

Understanding the PFAS National Primary Drinking Water Proposal Hazard Index

What is a Hazard Index?

The Hazard Index is a long-established tool that EPA regularly uses, for example in the Superfund program, to understand health risk from chemical mixtures. EPA is proposing a Hazard Index MCL to limit any mixture containing one or more of PFNA, PFHxS, PFBS, and/or GenX Chemicals. The Hazard Index considers the different toxicities of PFNA, GenX Chemicals, PFHxS, and PFBS. For these PFAS, water systems would use a hazard index calculation to determine if the combined levels of these PFAS in the drinking water at that system pose a potential risk and require action.

How do I calculate the Hazard Index?

The Hazard Index (HI) is made up of a sum of fractions. Each fraction compares the level of each PFAS measured in the water to the highest level determined not to have risk of health effects.

Step 1. Divide the measured concentration of Gen X by the health-based value of 10 ppt

Step 2. Divide the measured concentration of PFBS by the health-based value of 2000 ppt

Step 3. Divide the measured concentration of PFNA by the health-based value of 10 ppt

Step 4. Divide the measured concentration of PFHxS by the health-based value of 9 ppt

Step 5. Add the ratios from steps 1, 2, 3 and 4 together

Equation

$$\text{Hazard Index} = \left(\frac{[\text{GenX}_{\text{water}}]}{[10 \text{ ppt}]} \right) + \left(\frac{[\text{PFBS}_{\text{water}}]}{[2000 \text{ ppt}]} \right) + \left(\frac{[\text{PFNA}_{\text{water}}]}{[10 \text{ ppt}]} \right) + \left(\frac{[\text{PFHxS}_{\text{water}}]}{[9.0 \text{ ppt}]} \right)$$

Step 6. To determine HI compliance, repeat steps 1-5 for each sample collected in the past year and calculate the average HI for all the samples taken in the past year.

Step 7. If the running annual average HI greater than 1.0, it is a violation of the proposed HI MCL.