

Benefits and Costs of Reducing PFAS in Drinking Water

EPA is establishing the first-ever nationwide, legally enforceable drinking water standards to protect communities from PFAS in their drinking water. This rule sets limits for five individual PFAS: PFOA, PFOS, PFNA, PFHxS, and HFPO-DA (known as “GenX chemicals”). And the rule sets a limit for mixtures of four PFAS: PFHxS, PFNA, HFPO-DA, and PFBS. This action that will reduce PFAS exposure for approximately 100 million people, prevent thousands of deaths, and reduce tens of thousands of serious illnesses.

Summary of Annual Costs and Benefits of Final PFAS NPDWR. Table 1.

	How Much?	What From?	The Potential Impact
Costs	\$1.5 Billion per year	Monitoring, communicating with customers, and if necessary, obtaining new or additional sources of water or installing and maintaining treatment technologies (Table 2).	States, Tribes, and territories with primacy will have increased oversight and administrative costs.
	Non-quantified*	Costs for some systems to comply with the Hazard Index, HFPO-DA, and PFNA MCLs.	66,000 regulated water systems will have to complete monitoring and notifications. 4,100 – 6,700 water systems may have to take action to reduce levels of PFAS.
Benefits	\$1.5 Billion per year	The rule results in fewer cancers, lower incidence of heart attacks and strokes, and fewer birth weight-related deaths. Actions taken to implement the rule may also lead to associated health benefits from reductions in other PFAS and unregulated disinfection byproducts. Benefits will prevent over 9,600 deaths and reduce approximately 30,000 serious illnesses (Table 3).	83 – 105 million people will have improved drinking water as a result lower levels of PFAS
	Non-quantified*	Increased ability to fight disease, reductions in thyroid disease and impacts to human hormone systems, reductions in liver disease, and reductions in negative reproductive effects such as decreased fertility.	
*Non-quantified benefits and costs are those that the EPA could not assign a specific dollar amount to as part of its national level quantified analysis, but it doesn’t mean their benefits or costs are less important than those with numerical values.			

Did EPA consider all the costs and the benefits of the rule?

The EPA Administrator considered all available information and analyses for quantifiable and non-quantifiable costs and benefits of this rule and determined that the quantifiable and non-quantifiable benefits of the final rule justify the quantifiable and non-quantifiable costs.

What will implementation of this rule cost?

The EPA estimates the costs for public water systems and primacy agencies to implement this regulation are approximately **\$1.548 billion per year**. These costs include water system monitoring, communicating with customers, and if necessary, obtaining new or additional sources of water or installing and maintaining treatment technologies to reduce levels of the six PFAS in drinking water. The estimated costs also include the costs to dispose of drinking water treatment residuals. The EPA estimates **4,100 – 6,700 public water systems** serving 83 - 105 million people will be required to take action to address PFAS above the regulatory standards.

Quantified Costs of Final PFAS NPDWR. Table 2.

<i>The Final PFAS NPDWR Will Cost</i>	<i>Annual Quantified Costs Once Fully Implemented</i>
Water System Monitoring	\$ 36 million
Water System Treatment and Disposal	\$ 1,506 million
Water System Administrative	\$ 1 million
Primacy Agency Implementation and Administration	\$ 5 million
This table shows the quantified costs of the final rule. The EPA expects there are additional non-quantified costs that are not included that may result in other increased and decreased costs once the rule is fully implemented.	

What are the benefits of this rule?

Over many years, this action **will prevent thousands of deaths and reduce tens of thousands** of serious illnesses that would be attributable to long-term exposure to these PFAS. The EPA has quantified some of the benefits associated with decreases in adverse health effects resulting from this rule and estimates these quantified benefits to be approximately **\$1.549 billion per year**. The quantified health benefits include fewer cancers, lower incidents of heart attacks and strokes, and reduced birth complications.

Quantified Health Benefits of Final PFAS NPDWR. Table 3.

<i>The Final PFAS NPDWR Will Prevent</i>	<i>Annual Quantified Benefits Once Fully Implemented</i>	<i>Number of Avoided Illnesses and Deaths Once Fully Implemented</i>
Developmental Effects	\$209 million	1,300 deaths
Cardiovascular Effects	\$607 million	3,700 deaths and 15,600 illnesses
Kidney Cancer	\$354 million	2,000 deaths and 7,000 illnesses
Bladder Cancer (resulting from co-removal of disinfection byproducts with PFAS)	\$380 million	2,600 deaths and 7,300 illnesses
This table shows the quantified health benefits of the final rule. The EPA expects there are significant additional non-quantified health benefits that are not included but would result in a much greater number of avoided illnesses or deaths once the rule is fully implemented.		

Are there benefits and costs that the EPA could not quantify?

The EPA expects **significant additional non-quantified benefits** beyond those that the agency has quantified and that are not included in the quantified monetary estimate. Non-quantified benefits are those that EPA could not assign a specific dollar amount to, but it doesn't mean their benefits are less important than those with numerical values. These substantial health benefits the agency could not quantify include reduced impacts to immune systems and ability to fight disease, reductions in thyroid disease and impacts to human hormone systems, reductions in liver disease, and reductions in negative reproductive effects such as decreased fertility. Furthermore, outside of the benefits related to

the six PFAS which the EPA is regulating in this rule, the agency also expects there are more benefits related to reductions in co-occurring contaminants (e.g., other PFAS, unregulated disinfection byproducts). The agency anticipates that the non-quantifiable human health benefits associated with reductions in drinking water PFAS exposure are substantial and may reasonably exceed the benefits the agency was able to quantify for this final rule.

The EPA also expects the final rule will result in **additional non-quantifiable costs**. These include those increased costs associated with treatment required at systems with Hazard Index, HFPO-DA, and/or PFNA MCL exceedances.

Why does EPA present costs and benefits on an annual basis?

Producing annualized values of costs and benefits is useful because it allows the EPA to consider costs and benefits that are realized over different timeframes. For instance, in a rule such as the PFAS drinking water rule, a higher relative percentage of costs may be incurred in the first years of rule implementation, as water systems invest capital to install treatment to remove PFAS, while benefits of avoided deaths and illnesses are anticipated to accrue after PFAS exposures to the population are reduced. Annualization of costs and benefits is useful when evaluating long-term health effects, such as reductions in cancer or cardiovascular disease risk, when benefits increase over time.

Is funding available to support implementation of this rule?

As public water systems determine the best way to tackle the investments they may need, the EPA will continue to work with states, Tribes, communities, and other partners to help them make the long-term investments needed to make our nation's drinking water safe from PFAS and will continue to provide assistance in accessing funding.

The Infrastructure Investment and Jobs Act provides **\$9 billion** specifically to invest in communities with drinking water impacted by PFAS and other emerging contaminants. The EPA will ensure that states, Tribes, and localities get their fair share of this federal water infrastructure investment—especially disadvantaged communities through its technical assistance program ([www.epa.gov.waterta](https://www.epa.gov/waterta)). This includes **\$4 billion** to the Drinking Water State Revolving Fund (DWSRF) and **\$5 billion** through the EPA's Emerging Contaminants in Small or Disadvantaged Communities Grant Program. States and communities can further leverage an additional nearly **\$12 billion** in the DWSRF dedicated to making drinking water safer, and billions more that the federal government has annually provided to fund DWSRF loans.

These funds will help communities make important investments in solutions to remove PFAS from drinking water and are a critical foundation on which to build to address this issue across the nation. More information about the Infrastructure Investment and Jobs Act and its emerging contaminant funding can be found at <https://www.epa.gov/infrastructure>.

Background

The Safe Drinking Water Act requires that the EPA conduct a Health Risk Reduction and Cost Analysis to assess the quantifiable and nonquantifiable benefits of removing these PFAS and other co-occurring contaminants and the quantifiable and nonquantifiable costs that are likely to occur solely as result of compliance with the rule, as well as assess other factors that may impact this overall analysis. Based on this analysis, the EPA Administrator has determined that the benefits justify the costs.

To learn more about the final rule, including the full analysis of the rule benefits and costs, visit:
www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas