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Testimony of
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Before the Committee on Health and Human Services
On
Legislative Document No. 164, An Act To Establish Maximum Contaminant Levels
under the State's Drinking Water Rules for Certain Perfluoroalkyl and
Polyfluoroalkyl Substances
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Thank you for the opportunity to testify today. My name is David Andrews, and I am a senior scientist for the Environmental Working Group, a national environmental health organization that has sought to address the risks posed by per- and poly-fluoroalkyl substances, called PFAS, for two decades.¹

Contamination from PFAS chemicals is a national public and environmental health emergency that requires local, state and federal action. An enforceable drinking water standard is urgently needed and should include not only perfluorooctanoic acid, known as PFOA and perfluorooctane sulfonate, called PFOS, but also similar PFAS compounds, an approach used in other states.

Because of unchecked contamination and exposure to nearly 70,000 residents in the mid-Ohio river valley, we know that exposure to PFOA is linked to kidney and testicular cancer, preeclampsia, ulcerative colitis, thyroid disease and high cholesterol.² Subsequent studies have linked an increasing number of PFAS compounds to

¹ Bill Walker, *EWG and Toxic Fluorinated Chemicals: 20 Years in the Fight Against PFAS*, Environmental Working Group (July 24, 2019), <https://www.ewg.org/news-and-analysis/2019/07/ewg-and-toxic-fluorinated-chemicals-20-years-fight-against-pfas>.

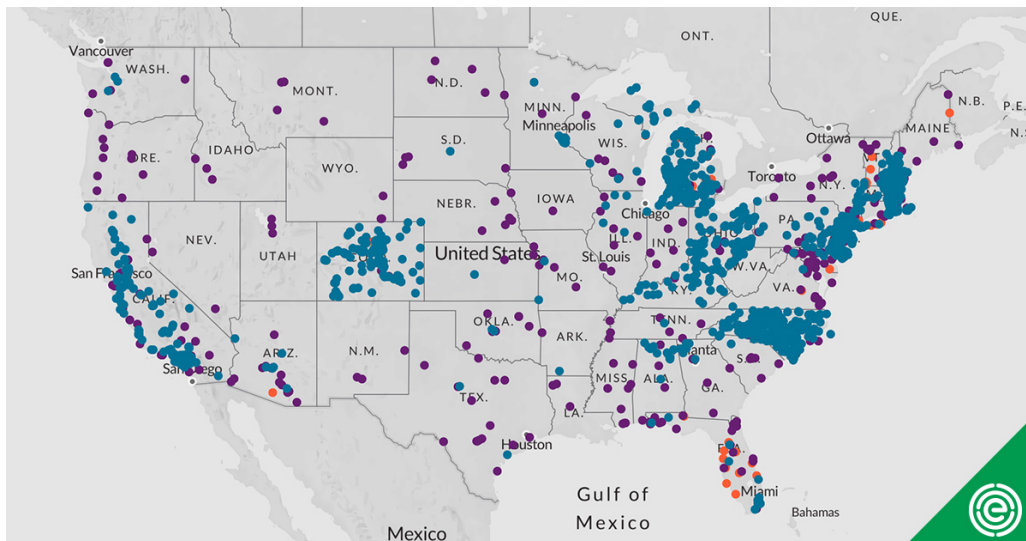
² C8 Science Panel, C8 Probable Link Reports, http://www.c8sciencepanel.org/prob_link.html (last visited Feb. 8, 2021).



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reproductive and developmental harm,³ and damage to the immune system, reducing the effectiveness of vaccines.⁴

PFAS are called “forever chemicals,” because they do not break apart in the environment. Many PFAS accumulate in blood, and these chemicals are detected in nearly every single person in the country.⁵ EWG has mapped PFAS contamination at over 2,337 sites in 49 states. The interactive map is available on our website at https://www.ewg.org/interactive-maps/pfas_contamination/. The number of identified sites is a reflection of the extent of testing more than the presence of PFAS. In our nationwide analysis of PFAS contamination, we estimate that more than 200 million Americans likely have PFOA or PFOS at levels over 1 ppt in drinking water.⁶



³ Environmental Protection Agency, Drinking Water Health Advisory for Perfluorooctanoic Acid (PFOA) at 18 (May 2016), https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_health_advisory_final_508.pdf; Environmental Protection Agency, Drinking Water Health Advisory for Perfluorooctane Sulfonate (PFOS) at 19 (May 2016); https://www.epa.gov/sites/production/files/2016-05/documents/pfos_health_advisory_final_508.pdf

⁴ Philippe Grandjean et al., *Estimated exposures to perfluorinated compounds in infancy predict attenuated vaccine antibody concentrations at age 5-years*. *Journal of immunotoxicology*, 14(1):188–195. 2017. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6190594/>

⁵ Centers for Disease Control and Prevention, National Biomonitoring Program, Early Release: Per- and Polyfluorinated Substances (PFAS) Tables, NHANES 2011-2018, https://www.cdc.gov/exposurereport/pfas_early_release.html. (last updated Feb. 2, 2021).

⁶ David Andrews and Olga Naidenko. *Population-Wide Exposure to Per-and Polyfluoroalkyl Substances from Drinking Water in the United States*. *Environmental Science & Technology Letters Population-Wide Exposure to Per-and Polyfluoroalkyl Substances from Drinking Water in the United States*. *Environmental Science & Technology Letters* 2020.



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Even at the average levels found in people in the U.S., studies evaluating exposure to PFAS have shown increased risk of high cholesterol,⁷ thyroid disease⁸ and harm to our immune systems.⁹ In 2016, the EPA set health advisory values for exposure to PFOA and PFOS at a combined concentration of 70 parts per trillion, or ppt,¹⁰ a level in drinking water that, according to the latest research, is not protective of human health. The EPA advisory value does not adequately protect vulnerable populations such as infants, or protect from cancer, harm to the immune system,¹¹ harm to reproductive development,¹² or harm to the liver.¹³

Any additional exposure to PFAS in drinking water is a concern, and EWG has summarized the scientific evidence behind our belief that a health-based exposure limit should be near 1 ppt.¹⁴ Scientists for the state of New Jersey calculated that drinking water with 10 ppt PFOA or PFOS would lead to a significant increase in exposure and blood levels for nearly every American.¹⁵

An increasing number of states have set drinking water limits below the EPA health advisory value, and other states are in various stages of setting more protective standards. In New England, both Vermont and Massachusetts have established

⁷ Jessica Nelson et al., *Exposure to Polyfluoroalkyl Chemicals and Cholesterol, Body Weight, and Insulin Resistance in the General U.S. Population*, Environmental Health Perspectives, Feb. 1, 2010, <https://ehp.niehs.nih.gov/doi/10.1289/ehp.0901165>.

⁸ David Melzer et al., *Association between Serum Perfluorooctanoic Acid (PFOA) and Thyroid Disease in the U.S. National Health and Nutrition Examination Survey*, Environmental Health Perspectives, Feb. 1, 2010, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2866686/>.

⁹ Tasha Stoiber, *PFAS Chemicals Harm the Immune System, Decrease Response to Vaccines*, New EWG Review Finds, Environmental Working Group, June 21, 2019, <https://www.ewg.org/news-and-analysis/2019/06/pfas-chemicals-harm-immune-system-decrease-response-vaccines-new-ewg>.

¹⁰ David Andrews, *EWG Proposed PFAS Standards that Fully Protect Children's Health*, Environmental Working Group, May 6, 2019, <https://www.ewg.org/research/ewg-proposes-pfas-standards-fully-protect-children-s-health>.

¹¹ Philippe Grandjean, *Delayed discovery, dissemination, and decisions on intervention in environmental health: a case study on immunotoxicity of perfluorinated alkylate substances*, Environmental Health, July 2018, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6066926/>.

¹² Deirdre K. Tucker et al., *The mammary gland is a sensitive pubertal target in CD-1 and C57Bl/6 mice following perinatal perfluorooctanoic acid (PFOA) exposure*, Reproductive Toxicology, July 2015., www.ncbi.nlm.nih.gov/pubmed/25499722.

¹³ Office of Environmental Health Hazard Assessment, *Notification Level Recommendations, Perfluorooctanoic Acid and Perfluorooctane Sulfonate in Drinking Water*, August 2019, <https://oehha.ca.gov/media/downloads/water/chemicals/nl/final-pfoa-pfosnl082119.pdf>.

¹⁴ David Andrews, *EWG Proposed PFAS Standards that Fully Protect Children's Health*, Environmental Working Group, May 6, 2019, <https://www.ewg.org/research/ewg-proposes-pfas-standards-fully-protect-children-s-health>.

¹⁵ Gloria Post, *Recent US State and Federal Drinking Water Guidelines for Per- and Polyfluoroalkyl Substances*, Environmental Toxicology and Chemistry, 2020, <https://setac.onlinelibrary.wiley.com/doi/full/10.1002/etc.4863>.



maximum contaminant levels of 20 ppt for the sum concentration of five or six PFAS, including PFOA, PFOS, PFHxS, PFNA, PFHpA and, in Massachusetts, PFDA.¹⁶ Vermont used the same reference dose as EPA but assumed greater water consumption for infants, whereas Massachusetts used the same reference dose but added an additional uncertainty factor to account for studies showing harm at lower concentrations.¹⁷ The drinking water standard in Massachusetts was set as a group of six PFAS based on similarities in structure, chemical properties and toxicity and because they can be tested for using EPA-validated methods.¹⁸

It is important that PFAS regulations in drinking water extend beyond just PFOA and PFOS, because the entire class of PFAS is a concern from a public and environmental health perspective.¹⁹ PFAS exposure is thought to come from food, food wrappers, dust and consumer products,²⁰ but drinking water is a critical route of exposure and one that can be easily remedied.

There is a clear path forward.

The technology to filter PFAS out of drinking water is readily available. Granular activated carbon, ion-exchange resins and reverse osmosis systems have all been used to significantly reduce or eliminate PFAS in drinking water systems.²¹ And once exposure ends, levels and health risk will decrease, albeit slowly.

In the absence of federal drinking water standards, numerous states have set or are in the process of setting standards to protect their residents. The state standards or guideline values set in the past four years are consistently more health protective than

¹⁶ American Water Works Association. *Per- and Polyfluoroalkyl Substances (PFAS) Summary of State Policies to Protect Drinking Water*, November 1, 2020. https://www.awwa.org/LinkClick.aspx?fileticket=Ve9Ygub_2ZM%3d&portalid=0.

¹⁷ Massachusetts Department of Environmental Protection, *Technical Support Document Per- and Polyfluoroalkyl Substances (PFAS): An Updated Subgroup Approach to Groundwater and Drinking Water Values*, December 2019, <https://www.mass.gov/doc/per-and-polyfluoroalkyl-substances-pfas-an-updated-subgroup-approach-to-groundwater-and/download>

¹⁸ *Id.*

¹⁹ Carol Kwiatkowski et al., *Scientific Basis for Managing PFAS as a Chemical Class*, Environmental Science & Technology Letters. June 30, 2020, <https://pubs.acs.org/doi/10.1021/acs.estlett.0c00255> See also David Andrews, *Insight: The Case for Regulating All PFAS Chemicals as a Class*, Bloomberg Environment (May 20, 2019), <https://news.bloombergenvironment.com/environment-and-energy/insight-the-case-for-regulating-all-pfas-chemicals-as-a-class/>.

²⁰ Juliane Glüge et al., *An overview of the uses of per- and polyfluoroalkyl substances (PFAS)*. Environmental Science: Processes & Impacts. 2020, <https://pubs.rsc.org/en/content/articlelanding/2020/EM/D0EM00291G#!divAbstract>.

²¹ Tasha Stoiber et al., *PFAS in drinking water: an emergent water quality threat*, Water Solutions. 2020, https://cdn3.ewg.org/sites/default/files/u352/WS_01_2020_Research_PFAS_Water_June8_2020.pdf.



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the health advisory EPA published in 2016.²² There is no reason that residents in the state of Maine should be drinking PFAS-contaminated water at levels that would not be legal in nearby states, and there is significant scientific support for limiting exposure below the EPA health advisory for PFOA and PFOS.

EWG supports L.D. 164, limiting exposure to 20 ppt for the total concentration of PFOS, PFOA, PFHxS, PFNA, PFHpA and PFDA, but this legislation should also include a requirement to test community and non-community water systems, in order to ensure the protection of public health.

²² Gloria Post. *Recent US State and Federal Drinking Water Guidelines for Per- and Polyfluoroalkyl Substances*, Environmental Toxicology and Chemistry, 2020, <https://setac.onlinelibrary.wiley.com/doi/full/10.1002/etc.4863>.