Advancing health equity means banning PFAS...ASAP

Race Creeden, MD, University of Minnesota School of Public Health

Opinion Editorial
Published June 2, 2023

Abstract

Perfluoroalkyl and polyfluoroalkyl substances, or PFAS, are substances that are commonly used in thousands of products designed to make modern life possible. Unfortunately, these substances can have profound negative impacts on human health. These impacts are not distributed equally, however, and people of color and those in low-income communities experience more frequent and disproportionate exposure to PFAS. Ensuring health equity and preventing the public from exposure to these dangerous substances will require changes in how PFAS are used, increased regulatory actions, and ultimately phasing out PFAS altogether.

Introduction

Perfluoroalkyl and polyfluoroalkyl substances, commonly called PFAS, present an environmental justice and equity issue. PFAS is a catch-all term that encompasses thousands of different chemicals that are used in products like nonstick cookware, water-repellent clothing, fabrics, cosmetics, and firefighting foams, according to the Agency for Toxic Substances and Disease Registry. The same agency also collects data about the health effects of PFAS on humans and states there is enough evidence to link them to several adverse health impacts. However, PFAS distribution and the health effects that result from these toxic chemicals do not impact every community equally. Data show that low-income communities and communities of color are disproportionately impacted by PFAS because of closer proximity to sites contaminated with the harmful substances. PFAS are so widespread, ubiquitous and long lasting in the environment that banning them is not only necessary, but would be a monumental step forward for public health efforts.

Significance of PFAS

Human exposure to PFAS is significant in many ways. Frequent exposure is known to cause detrimental health effects, exposure is common due to widespread use and contamination in the environment, and perhaps more importantly, there is still a great deal that is unknown about the long-term health consequences of regular PFAS exposure. It is known with high certainty that PFAS substances can cause reduced response to vaccines, thyroid and liver disease, low birth weight, testicular and kidney cancer, and increased cholesterol levels. Health impacts linked to PFAS with a lesser degree of evidence and certainty thus far include breast cancer, increased risk of pregnancy loss, decreased sperm count, obesity, and ulcerative colitis, but even without these, the high certainty health effects are frightening enough. Additionally, PFAS is widespread, with one 2022 Government Accountability Office report showing that in a six-state area, PFAS contamination in the water supply was above the new EPA limit of 4 parts per trillion in 18% of the water systems, which served 29% of the population in those states. Considering that even levels of PFAS below this limit can cause blood concentrations up to 100 times the level present in the water (due to slow clearance and bioaccumulation), widespread environmental contamination is greatly concerning. Furthermore, while contamination of the environment with PFAS is mostly due to fluorochemical production plants, military facilities, and airports that use aqueous film forming foam (AFFF) for firefighting, PFAS is also present in numerous consumer products, such as paper, packaging products, lubricants, paints, carpets, adhesives, pesticides, cosmetics, surfactants, and semiconductors. Finally, the health effects of PFAS are challenging to study for many reasons, such as large interspecies differences that make animal models not completely reflective of human exposure, lack of a no-exposure control group due to widespread societal exposure after the introduction of PFAS in the 1950s, and lack of data about the synergistic effects of PFAS mixtures. This indicates that there are probable health effects from PFAS that have not yet been elucidated.

PFAS as an Environmental Justice Issue

There are many determinants of population health that intersect with the issue of environmental PFAS contamination. The first is systemic racism. Communities of color are at increased risk of PFAS exposure because they live near wastewater treatment plants, industrial sites, and military sites at a higher rate than other communities. Poverty is another factor. A study done by the Northeastern University Social Science Environmental Health Research Institute found that around 39,000 more low-income households and 295,000 more people of color live within five miles of a PFAS contaminated site than would be expected from U.S. census data (15% and 22% more than expected, respectively). Living in close proximity to PFAS contaminated sites, such as military installations where AFFF has been used for firefighting or PFAS manufacturing and disposal facilities, is significant in that it essentially always means higher levels of PFAS in drinking water, and in turn more bioaccumulation. People within these communities are potentially under-equipped to deal with the health consequences of constant PFAS exposure due to lack of access to health care, transportation, and work demands. They may also be more susceptible to health impacts as they are sometimes already in poor health because of chronic stress, poor diet, and exercise habits. One study also points out that fast food packaging is an intake source of PFAS and that fast food chains have been known to market their products disproportionately to Black and Hispanic neighborhoods. This issue of environmental justice and equity with regards to PFAS contamination is rooted in the Flint, Michigan, drinking water crisis that started in 2015. The Michigan Civil Rights Commission found in its investigation that "a complex mix of historical, structural and systemic racism combined with implicit bias led to decisions, actions, and consequences in Flint that would not have been allowed to happen in primarily white communities." PFAS contamination is likely a continuation of this but on a larger scale. Regulatory authorities and the voting populace are more indifferent to an issue when it does not directly impact them. This is a misguided approach to solving public health issues because it is not only morally wrong, but it is also false in this case. PFAS is so widespread and persistent that it is likely already affecting the majority of the U.S. population, with one study finding PFAS in the blood of 97% of the participants.

Future Vision

Having a vision for health equity will be an important factor in solving this crisis. My vision is that low-income communities and communities of color are not disproportionately impacted by the threat of PFAS. Ideally, no community should be affected by the threat of PFAS. The only way to achieve this is by phasing out the use of PFAS, as well as its manufacture and any unregulated disposal. This will require a great deal of innovation as several PFAS chemicals are essential for the products used daily by humanity to maintain a functioning society. However, one obvious first step would be to ban the use of PFAS for non-essential purposes, such as ski waxes, cosmetics, non-stick kitchenware, and water-repellent clothing. Another mitigation strategy would be to increase regulation on PFAS manufacturers, users, and industries in regards to their disposal techniques. Because PFAS has historically not been regulated under the Safe Water Drinking Act, companies have had little incentive to become more scrupulous in their disposal techniques or report contamination incidents. Bringing PFAS under the regulation of the Safe Water Drinking Act and eliminating its use would be exceedingly beneficial to those communities impacted most, due to the decreased cost related to reduced rate of health problems, health care complications, and increased peace of mind that having access to clean drinking water would bring. The Environmental Protection Agency (EPA) has recently released their plans to do just that and establish the maximum contaminant level (MCL) of two PFAS subtypes, PFOA and PFOS, at 4 parts per trillion, which is certainly a good start. The 2021-2024 EPA PFAS strategic roadmap also highlights the disproportionate effects of PFAS on disadvantaged communities and pledges to dedicate resources to understand the impact of exposure on these communities, as well as offer solutions that create an equitable benefit. Opponents of a PFAS ban argue that it will cost too much. I would argue that the direct health care costs, €52-84 billion annually (37-59 billion in U.S. dollars) as estimated in one European study, as well as the indirect social costs like lost wages, lost years of life, and reduced quality of life, outweigh the potential costs of stopping PFAS use. Companies that manufacture PFAS or industries that regularly use them in their products might scoff at a potential ban. This resistance would be short sighted because innovation and development of alternatives to PFAS will likely be needed

for these companies to survive and thrive in the future, and lawmakers, consumers, and the public will likely demand a ban once more data is available and widely publicized that delineates the negative health effects PFAS can cause.

Conclusion

It is critical to act now to begin phasing out and ultimately banning PFAS to reduce its negative health impacts on impoverished communities and communities of color. The longer these substances are allowed to accumulate in our bodies and the environment, the longer they will have devastating health consequences to the Americans that can afford it the least.

Author Contact Information

Race Creeden: creed014@umn.edu

References

[1] (2022, November 1). What are PFAS? Atsdr. https://www.atsdr.cdc.gov/pfas/health-effects/overview.html#:~:text=PFAS%20are%20man-made%20chemicals,grease%2C%20water%2C%20and%20oil

[2] (2022, November 1). What are the health effects of PFAS? Atsdr. https://www.atsdr.cdc.gov/pfas/health-effects/index.html

[3] Reed, G. (2019, October 30). PFAS contamination is an equity issue, and President Trump's EPA is failing to fix it. Blog. https://blog.ucsusa.org/genna-reed/pfas-contamination-is-an-equity-issue-president-trumps-epa-is-failing-to-fix-it/

[4] Kehrt, S. (2022, June 30). 'It's scary as hell' — PFAS exposure a 'widespread' problem for troops, families nationwide. Militarytimes. https://www.militarytimes.com/news/your-military/2022/06/30/its-scary-as-hell-pfas-exposure-a-widespread-problem-for-troops-families-nationwide/#:~:text=PFAS%20can%20last%20in%20our,of%20PFAS%20in%20their%20blood

[5] Scott, D. & Rizzuto, P. (2022, November 17). Cleanup liability among concerns about EPA's hazardous PFAS plan. News. https://news.bloomberglaw.com/environment-and-energy/cleanup-liability-among-concerns-about-epas-hazardous-pfas-plan

[6] Vosper, Y. (2022, November 7). Addressing PFOA and PFOS in the environment. Aboutblaw. https://aboutblaw.com/5Ji

[7] Cousins, I.T., Goldenman, G., Herzke, D., Lohmann, R., Miller, M., Ng, C.A., Patton, S., Scheringer, M., Trier, X., Vierke, L., Wang, Z., and DeWitt, J.C. Environ. Sci.: Processes Impacts, 2019, 21, 1803 DOI: 10.1039/C9EM00163H

[8] Fedinick, K., Taylor, S. & Roberts, M. (2019, August 1). Watered down justice. Comingcleaninc. https://comingcleaninc.org/assets/media/documents/WateredDownJustice%20ENG%2019-09-A_08%20FINAL.pdf

[9] (2022, November 29). Perfluoroalkyl and polyfluoroalkyl substances (PFAS). Niehs. https://www.niehs.nih.gov/health/topics/agents/pfc/index.cfm#footnote1

[10] Fenton, S. E., Ducatman, A., Boobis, A., DeWitt, J.C., Lau, C., Ng, C., Smith, J.S., & Roberts, S.M. (2021). Per- and polyfluoroalkyl substance toxicity and human health review: current state of knowledge and strategies for informing future research. Environmental Toxicology and Chemistry, 40(3), 606–630. https://doi.org/10.1002/etc.4890

[11] Persistent chemicals: EPA should use new data to analyze the demographics of communities with PFAS in their drinking water (GAO-22-105135). (2022). US Government Accountability Office. https://www.gao.gov/assets/gao-22-105135.pdf

[12] Panieri, E., Baralic, K., Djukic-Cosic, D., Buha Djordjevic, A., & Saso, L. (2022). PFAS molecules: a major concern for the human health and the environment. Toxics, 10(2), 44. MDPI AG. Retrieved from http://dx.doi.org/10.3390/toxics10020044

[13] Blake, B.E., & Fenton, S.E. (2020). Early life exposure to per- and polyfluoroalkyl substances (PFAS) and latent health outcomes: a review including the placenta as a target tissue and possible driver of peri- and postnatal effects. Toxicology, 443, 152565. https://doi.org/10.1016/j.tox.2020.152565

[14] Salvatore, D., Mok, K., Garrett, K.K., Poudrier, G., Brown, P., Birnbaum, L.S., Goldenman, G., Miller, M.F., Patton, S., Poehlein, M., Varshavsky, J., & Cordner, A. (2022). Presumptive contamination: a new approach to PFAS contamination based on likely sources. Environmental Science & Technology Letters, 9(11), 983–990. https://doi.org/10.1021/acs.estlett.2c00502

[15] Manojkumar, Y., Pilli, S., Rao, P., & Tyagi, R. (2023). Sources, occurrence and toxic effects of emerging per- and polyfluoroalkyl substances (PFAS). Neurotoxicology and Teratology., 97, 107174.

[16] Cordner, A., Goldenman, G., Birnbaum, L.S., Brown, P., Miller, M.F., Mueller, R., Patton, S., Salvatore, D.H., & Trasande, L. (2021). The true cost of PFAS and the benefits of acting now. Environmental Science & Technology, 55(14), 9630–9633. https://doi.org/10.1021/acs.est.1c03565

[17] PFAS standards for drinking water. (2023, April 7). Minnesota Department of Health. Retrieved May 6, 2023, from https://www.health.state.mn.us/communities/environment/water/pfasvalues.html

[18] PFAS strategic roadmap: EPA's commitments to action 2021-2024. (2022, November 17). US EPA. https://www.epa.gov/pfas/pfas-strategic-roadmap-epas-commitments-action-2021-2024