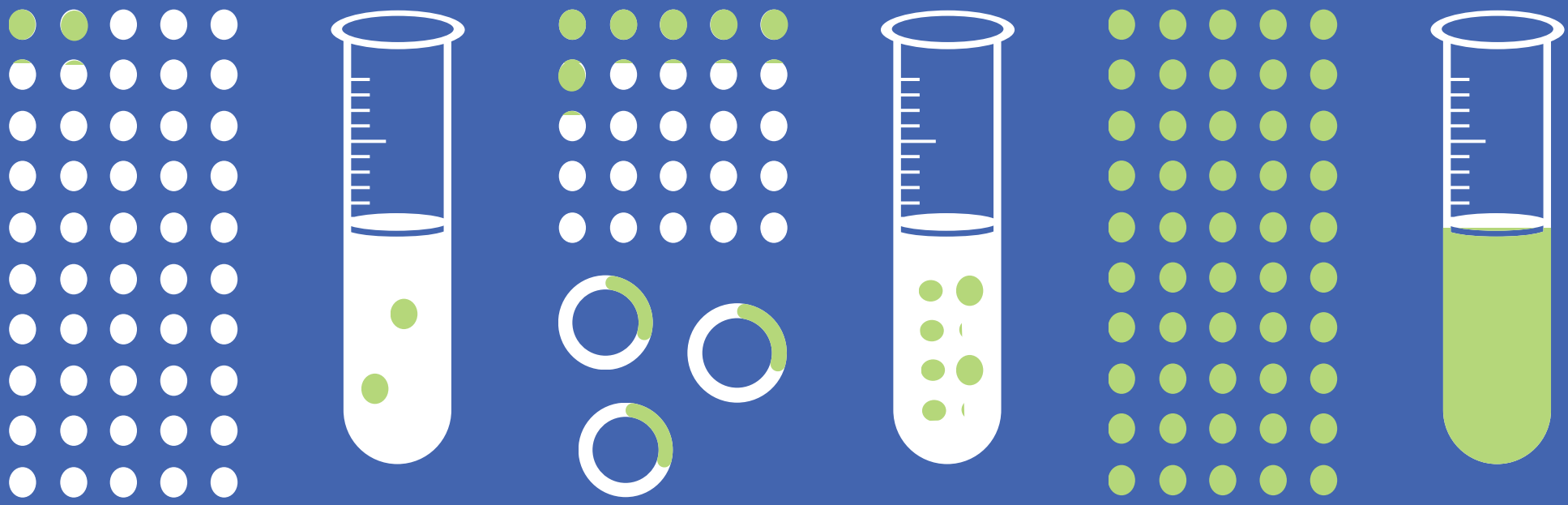
This could mean that as more research into the toxicity of PFAS emerges, EPA can add additional compounds to the equation…

…and keep the hazard index standard set at 1.0.

This is better at capturing possible combined effects of multiple PFAS.

Hazard index: A path forward

The hazard index improves on the approach of setting standards one by one. However, this approach still requires research on individual PFAS one by one to define a chemical-specific safety level.



As scientists develop new methods to measure PFAS in water and evaluate health effects, we may one day have the tools to better monitor and regulate PFAS as a class in drinking water and more efficiently reduce exposures to mixtures of PFAS.

Hazard index: Additional resources

For additional information about regulatory requirements and EPA's PFAS drinking water standards, visit www.epa.gov/pfas

For community-friendly resources on PFAS to identify sources, reduce exposures, connect with advocacy groups, and more, visit the PFAS Exchange: www.pfas-exchange.org

PFAS-REACH
PFAS Research, Education, and Action for Community Health