conservation law foundation

For a thriving New England

CLF Maine
53 Exchange Street, Suite 200
Portland, ME 04101
P: 207.210.6439
F: 207.221.1240
www.clf.org

By email:

December 19, 2018

Bethany Hamm, Acting Commissioner
Maine Department of Health and Human Services
221 State Street
Augusta, ME 04333-0011
bethany.hamm@maine.gov

Subject: Petition for Rulemaking to Establish a Treatment Technique Drinking Water Standard for Per- and Polyfluoroalkyl Substances

Dear Commissioner Hamm:

Conservation Law Foundation (CLF) and Toxics Action Center hereby petition the Maine Department of Health and Human Services (Maine DHHS) to establish a drinking water standard for Per- and Polyfluoroalkyl Substances (PFAS) that is protective of public health.[1] Specifically, CLF petitions Maine DHHS to adopt a treatment technique drinking water standard for the PFAS class of chemicals in lieu of setting a maximum contaminant level (MCL) for specific PFAS. At a bare minimum, if Maine DHHS does not promulgate a treatment technique standard, Maine DHHS should adopt an MCL for the PFAS class or MCLs for each PFAS chemical that poses a risk to public water systems in Maine. As an interim step to protect public health, Maine DHHS should immediately adopt the Vermont Department of Public Health's Health Advisory for PFAS (PFAS Health Advisory) of 20 parts per trillion (ppt) for the PFAS Class as an MCL.[2]

PFAS have been found in drinking water sources across Maine and numerous studies have linked PFAS to significant health risks, including cancer. Although the State of Maine has taken some preliminary steps to limit exposure to this dangerous class of chemicals, Maine DHHS must take additional affirmative steps to protect Maine residents from PFAS.

CLF protects New England's environment for the benefit of all people. Founded in 1966, CLF is a non-profit, member-supported organization with offices located in Maine, Massachusetts, Vermont, Rhode Island, and New Hampshire. CLF uses the law, science, and the market to

[1] Pursuant to Maine's Administrative Procedure Act, codified at 5 M.R.S. § 8055, "[a]ny person may petition an agency for the adoption or modification of any rule."
[2] Although this petition has prioritized a drinking water standard for the PFAS class, there is also an urgent need to develop comprehensive standards for PFAS compounds, including but not limited to, surface water quality standards, pre-treatment standards for industrial users, and limits for land application of sludges.

create solutions that protect public health, preserve natural resources, build healthy communities, and sustain a vibrant economy. CLF has been a leading advocate for clean water and safe drinking water in Maine and throughout New England, and is engaged in numerous efforts to address the threat of emerging contaminants like PFAS throughout New England.

Founded in 1987, Toxics Action Center works side-by-side with communities across New England to clean up and prevent pollution at the local level.

INTRODUCTION

Maine DHHS must immediately adopt a drinking water standard that protects the residents of Maine from exposure to all PFAS compounds. PFAS are persistent in the environment; bioaccumulative; highly mobile in water; found in hundreds of different products; and are toxic in very small concentrations. PFAS have been found at unsafe levels in drinking water in Maine, as well as in ground- and surface waters. Drinking water contaminated with PFAS is a significant source of exposure.[3] Without a drinking water standard, public water systems in Maine are not required to regularly monitor for PFAS compounds or to treat water with unsafe levels of PFAS.

DuPont, 3M, and other chemical manufacturers recklessly produced these dangerous chemicals for decades despite being aware of the significant health risks associated with PFAS. Furthermore, in 1981, 3M and DuPont were aware that ingestion of perfluorooctanoic acid (PFOA) caused birth defects in rats.[4] After receiving this information, DuPont tested seven children of pregnant workers: two had birth defects.[5] DuPont was also aware that at least one facility had contaminated local drinking water supplies with unsafe levels of PFOA by 1987, but failed to warn anyone.[6]

DuPont hid this vital health information from the public and the U.S. Environmental Protection Agency (EPA) while making billions of dollars in profits from continued production of PFOA.[7] Ultimately, DuPont was fined $16.5 million dollars in 2005 for failing to disclose information about toxicity and health risks caused by PFOA.[8]

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[3] *See* Me. Ctr. for Disease Control and Prevention, *PFOA and PFOS in Private Well Water Questions and Answers*, March 2017, https://www.maine.gov/dep/spills/topics/pfas/PFOS_PFOA_Factsheet_March2017_Final.pdf
[4] Nathaniel Rich, *The Lawyer Who Became DuPont's Worst Nightmare*, N.Y. TIMES, Jan. 6, 2016, https://www.nytimes.com/2016/01/10/magazine/the-lawyer-who-became-duponts-worst-nightmare.html
[5] *Id.*
[6] *Id.*
[7] *Id.*
[8] Memorandum from Grant Y. Nakayama, Assistant Administrator, to Environmental Appeals Board Re Consent Agreement and Final Order to Resolve DuPont's Alleged Failure to Submit Substantial Risk Information Under the Toxic Substances Control Act (TSCA) and Failure to Submit Data Requested Under the Resource Conservation and

Although PFOA and perfluoro-octane sulfonic acid (PFOS) have now been phased out of production in the U.S.,[9] these compounds will remain in our drinking water, ground- and surface waters, as well as our bodies, for decades. In addition, manufacturers have rushed to produce thousands of alternative PFAS that are likely to pose similar health risks given the similarities in chemical structure.[10] There are now over 3,000 different kinds of PFAS.

To make matters worse, EPA has failed to take meaningful action to protect the public from exposure to PFAS in drinking water. After becoming aware of contamination of drinking water supplies and the significant health risks posed by these dangerous chemicals, EPA gave manufacturers almost a decade to phase out production and use of PFOA and PFOS through a voluntary program.[11] Despite learning in 2015 that millions of Americans were, and continue to be, exposed to PFAS contaminated drinking water, EPA has not taken steps toward requiring public water systems to regularly monitor for PFAS and to treat unsafe water.[12] EPA even suppressed a scientific study suggesting that EPA's current health advisory for PFOA and PFOS does not protect public health. After widespread public outcry, EPA announced the possibility of setting drinking water standards for just two out of more than 3,000 PFAS, and even this limited action will take years.[13]

In addition, the federal government's capacity to set a standard protective of public health has been compromised by the staggering liabilities of the United States for releases of PFAS at federal facilities nationwide, including releases from federal facilities in Maine.

Recovery Act (RCRA) 3 (Dec. 14, 2005), https://www.epa.gov/sites/production/files/2013-08/documents/eabmemodupontpfoasettlement121405.pdf

[9] U.S. Envtl. Prot. Agency, *Assessing and Managing Chemicals Under TSCA, Fact Sheet: 2010/2015 PFOA Stewardship Program*, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/fact-sheet-20102015-pfoa-stewardship-program#what

[10] *See, e.g.*, Stephen Brendel et al., *Short-Chain Perfluoroalkyl Acids: Environmental Concerns and a Regulatory Strategy under REACH* 30 ENVTL. SCI. EUR. 9, (2018), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5834591/pdf/12302_2018_Article_134.pdf

[11] *See, e.g.*, U.S. Env't Prot. Agency, *In the matter of: Premanufacture Notice Numbers: Dupont Company* (April 9, 2009), https://assets.documentcloud.org/documents/2746607/Sanitized-Consent-Order-P08-0508-and-P08-0509.pdf; Premanufacture Notification Exemption for Polymers; Amendment of Polymer Exemption Rule to Exclude Certain Perfluorinated Polymers, 75 Fed. Reg. 4295, 4296 (Jan. 27, 2010).

[12] David Andrews, *Report: Up to 110 Million Americans Could Have PFAS-Contaminated Drinking Water*, ENVTL. WORKING GROUP, May 22, 2018, https://www.ewg.org/research/report-110-million-americans-could-have-pfas-contaminated-drinking-water#.W6_7a2hKg2w

[13] *The Federal Role in the Toxic PFAS Chemical Crisis, Hearing on SD-342 Before the Subcommittee on Homeland Security & Governmental Affairs*, 115 Cong. (2018) (statement of Chairman Rand Paul and Ranking Member Gary C. Peters) https://www.hsgac.senate.gov/hearings/the-federal-role-in-the-toxic-pfas-chemical-crisis

Maine can—and must—take the lead in the absence of federal safeguards. We will never be able to reverse the damage caused by chemical manufacturers and EPA's inaction, but Maine DHHS has broad authority to promulgate rules that limit additional exposure to unsafe levels of PFAS in drinking water.[14] In the absence of such rules, the public will remain at risk, and the most vulnerable among us – nursing infants and children in general, who consume higher volumes of water for their body weight and have greater developmental susceptibility – will be at the greatest risk.

Moreover, in the absence of such rules, homeowners on well-water and municipalities and other drinking water system operators will be stymied in their efforts to recover the costs of adopting filtration and other safeguards from responsible polluters.

For all these reasons, Maine DHHS should stop putting public health at risk and adopt a treatment technique drinking water standard that will protect Maine residents from the class of PFAS. As an interim step, Maine DHHS should immediately adopt Vermont's PFAS Health Advisory as a drinking water standard for public water systems.

I. BACKGROUND

A. PFAS are harmful to human health.

PFAS are a public health crisis "perfect storm" because PFAS compounds are extremely persistent in the environment, highly mobile in water, bioaccumulative, toxic in very small quantities, and found in hundreds of products. PFAS compounds are man-made substances that do not occur naturally, and they have been used in non-stick cookware, water-repellent clothing, stain resistant fabrics and carpets, cosmetics, firefighting foams, and other products that resist grease, water, and oil.[15] These chemicals are extremely strong and highly resistant to degradation.[16]

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[14] *See* 22 M.R.S. § 2611 ("The [Maine DHHS] commissioner shall promulgate and enforce primary drinking water regulations which are necessary to protect the public health and which shall apply to all public water systems. . . .[s] Such regulations shall be no less stringent than the most recent National Primary Drinking Water Regulations in effect, as issued or promulgated by the United States Environmental Protection Agency. Regulations under this subsection may be amended from time to time, as necessary.").

[15] Seth Kerschner and Zachary Griefen, *Next Round of Water Contamination Suits May Involve CWA*, LAW 360 (October 5, 2017), https://www.law360.com/articles/970995/next-round-of-water-contamination-suits-may-involve-cwa

[16] New Jersey Dep't of Envtl Prot. Division of Science, Research, and Envtl. Health, *Investigation of Levels of Perfluorinated Compounds in New Jersey Fish, Surface Water, and Sediment*, June 18, 2018, https://www.nj.gov/dep/dsr/publications/Investigation%20of%20Levels%20of%20Perfluorinated%20Compounds%20in%20New%20Jersey%20Fish,%20Surface%20Water,%20and%20Sediment.pdf

PFAS are toxic to humans in very small concentrations—in the *parts per trillion*.[17] PFAS are suspected carcinogens and have been linked to growth, learning and behavioral problems in infants and children; fertility and pregnancy problems, including pre-eclampsia; interference with natural human hormones; increased cholesterol; immune system problems; and interference with liver, thyroid, and pancreatic function.[18] PFAS have been linked to increases in testicular and kidney cancer in human adults.[19] The developing fetus and newborn babies are particularly sensitive to some PFAS.[20]

Alarmingly, epidemiological studies identify the immune system as a target of PFAS toxicity. Some studies have found decreased antibody response to vaccines, and associations between blood serum PFAS levels and immune system hypersensitivity (asthma) and autoimmune disorders (ulcerative colitis).[21] There are no medical interventions that will remove PFAS from the body.[22]

PFAS are very resistant to breakdown, bioaccumulate, and easily migrate. PFAS are persistent in the environment and have been "shown to bioaccumulate in wildlife."[23] A study by the U.S. Centers for Disease Control and Prevention (CDC) found four PFAS (PFOS, PFOA, perfluorohexane (PFHxS), and perfluorononanoic acid (PFNA)) in the serum of nearly all of the people tested, indicating widespread exposure in the U.S. population.[24] PFOA and PFOS were found in up to 99 percent of the U.S. general population between 1999 and 2012.[25] PFAS are found in human breast milk and umbilical cord blood.[26]

While a great deal of public attention has recently been paid to PFOA and PFOS, and Maine DHHS, through its Center for Disease Control and Prevention, adopted a Maximum Exposure

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[17] Agency for Toxic Substances and Disease Registry, *Per- and Polyfluoroalkyl Substances (PFAS) and Your Health*, https://www.atsdr.cdc.gov/pfas/health-effects.html, Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Perfluoroalkyls*, https://www.atsdr.cdc.gov/toxprofiles/tp200.pdf, at 5–6.
[18] *Id.*
[19] *Id.* at 6; Vaughn Barry et al., *Perfluorooctanoic Acid (PFOA) Exposures and Incident Cancers among Adults Living Near a Chemical Plant*, 121 ENVTL. HEALTH PERSPECTIVES 11-12, 1313-18 (Nov.-Dec. 2013), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3855514/pdf/ehp.1306615.pdf
[20] U.S. Envtl. Prot. Agency, *Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS)*, (May 2016) https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf at 10
[21] *Id.* at 39.
[22] Vermont Dep't of Health, *Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) in Drinking Water*, July 9, 2018, http://www.healthvermont.gov/sites/default/files/documents/pdf/ENV_DW_PFAS.pdf
[23] Me. Dept. of Envtl. Prot., *PFOA and PFOS: What is it?,* (Oct. 31, 2018, 4:33 PM), https://www.maine.gov/dep/spills/topics/pfas/index.html
[24] Ctr. for Disease Control and Prevention, *Per- and Polyfluorinated Substances (PFAS) Factsheet* (Apr. 7, 2017), https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html
[25] U.S. Envtl. Prot. Agency, *Drinking Water Health Advisory for Perflourooctanoic Acid (PFOA)* (May 2016) at 9, https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf
[26] Agency for Toxic Substances and Disease Registry, *Toxicological Profile for Perfluoroalkyls*, *supra* note 17, at 3.

Guideline (MEG) for Drinking Water of 70 ppt for PFOA and PFOS when both are present in drinking water,[27] EPA and other scientists have raised concerns that other chemicals in the PFAS class of compounds are similar in chemical structure and are likely to pose similar health risks.[28] For example, all PFAS share a strong carbon-flourine bond and "degrade very slowly, if at all, under environmental conditions."[29] Although some of the long-chain PFASs are being regulated or phased out, the most common replacements are short-chain PFASs with similar structures, or compounds with fluorinated segments joined by ether linkages. While some shorter-chain fluorinated alternatives seem to be less bioaccumulative, they are still as environmentally persistent as long-chain substances or have persistent degradation products.[30] In addition, because some of the shorter-chain PFASs are less effective, larger quantities may be needed to provide the same performance.[31] Thus, drinking water rules must protect the public health from unsafe exposure to all compounds in the PFAS class.

B. PFAS have been found in Maine drinking water, groundwater, and surface waters.

Not only are PFAS toxic in very small amounts (in the nanograms per liter or parts per trillion), they are highly mobile in groundwater and surface water, and have been found in waters throughout Maine.

1. Groundwater

In Aroostook County, Maine, near the former Loring Air Force Base, PFAS compounds have been found in groundwater and surface water.[32] The base has been closed since 1994, and was added to the EPA National Priorities List in 1990 due to contamination from waste oils, PCBs, and pesticides.[33] More recently, a preliminary assessment was conducted to identify areas of the former base where Aqueous Film Forming Foams (AFFFs) were historically used.[34]

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[27] Me. Ctr. for Disease Control and Prevention, *Maximum Exposure Guidelines (MEGs) for Drinking Water*, Dec. 31, 2016, https://www.maine.gov/dhhs/mecdc/environmental-health/eohp/wells/documents/megtable2016.pdf

[28] *See, e.g.,* U.S. Envtl. Prot. Agency*, supra* note 11 (stating that, with respect to "GenX" compounds (chemical substances intended to replace long-chain (C8) PFAS used in Teflon), "EPA has concerns that these PMN substances will persist in the environment, could bioaccumulate, and be toxic ("PBT") to people, wild mammals, and birds.").

[29] Arlene Blum et al., *The Madrid Statement on Poly- and Perfluoroalkyl Substances (PFASs)*, ENVTL. HEALTH PERSPECTIVES, May 2015, https://ehp.niehs.nih.gov/doi/pdf/10.1289/ehp.1509934

[30] *Id.*

[31] *Id.*

[32] U.S. Envtl. Prot. Agency, *Loring Air Force Base Limestone, ME; Cleanup Activities*, https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0101074

[33] *Id.*

[34] *Id.*

Groundwater, surface water, soil and sediment samples collected from this assessment identified the presence of PFAS chemicals – further investigation is to be conducted to determine the extent of contamination.[35]

A former Naval Air Station in Brunswick, Maine, has also been placed on the EPA Superfund program after PFAS levels were detected in nearby groundwater.[36] Most significantly, Building 653 of the site was historically struck by lightning, and a fire suppression system was activated in the surrounding area.[37] As a result, the PFOS and PFOA levels detected in the area around Building 653 were an astounding 24 parts per billion (ppb) and 0.63 ppb, respectively.[38] Of the 139 on-base monitoring wells tested, 70 wells showed the presence of PFAS above the EPA Health Advisory limits.[39]

Additional sites in Maine that detected PFAS contamination, most likely originating from historic use of AFFFs, on the property include:

- Sanford and York County, Maine, where in 2013 PFOS was detected at 290 ppt in groundwater testing. Possible sources include AFFF from the near Sanford Seacoast Regional Airport, previously the Naval Auxiliary Air Facility.[40]
- In Kittery, Maine, on-base monitoring well samples were taken in 2018. Of the four wells tested, one found PFAS compounds at a rate of 140 ppt. The suspected source of this PFAS contamination is AFFF used at the neighboring Portsmouth Naval Shipyard.[41]

In 2018 PFAS compounds of PFOS and PFOA were found in Cutler, Maine. The contamination levels detected from four on-base monitoring wells showed levels between 161-360 ppt. Once again, the source of this contamination is suspected to be the use of AFFF from the Navy VLF Transmitter Cutler.[42]

2. Drinking Water

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[35] *Id.*
[36] U.S. Envtl. Prot. Agency, *Brunswick Naval Air Station Brunswick, ME; Cleanup Activities* https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=0101073 Naval Facilities Eng'g Command, *Testing of Perfluorinated Compounds in Off-Base Drinking Water Wells: Former Naval Air Station Brunswick, Brunswick, Maine,* April 2016, https://www.maine.gov/dep/spills/topics/pfas/NASB_ResWell_PFC_FactSheet_April2016.pdf
[37] *Id.*
[38] *Id.*
[39] *Interactive Map Shows If Your Tap Water is Contaminated with PFCs*, ENVTL. WORKING GROUP (June 15, 2017) https://www.ecowatch.com/ewg-pfcs-drinking-water-2436908585.html (follow "Interactive Map" hyperlink; then search for the Brunswick, Maine contamination site).
[40] *Id.*
[41] *Id.*
[42] *Id.*

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A 2017 investigation of well water near the Houlton International Airport revealed PFAS contaminants in drinking water above the EPA Health Advisory of 70 ppt.[43] The residents of a nearby Mobile Home Park were supplied with bottled water as a result of these findings.[44] The investigation of the well that serves the Mobile Home Park found PFAS contaminants at a level of 70.6 ppt, and another water sample tested in December of 2017 also found PFAS levels above 70 ppt.[45]

In the Spring of 2017 PFAS was detected in the Kimball Lane well in West Kennebunk.[46] Although the levels detected were below the EPA Health Advisory limit of 70 ppt, the district opted to err on the side of caution and shut down the well until June 8, 2018.[47] The District Superintendent, Norm Labbe, decided to be proactive in the protection of the residents in the district, adding that the EPA Health Advisory guidelines are based on the size of an adult and are not necessarily protective of the entire population.[48]

Following the 2013 findings of PFOS in groundwater near the Sanford Airport (previously the Naval Auxiliary Air Facility Sanford), public water supply testing was conducted in nearby Sanford.[49] The Sanford Water District testing from 2013-2016 showed PFOS contamination in 2 out of 16 samples collected.[50] The samples detected an average PFOS level of 33 ppt, with a maximum of 290 ppt detected in some testing.[51]

3. Surface Water

The suspected source of the Kennebunk contamination are byproducts from nearby Stoneridge Farm.[52] In the mid-1980s sludge from sewer districts and a paper mill were spread as soil

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[43] Jen Lynds, *Houlton Mobile Home Park water not safe to drink*, THE COUNTY (February 6, 2018) https://thecounty.me/2018/02/06/news/houlton-mobile-home-park-water-not-safe-to-drink
[44] *Id.*
[45] *Id.*
[46] Donna Buttarazzi, *Water district took well offline after detecting contaminants, superintendent says*, BANGOR DAILY NEWS (February 4, 2018) https://bangordailynews.com/2018/01/19/news/york/water-district-took-well-offline-after-discovering-contaminants-official-says
[47] *Id.*; Kennebunk, Kennebunkport and Wells Water District, *Updated: Kennebunk River Well PFAS Information* (June 8, 2018) https://kkw.org/kennebunk-river-well-pfas-information
[48] Buttarazzi, *supra* note 46.
[49] *Interactive Map Shows If Your Tap Water is Contaminated with PFCs*, *supra* note 39 (follow "Interactive Map" hyperlink; then search for the Sanford "Public Water District" EPA Tap Water Detection).
[50] *Id.*
[51] *Id.*
[52] Buttarazzi, *supra* note 46; Donna Buttarazzi, *Dairy farm contaminated KKWWD's Kimball Lane well*, SEACOASTONLINE.COM (February 1, 2018) http://www.seacoastonline.com/news/20180201/dairy-farm-contaminated-kkwwds-kimball-lane-well

enhancers on the farm land.[53] The Kimball Lane well was tested after results showed more extensive contamination from the monitoring well on this nearby Stoneridge Farm property.[54]

The Stoneridge Farm well also presented PFAS compounds at 140 ppt during testing in 2016.[55] A data report from the Maine Department of Environmental Protection (Maine DEP) in February of 2017 showed the presence of PFAS compounds in various bodies of water on the Stoneridge Farm.[56] The extent of contamination on Stoneridge Farm is still being monitored by the Maine DEP, who notes that PFAS compounds can accumulate in milk from the dairy cattle when they are consuming nearby tainted surface waters.[57] Alarmingly, the milk tank on the farm was tested and uncovered PFAS contaminants at the rate of 690 ppt, nearly ten times in excess of the EPA Health Advisory limit.[58] Subsequent soil samples on the farm indicated PFAS readings as high as 896,200 ppt (although safe PFAS limits for soil are not held to the EPA Health Advisory limit of 70 ppt standard).[59]

II. Maine DHHS should establish a treatment technique drinking water standard for the PFAS class that is protective of human health.

In the absence of federal safeguards, Maine must act to protect drinking water and limit Maine residents' exposure to PFAS. As described below, setting MCLs on a chemical-by-chemical basis does not adequately protect the public from PFAS health impacts. Instead, a treatment technique drinking water standard for the class of PFAS is needed. This regulatory approach is authorized by law and technically feasible.

A. The chemical-by-chemical, MCL approach to regulating toxic chemicals is not protective of public health and the environment.

The current chemical-by-chemical regulatory framework for toxic chemicals is so inefficient it puts public health at risk. For example, even after the 2016 amendment to the Toxic Substances Control Act (TSCA), "it could take decades to evaluate the 80,000 chemicals already in commerce that have yet to be tested, let alone the 2,000 new

[53] *Id.*
[54] *Id.*
[55] Edsel Cook, *Pollution in the ground water: Well water in Maine is contaminated with PFAs, and it's compounding*, NATURAL NEWS (October 5, 2018) https://www.naturalnews.com/2018-10-05-pollution-in-the-ground-water-well-water-in-maine-is-contaminated-with-pfas.html
[56] *Id.*
[57] *Id.*
[58] *Id.*
[59] *Id.*

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chemicals introduced each year."[60] The EPA "still treats each chemical individually, continuing the saga in which similar, but slightly different, chemicals can be regrettably substituted."[61]

The "whack-a-mole" approach is especially troublesome when it comes to setting drinking water standards for emerging contaminants like PFAS, because it is time consuming and expensive to assess them, it is "technically and financially challenging to identify and reverse environmental and human exposure to PFASs[,]" and both of these issues are exacerbated by the continual introduction of new PFAS compounds.[62] There are at least 3,000 PFAS compounds in use currently[63] and regulators don't know the names of all PFAS compounds, much less where they are located in their state. Recently developed PFAS are regarded as trade secrets and closely-guarded confidential business information, so manufacturers often do not apply for patents or supply regulators with information about molecular structure or usage.[64]

In light of the thousands of PFAS that have been introduced into commerce, and more introduced each year, establishing MCLs for each PFAS compound is simply not sustainable. The regulators fall farther behind every year, putting our citizens in harm's way. Thus, Maine should adopt a treatment technique drinking water standard that protects Maine residents from exposure to unsafe levels of all chemicals in the PFAS class.

B. The current MEG for PFOA and PFOS does not protect Maine residents.

Maine's current MEG, which adheres to EPA's Health Advisory for PFOA and PFOS, does not protect Maine residents from exposure to unsafe PFAS levels in public water systems. Even though Maine DHHS's Center for Disease Control issued its MEG for PFOA and PFOS back in 2016, public water systems in Maine are not required to test for and treat unsafe concentrations of PFOA and PFOS because there is no federal or state drinking water standard for any of the PFAS compounds. While Maine DEP has been working to identify locations that show a presence of PFOA and PFOS in the environment, Maine DHHS has yet to adopt an MCL or

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[60] Joseph Allen, *Stop playing whack-a-mole with hazardous chemicals*, WASH. POST (December 15, 2016), https://www.washingtonpost.com/opinions/stop-playing-whack-a-mole-with-hazardous-chemicals/2016/12/15/9a357090-bb36-11e6-91ee-1adddfe36cbe_story.html?utm_term=.ea468ed06c5e

[61] *Id.*

[62] Zhanyun Wang et al., *A Never-Ending story of Per- and Polyfluoroalkyl Substances (PFASs)*?, ENVTL. SCIENCE & TECH., (February 22, 2017), at 2511, https://pubs.acs.org/doi/pdf/10.1021/acs.est.6b04806

[63] KEMI Swedish Chemicals Agency, *Occurrence and use of highly fluorinated substances and alternatives; Report from a government assignment*, 6-78, 26 (August 9, 2009), https://www.kemi.se/en/global/rapporter/2015/report-7-15-occurrence-and-use-of-highly-fluorinated-substances-and-alternatives.pdf

[64] Zhanyun Wang et al., *supra* note 62. at 26.

establish an alternative drinking water standard for PFAS. This means that public water systems in Maine are not required to monitor for or treat unsafe concentrations of PFOA, PFOS, or any other PFAS chemical. Even if Maine's MEG for PFOA and PFOS was adopted as an MCL, it would not be protective of public health because it does not address the thousands of PFAS chemicals in the PFAS class.

C. A treatment technique drinking water standard is appropriate for PFAS.

Maine DHHS has broad authority to regulate unsafe chemicals in drinking water.[65] In this case, the unique nature of PFAS demands an alternative approach to chemical-by-chemical regulation through MCLs. Regulation of PFAS as a class and through a treatment technique standard is necessary. There are well-established drinking water treatment technologies that public water systems can install to remove unsafe levels of PFAS from drinking water. There is simply no excuse for Maine DHHS to delay the promulgation of a drinking water treatment technique standard for the PFAS class to address this public health crisis "perfect storm."

1. Maine DHHS has the authority to adopt a treatment technique drinking water standard.

Maine DHHS has authority to adopt a treatment technique drinking water standard for PFAS. The Legislature has mandated that Maine DHHS "shall promulgate and enforce primary drinking water regulations which are necessary to protect the public health and which shall apply to all public water systems." Neither Maine's statute nor Maine's Rules Relating to Drinking Water expressly provide for how Maine DHHS should establish water standards, but they do recognize that Maine DHHS's commissioner has broad authority to establish these drinking water regulations so long as they are "no less stringent than the most recent National Primary Drinking Water Regulations in effect, as issued or promulgated by the United States Environmental Protection Agency."[66]

"A treatment technique is an enforceable procedure or level of technological performance which public water systems must follow to ensure control of a contaminant."[67] Where a treatment technique is selected in lieu of an MCL, the treatment technique must "prevent known or anticipated adverse effects on the health of persons to the extent feasible."[68] EPA has adopted

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[65] *See* 22 M.R.S. § 2611.
[66] *Id*. The State of Maine has primacy for the Safe Drinking Water Act in Maine and has adopted the authority of the Safe Drinking Water Act via rulemaking. Maine Department of Health and Human Services, *Rules Relating to Drinking Water*, 10-144 C.M.R. Ch. 231.
[67] U.S. Envtl. Prot. Agency, *How EPA Regulates Drinking Water*, https://www.epa.gov/dwregdev/how-epa-regulates-drinking-water-contaminants
[68] 42 U.S.C. § 300g-1(b)(7)(A).

several treatment technique drinking water standards in lieu of an MCL where EPA has determined that it is "not economically or technologically feasible to ascertain the level of [a] contaminant."[69] For example, the Lead and Copper Rule requires the use of a treatment technique.[70] This rule requires public water systems to test drinking water in the homes of consumers and undertake additional treatment measures to control lead if 10% of the samples exceed 15 ppb.[71] The Surface Water Treatment Rule also requires the use of a treatment technique. Under this rule, most public water systems that obtain water from surface water or groundwater under the direct influence of surface water must use filters and disinfectants to reduce pathogens.[72] In both cases, EPA had to establish a unique procedure to address the risks posed by a specific contaminant because an MCL would not have been practical or protective of public health due to the unique characteristics of the contaminants.

Similarly, the unique characteristics of the PFAS class pose a public health threat that cannot be adequately addressed with the establishment of an MCL for one or a few PFAS chemicals. Maine DHHS has the authority to develop a procedure that would require installation of specific drinking water treatment technologies under certain circumstances. Maine DHHS has multiple options to protect Maine residents from exposure to the PFAS class. For example, Maine DHHS could promulgate a rule that requires public water systems to install appropriate treatment technologies where (1) the sum of all measurable PFAS exceeds a conservative threshold level that is protective of public health and takes into account the cumulative impacts of all PFAS chemicals or (2) the presence of PFAS compounds is detected using "non-targeted" laboratory analysis.[73] Non-targeted analysis allows "researchers [to] rapidly characterize thousands of never studied chemical compounds in a wide variety of environmental, residential, and biological media."[74] An alternative option would be to require: 1) a robust source water assessment for PFAS and 2) treatment where PFAS may be present in the source water. Maine DHHS should determine a specific procedure for the drinking water standard through a robust stakeholder process as part of the rulemaking process.

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[69] *Id.*
[70] U.S. Envtl. Prot. Agency, *How EPA Regulates Drinking Water Contaminants, supra* note 67
[71] U.S. Envtl. Prot. Agency, *Lead and Copper Rule*, https://www.epa.gov/dwreginfo/lead-and-copper-rule
[72] U.S. Envtl. Prot. Agency, *Surface Water Treatment Rules, https://www.epa.gov/dwreginfo/surface-water-treatment-rules*
[73] U.S. Envtl. Prot. Agency, *EPA Researchers Use Innovative Approach to Find PFAS in the Environment*, https://www.epa.gov/sciencematters/epa-researchers-use-innovative-approach-find-pfas-environment, Karl Leif Bates, *Duke Expert Helps Spearhead State's New Water-Testing Program*, DUKE TODAY (Aug. 8, 2018), available at https://today.duke.edu/2018/08/duke-expert-helps-spearhead-states-new-water-testing-program
[74] *Id.*

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2. Due to the unique characteristics of the PFAS class of compounds, a treatment technique is necessary to protect public health.

i. Regulation of PFAS chemicals as a class is necessary.

Even if Maine DHHS were to adopt the current MEG (or a lower ppt value) as an MCL, a combined limit for PFOA and PFOS would not protect Maine residents from the 3,000 or more other PFAS.[75]

First, there are likely many other PFAS in Maine, including for example PFHxS, PFHpA, PFNA, and PFBS, which other New England states have found to have "a very similar molecular structure to PFOS and PFOA" [76] but the State does not test for them. Furthermore, given the speed and secrecy with which chemical manufacturers have introduced these dangerous chemicals into commerce, there could be even more PFAS that Maine is simply not aware of yet.[77]

Second, as discussed above, PFAS are similar in chemical structure and some PFAS break down into each other.[78] While long-chain PFAS compounds may be decreasing in the environment due to voluntary phase-outs by manufacturers, "the most common replacements are short-chain PFAS with similar structures."[79] Third, these PFAS chemicals are often found together, and fourth, they are likely to have similar health effects as discussed in Section I.A.

EPA has applied similar concepts to establish an MCL for a group of chemicals. For example, EPA established an MCL for five haloacetic acid disinfection byproducts (HAA5) because it did not have sufficient information regarding (1) the occurrence of individual haloacetic acids; (2) how water quality parameters affect the formation of haloacetic acids; (3) how "treatment technologies control the formation of individual . . . [haloacetic acids];" and (4) toxicity information for some of the individual haloacetic acids.[80] In light of the unique challenges

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[75] KEMI Swedish Chemicals Agency, *supra* note 63, at 6.
[76] *See* Mass. Dep't of Envtl Prot., *Office of Research and Standards Final Recommendation for Interim Toxicity and Drinking Water Guidance Values for Perfluorinated Alkyl Substances Included in the Unregulated Chemical Monitoring Rule 3*, June 8, 2018, https://www.mass.gov/files/documents/2018/06/11/pfas-ors-ucmr3-recs_0.pdf
[77] Environmental Working Group Comments on the Agency for Toxic Substances and Disease Registry (ATSDR) Draft Toxicological Profile for Perfluoroalkyls, ENVTL WORKING GROUP (August 20, 2018), https://cdn.ewg.org/sites/default/files/testimony/EWG%20Comments%20for%20ATSDR_Aug20..pdf?_ga=2.236461961.949885036.1539136763-1789323056.1527870942
[78] Section I(A): Maine DHHS should establish a treatment technique drinking water standard for the PFAS class that is protective of human health; The chemical-by-chemical, MCL approach to regulating toxic chemicals is not protective of public health and the environment.
[79] Blum, *supra* note 29.
[80] 63 Fed. Reg. 69390, 69409 (Dec. 16, 1998), https://www.gpo.gov/fdsys/pkg/FR-1998-12-16/pdf/98-32887.pdf#page=1

associated with regulation of these chemicals, EPA promulgated a group MCL even in the absence of complete information about each individual haloacetic acid in order to better protect public health.[81] For all these reasons, it is appropriate to regulate PFAS chemicals as a class.

ii. A treatment technique in lieu of an MCL is necessary.

A treatment technique in lieu of an MCL for specific PFAS chemicals or small groups of PFAS chemicals is necessary. As discussed previously, scientists suspect that PFAS chemicals in the class may have similar adverse health effects as the handful of PFAS compounds that have been studied more extensively.[82] EPA has only developed targeted test methods for 14 PFAS chemicals out of more than 3,000 compounds.[83] Thus, it is simply not economically or technically feasible to ascertain the level of each specific PFAS chemical in the PFAS class that pose a risk to Maine residents.

As Maine DHHS is well aware, establishing an MCL for one compound is resource intensive and time consuming. Adopting a treatment technique drinking water standard for the PFAS class in lieu of establishing MCLs for thousands of PFAS chemicals will require far fewer resources and will provide protection from exposure to unsafe levels of PFAS on a much shorter timeline. For these reasons, a treatment technique drinking water standard is necessary to protect Maine residents.

3. Treatment technologies are available to remove long- and short-chain PFAS.

There are both established and novel methods to remove and destroy PFAS. While long- and short-chain PFAS may be difficult to treat with any one traditional technology—some new technologies are in development— a "treatment train" of several technologies combining adsorption, separation, and destruction in sequence, for example, would be effective in treating drinking water and protecting public health.

Adsorption technologies such as Granular activated carbon (GAC) and ion exchange "are currently the most commonly encountered interim response measures to achieve immediate

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[81] *Id.*
[82] KEMI Swedish Chemicals Agency, *supra* note 63.
[83] U.S. Envt. Prot. Agency, *Method 537: Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography /Tandem Mass Spectrometry* 537-2 (EPA/600/R-08/092) (Sep. 2009), http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=ED20973987CE8E7A0E0944E8E31D66BE?doi=10.1.1.645.8401&rep=rep1&type=pdf

compliance with drinking water standards and serve as the benchmark of practicality and effectiveness for other treatment technologies."[84]

While new adsorption technologies like organically modified silica adsorbents show promise,[85] GAC has long been used for adsorption of chemical pollutants, consistently removes PFOS with an efficiency of more than 90 percent,[86] and is the treatment technique specified in Safe Drinking Water Act for the control of synthetic organic chemicals:

> granular activated carbon is feasible for the control of synthetic organic chemicals, and any technology, treatment technique, or other means found to be the best available for the control of synthetic organic chemicals must be at least as effective in controlling synthetic organic chemicals as granular activated carbon.[87]

Separation technologies, including reverse osmosis, microfiltration, ultrafiltration and nanofiltration, are highly effective for PFAS removal and can remove PFAS at more than 99 percent effectiveness.[88] "Membrane filtration has several benefits including: achieving continuous separation, low energy consumption, ease of combination with other existing techniques, easy up-scaling, and low chemical costs."[89] Ozofractionation (a patented process by the company EVOCRA and available commercially as Ozofractionative Catalyzed Reagent Addition (OCRA) (Dickson 2013, 2014)) is a novel separation technology that shows high (>99.99 percent reduction) effectiveness for PFAS.[90]

Finally, novel destructive treatment technologies for PFAS are becoming available. Destructive technologies include sonochemical decomposition,[91] chemical/advanced photochemical oxidation,[92] and AECOM's DE-FLUORO™ technology.[93]

This treatment train solution will also confer significant co-benefits for public health, because the

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[84] J. Horst et al., *Water Treatment Technologies for PFAS: The Next Generation, 38,* Groundwater Monitoring & Remediation (Spring 2018), at 15.
[85] *Id.* at 15–16.
[86] K.H. Kucharzyk et al., *Novel treatment technologies for PFAS compounds: a critical review* 204 JOURNAL OF ENVTL. MANAGEMENT (December 2017), at 759; 42 U.S.C. § 300g-1(b)(4)(D).
[87] 42 U.S.C. § 300g-1(b)(4)(D).
[88] Kucharzyk, *supra* note 86, at 759–60; Horst, *supra* note 84.
[89] V.A. Arias Espana et al., *Treatment technologies for aqueous perfluorooctanesulfonate (PFOS) and perfluorooctanoate (PFOA): A critical review with an emphasis on field testing*, 4 ENVIRONMENTAL TECHNOLOGY & INNOVATION (2015) 168, 177.
[90] Horst, *supra* note 84, at 17.
[91] Espana, *supra* note 89, at 174.
[92] *Id.* at 178.
[93] AECOM, *AECOM's Promising New PFAS Treatment Technology DE-FLUORO Shows Complete Destruction of PFAS*, https://www.aecom.com/content/wp-content/uploads/2018/04/PFAS-Treatment-Technology-DE-FLUORO_INFO-SHEET.pdf

same technologies that are effective in PFAS treatment are effective in removing a host of other dangerous chemicals. GAC adsorption filters alone, for example, are effective in removing dozens of harmful contaminants in addition to PFAS (including, but not limited to: RDX, arsenic, benzene, cryptosporidium, MTBE, mercury, perchlorate, tetrachloroethylene (Perc), and trichloroethylene (TCE)).[94] Other technologies that should be considered as components of the treatment train confer similar co-benefits; for example, membrane separation technologies like reverse osmosis not only treat PFAS but, without limitation, also treat 1,4-dioxane, alachlor, chromium, malathion, and nitrates.[95]

For all these reasons, CLF and Toxics Action Center urge Maine DHHS to initiate a rulemaking for a treatment technique drinking water standard for the PFAS class.

III. In the alternative, Maine DHHS should either adopt an MCL for the PFAS class or for each individual PFAS chemical.

Maine DHHS must take action to establish drinking water standards for PFAS in the absence of federal safeguards even if Maine DHHS does not establish a treatment technique standard. As discussed in Section II.C., Maine DHHS has the authority to regulate PFAS as a class or on a chemical-by-chemical basis. PFAS are present in Maine waters and are known to cause adverse health effects. Thus, at a bare minimum, Maine DHHS should either 1) adopt an MCL for the PFAS class, or 2) set a schedule for the adoption of an MCL for each individual PFAS chemical that has been identified and begin establishing MCLs immediately. Of course, as new PFAS chemicals are identified, the schedule of MCL adoption will need to be modified.

IV. Maine DHHS should immediately adopt Vermont's PFAS Health Advisory as a maximum contaminant level.

In the interim and until Maine DHHS establishes a treatment technique drinking water standard for PFAS, Maine DHHS should immediately adopt Vermont's PFAS Health Advisory of 20 ppt for the PFAS Class as an MCL.

CONCLUSION

For all the forgoing reasons, CLF and Toxics Action Center petition Maine DHHS to establish a drinking water standard for PFAS that is protective of public health. Specifically, Maine DHHS should adopt a treatment technique drinking water standard for the PFAS class. In the alternative, Maine DHHS should establish an MCL for the PFAS class or individual MCLs for each PFAS chemical that poses a risk to public water systems in Maine. As an interim step,

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[94] U.S. Envtl. Prot. Agency, *Drinking Water Treatability Database*, *Granular Activated Carbon*, https://oaspub.epa.gov/tdb/pages/treatment/treatmentContaminant.do
[95] *Id.*

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Maine DHHS should immediately adopt Vermont's PFAS Health Advisory of 20 ppt for the PFAS Class as an MCL.

The significant threats posed to human health and the environment by the PFAS class of compounds are clear. These compounds have been found in Maine drinking water, groundwater, and surface waters. The dangers this class of chemicals pose to Maine residents demand immediate action to limit further exposure. Thank you for your consideration.

Sincerely,

Phelps Turner
Staff Attorney
Conservation Law Foundation

/s/ Sylvia Broude
Sylvia Broude
Executive Director
Toxics Action Center

CC:

Nancy Beardsley, Director, Maine CDC Division of Environmental Health (nancy.beardsley@maine.gov)
Michael Abbott, Director, Maine CDC Division of Environmental Health Drinking Water Program (michael.abbott@maine.gov)
Andrew Smith, State Toxicologist / Program Manager, Maine CDC Division of Disease Control (andy.e.smith@maine.gov)