

ENVIRONMENTAL HEALTH PROJECT

DEFENDING PUBLIC HEALTH SINCE 2012

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PFAS: Breaking Down the Future of Forever Chemicals in Our Water

March 21, 2023

QUESTIONS FROM THE CHAT

1. What will be done with the plants or vegetation used to absorb PFAS from soil?

Jason White, Connecticut Agricultural Experiment Station (CAES): We are working with collaborators at Princeton University to degrade PFAS once they are in the plants. Plants would be removed and treated off-site.

2. Are manufacturers who release PFAS getting National Pollutant Discharge Elimination System (NPDES) permits from the EPA?

Detlef Knappe, North Carolina State University (NCSU): In most cases, NPDES permits are issued at the state level. For example, in North Carolina, they are issued by our Department of Environmental Quality.

3. Is it true that ZeroWater filters are the best we can use for our drinking water? Will a Brita filter remove PFAS?

Carla Ng, University of Pittsburgh (UPitt): My understanding is that ZeroWater filters are quite good (if changed regularly) for long-chain PFAS like PFOA and PFOS because they use two types of sorbents.

Detlef Knappe, (NCSU): Pitcher filters will lower the PFAS concentration, but they are not as effective as under-sink reverse osmosis or two-stage carbon block filters.

4. I've read that PFAS have been detected in rainwater all over the world, sometimes in alarming concentrations. As a pediatrician, I find this to be an enormously disturbing development. Am I overreacting?

Carla Ng, (UPitt): The detection of PFAS in every environmental reservoir, including rainwater, speaks to how pervasive and persistent these chemicals are, and to how important it is to institute controls on their use and emissions if we are to have any hope of reversing this widespread contamination.

5. Are there any successful community programs for providing water filtration to individual homes for low-income families?

Environmental Health Project (EHP): There are organizations, often focusing on underdeveloped countries, that work around water filtration for low-income communities. At this time, we are unaware of any programs targeting PFAS filtration for low-income families. This does not mean that none exist.

6. How can we get our water tested without paying a fortune?

Detlef Knappe, (NCSU): One important barrier to private well testing is the cost of testing. \$300-500/sample, which is out of reach for many people.

EHP: Since well testing is very costly, weekly use of a water quality monitor to track conductivity provides an inexpensive way of knowing if there are changes in your water and when it may be a good idea to perform additional testing. Conductivity testing measures the ability of water to conduct electrical current. This testing can provide insight into the number of salts and minerals (total dissolved solids or TDS) in your water. Drastic changes in the level of conductivity could indicate that groundwater has been contaminated. Conductivity and pH meters can be found online by searching “water quality test kit pH conductivity.” Some of these meters are inexpensive, and some perform both tests. Consult reviews before purchasing one.

Since concern and possible action about the levels of PFAS in water is evolving rapidly, programs may be developed in the future to assist with this cost. Keep abreast of PFAS information by using the resources listed midway down on the [event page](#).

7. How toxic is non-stick cookware?

Carla Ng, (UPitt): Most newer non-stick cookware contains lower levels of “free” PFAS that have not been incorporated into the fluoropolymer coating. However, it is known that the coating itself can become compromised if the pans are heated to a high temperature with nothing in the pan (e.g., if you turn on the heat and forget about it by accident). Birds are particularly sensitive to fumes that can be produced when this happens. However, the environmental releases that occur during the production and end of life of these pans may be more concerning than under everyday use conditions.

8. Should we be advocating for nontoxic firefighting foam? Is this a hopeless cause?

Carla Ng, (UPitt): There is already a lot of work being done to phase out the use of PFAS-containing firefighting foams at airports, and the Department of Defense is actively researching the development and testing of fluorine-free foams (sometimes referred to as F3 foams). Public advocacy always helps to keep these processes moving forward.

9. Are there airport-type firefighting foams that do not contain PFAS?

Carla Ng, (UPitt): FFF - fluorine-free foam

10. How do we get the cost for testing down?

Detlef Knappe, (NCSU): Getting the cost down will take time, I think. There are efforts to develop low-cost sensors, but they are not yet sufficiently sensitive/selective.

11. Is there some organization tracking what each state is doing about PFAS?

Carla Ng, (UPitt): There was a very nice paper in 2020 about the different state approaches to drinking water guidelines that also explained the methods to determine the levels, but it's now sadly out of date!

<https://setac.onlinelibrary.wiley.com/doi/full/10.1002/etc.4863>

EHP: Another great resource is Safer States, which tracks current bills being introduced by states: <https://www.saferstates.org/toxic-chemicals/pfas/>

12. I thought that employees were entitled to information sheets detailing all chemicals that they are exposed to in the workplace? What about the people who work at these wells?

EHP: In terms of PFAS chemicals, only two (PFOA and PFOS) of the thousands of PFAS have been proposed to be listed as hazardous as of 2022. In addition, state laws may vary on right-to-know laws that apply to public sector and private sector employers not covered by OSHA regulations. Employees may have to ask for the list of chemicals from employers, and in some cases chemicals are not required to be disclosed if they are contained in a product for which the manufacturer did not disclose its constituent chemicals.

Lastly, with shale gas development, additional hazardous materials originating in the shale formations are brought to the surface during the life of the well. The hazardous contents may not all be known, and their quantities can vary. Once fracking waste exits the well site, it is exempt from federal environmental legislation under the Resource Conservation and Recovery Act (RCRA) that covers hazardous waste. Employees transporting the waste may not know its contents or be aware of its hazardous properties.

13. Are there alternatives to PFAS in general, food packaging, plastic molding, etc? I know there are alternatives to AFFF.

EHP: Yes, there are alternatives. Here is a [fact sheet](#) by Clean Production Action and Toxic-Free Future that outlines those alternatives.

14. Aqua, who owns our local water utility in the Shenango Valley of Western Pennsylvania, may not be eager to take on the cost of PFAS testing or removal. Will it be doable for a smaller customer base?

EHP: This is a very good question that has yet to be determined. The EPA and state governments are trying to determine who will pay for water treatment – the taxpayers, the citizens paying the water and sewer bills, PFAS manufacturers, other manufacturers/users where leaks and spills have occurred, or a combination of these. This question may be determined state by state or even regionally, which may be less than optimal for communities that are less well-off.

15. How can I filter my drinking water living in an apartment building?

EHP: ZeroWater filters are about \$20 per month and can be used in the home. Other common filters include Brita water pitcher filters. The type of filter needed depends on the type of substances needing to be filtered out.