



**Testimony of Sharon Treat, Institute for Agriculture and Trade Policy
in Support of LD 164, “An Act to Establish Maximum Contaminant Levels under the State’s Drinking
Water Rules for Certain Perfluoroalkyl and Polyfluoroalkyl Substances” and
Neither For Nor Against LD 129, “Resolve, To Protect Consumers of Public Drinking Water by
Establishing Maximum Contaminant Levels for Certain Substances and Contaminants”
Joint Standing Committee on Health and Human Services
Maine Legislature, February 9, 2021**

Senator Claxton, Representative Meyer, and honorable members of the Health and Human Services Committee. My name is Sharon Treat and I live in Hallowell. I am Senior Attorney for the Institute for Agriculture and Trade Policy (IATP), on whose behalf I am testifying today in support of LD 164 and to offer additional information with respect to LD 129.

IATP is a 501(c)(3) nonprofit headquartered in Minneapolis, Minnesota with offices in Hallowell, Maine and other locations.¹ As an organization that works closely with farmers and seeks to promote local, sustainable and environmentally beneficial agriculture and healthy rural communities, IATP has a strong interest in preventing PFAS contamination of water and food, which has had a devastating impact on at least two Maine farms and their neighbors.

We support LD 164, which will immediately establish an enforceable 20 parts per trillion (ppt) Maximum Contaminant Level (MCL) for a group of six PFAS chemicals. This approach to PFAS regulation is also followed by Vermont and Massachusetts. While they differ in some particulars, most of the other states adopting PFAS standards over the past two years have likewise adopted MCLs that are well below the advisory health guidance of the Environmental Protection Agency, 70 ppt.² LD 164 is also consistent with guidance from the Agency for Toxic Substances and Disease Registry, part of the U.S. Centers for Disease Control and Prevention,³ and the recommendation of the director of the National Institute for Environmental Health Sciences.⁴

For years, the federal government has dithered and delayed on PFAS regulation and failed to set an enforceable standard. This is despite known health problems linked to PFAS including kidney and testicular cancer, thyroid disease, infertility and compromised immune systems -- which means PFAS exposure can make people more susceptible to COVID-19 health consequences and may limit the

¹ IATP also has offices in Washington, D.C. and Berlin, Germany. For over 30 years, IATP has provided research, analysis and advocacy on agriculture-related issues including farm to school; climate; soil health; water quality and access; farmworker and farm health and economic security; and trade and market policies. See, www.iatp.org.

² These states include California, Michigan, Minnesota, New Hampshire, New Jersey, and New York.

³ ATSDR RELEASES DRAFT TOXICOLOGICAL PROFILE FOR PFAS (July 18, 2018), <https://www.asdwa.org/2018/06/21/atsdr-releases-draft-toxicological-profile-for-pfas/>

⁴ <https://theintercept.com/2019/06/18/pfoa-pfas-teflon-epa-limit/>

effectiveness of vaccines. Indeed, recent research has found a strong association with PFAS exposure and COVID-19 severity, antibody response, and asthma.

In one study, Pentafluorobenzoic acid (PFBA) -- one of several thousand compounds in the PFAS class of chemicals -- detected in plasma showed strong association with the severity of COVID-19. In tissue samples from autopsies, PFBA accumulated in the lungs.⁵ COVID-19 affects the functioning of the lungs, where in severe cases, the lungs will inflame making it hard to breathe, potentially causing pneumonia. The positive association of PFBA concentration and COVID-19 severity suggests that PFBA could be heightening the damage to the lungs from COVID-19. Research is also suggestive that PFAS exposure reduces the antibody response for certain illnesses, raising concerns that PFAS may negatively affect the efficacy of the COVID-19 vaccines. In general, elevated PFAS exposure is associated with lower antibody responses to vaccinations in children and adults.⁶

We understand that the Maine CDC is now proposing the 20 ppt standard as an amendment to LD 129, but only for the two legacy PFAS which are no longer manufactured in the U.S., PFOA and PFOS. This is a step in the right direction, but it is not enough. Unfortunately, drinking water contamination in Maine is not limited to PFOA and PFOS, and as reported above, the damaging health effects of PFAS exposure are also not limited to these two chemicals. Just yesterday, David Burns, Director of DEP's Bureau of Remediation and Waste Management, presented to the Environment and Natural Resources Committee on data collected so far on contamination of dozens of drinking water wells in Fairfield, Benton and Unity. Here is the link to the Fairfield test results, and you will see they are not limited to PFOA and PFOS. In fact, Maine DEP is already calculating the "sum of 5" PFAS for the wells it is testing: <https://maine.maps.arcgis.com/apps/webappviewer/index.html?id=2bb04142294948458c81b2ece1011c88>.

We also support the monitoring, reporting, treatment and enforcement provisions in LD 129. Essentially, these two bills should be merged: The Legislature should enact the 20 ppt "sum of six PFAS" standard in LD 164 along with the language in LD 129 that includes testing and other requirements.

The bottom line is this: do not wait to enact these standards, and look to the current medical and scientific consensus on what the standard should be. PFAS is everywhere, as we are finding out, and as more research is done, it has become clear that the impact on public health is significant and growing. As David Burns stated yesterday in the DEP briefing on PFAS, without an enforceable standard, DEP's hands are tied. They can't go after the U.S. Department of Defense to require cleanup without a standard, for example. I sat through many months of the Governor's PFAS Task Force and learned that without enforceable standards and a requirement to test, some water systems actually refused testing to find out if their systems were contaminated with PFAS -- even when they did not have to pay the cost. I was shocked to find out that this included some schools and day cares. Until there is a standard in law and a requirement to comply with it, we are gambling with the health of our children and the rest of us in the midst of a deadly pandemic.

⁵ Grandjean, P., Timmermann, C., Kruse, M., Nielsen, F., Vinholt, P., Boding, L., Heilmann, C. and Molbak, K., 2020. Severity of COVID-19 at elevated exposure to perfluorinated alkylates. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7605584/>

⁶ The doubling of prenatal PFAS concentration was associated with a substantial decrease in antibody concentrations of diphtheria, a bacterial infection (Grandjean et al., 2012). Another study found a negative relationship between PFAS concentrations at delivery and children's anti-rubella antibody at three years of age (Granum et al., 2013). For sources and additional information, please see the attached Appendix on COVID-19 and PFAS.

We urge the Committee to favorably report out LD 164, along with monitoring and enforcement provisions. While it makes sense to phase in those monitoring and treatment provisions, the text should be clarified to assure that the 20 ppt MCL standard itself goes into effect as soon as possible, when the legislation becomes law.

Respectfully submitted,

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ATTACHMENT: APPENDIX TO IATP TESTIMONY ON LD 129 AND LD 164
Summary of scientific information on PFAS and COVID-19 severity and antibody response

APPENDIX TO IATP TESTIMONY ON LD 129 AND LD 164:

Summary of scientific information on PFAS and COVID-19 severity and antibody response

Researched and written by Loren Yu, Colby College '23

Exposure to PFAS. COVID-19 has affected the United States tremendously, with 24.5 million total cases and as of February 8, 2021, at least 462,037 deaths.⁷ Scientists have been assiduously researching the behavior of the virus and what affects the severity of it. Severe illness from COVID-19 is often attributed to co-morbidities and old age, but the fact that environmental exposure to chemicals can affect the severity of the virus has been largely overlooked.

Per- and polyfluoroalkyl (PFAS) substances are a chemical group that have a strong carbon-fluorine bond that makes these substances extremely resistant to thermal, chemical, and biological degradation, which results in the bioaccumulation up the food chain and its persistence in human tissues for many years (Browne et al., 2020). PFAS is often used in surfactants, water repellent sprays, adhesives, paintings, and lubricants and are found in many consumer products including clothing, food packaging and cookware, as well as firefighting foams and industrial uses. Humans are exposed to PFAS through food and water contamination (Quinete and Hauster-Davis, 2020) and other sources including household dust. PFAS compounds are now detectable in the blood of virtually all Americans (98%) according to the U.S. Centers for Disease Control and Prevention (U.S. CDC), and because of its long biological half-lives in humans, it could stay in the body for 3.8 to 7.3 years (Browne et al., 2020), potentially causing a multitude of health problems.

PFAS' Association with COVID-19. Research has found a strong association with PFAS and COVID-19 severity, antibody response, and asthma. In one study, Pentafluorobenzoic acid (PFBA) -- one of several thousand compounds in the PFAS class of chemicals -- detected in plasma showed the strongest association with the severity of COVID-19. The health consequences of PFBA are often overlooked due to its short elimination half-life in the blood compared to the other compounds, but in tissue samples from autopsies, PFBA is the only PFAS that is substantially accumulated in the lungs (Grandjean et al., 2020). COVID-19 affects the functioning of the lungs, where in severe cases, the lungs will inflame making it hard to breathe and potentially causing pneumonia. The positive association with PFBA concentration and COVID-19 severity suggests that PFBA could be heightening the damage to the lungs.

What makes the COVID-19 virus fatal is its potential to induce a cytokine storm, where the infection triggers the immune system to overload the bloodstream with cytokines, which are inflammatory proteins, resulting in tissue and organ damage. A cytokine storm results in fatal outcomes due to complications with lung inflammation, pneumonia, and respiratory issues. Perfluorooctane Sulfonate (PFOS), a PFAS compound, was found to alter cytokine production due to inconsistent production of specific cytokines (Bodin et al., 2016 and Zheng et al., 2011). PFAS affects the behavior of cytokines in the body, which could induce a cytokine storm while battling COVID-19, leading to a more severe case.

PFAS' Effect on Asthma. PFAS could also indirectly affect the severity of COVID-19 by worsening other physical ailments, such as asthma. PFAS compounds, Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS), were associated with greater odds of asthma diagnosis in

⁷ U.S. CDC Covid Data Tracker, https://covid.cdc.gov/covid-data-tracker/#cases_totaldeaths

children age 3-5 and were positively associated with asthma severity scores among already asthmatic children aged 9-16 years (Dong et al., 2013). A biological explanation is based on limited evidence that suggests early-life exposure to these compounds could induce immune dysfunction. According to the U.S. CDC, people with moderate to severe asthma may be at higher risk from getting a severe case of COVID. Asthmatics with COVID-19 may find it extremely difficult to breathe, and they already have a higher risk of developing pneumonia due to previous lung damage.

PFAS' Effect on Antibody Response. There has also been research into the effect of PFAS on antibodies. It was found that elevated PFAS exposure is associated with lower antibody responses to vaccinations in children and adults. The doubling of prenatal PFAS concentration was associated with a substantial decrease in antibody concentrations of diphtheria, a bacterial infection (Grandjean et al., 2012). Another study found a negative relationship between PFAS concentrations at delivery and children's anti-rubella antibody at three years of age (Granum et al., 2013). Such evidence suggests that PFAS reduces the antibody response for certain illnesses, raising the concern that PFAS may negatively affect the efficacy of the COVID-19 vaccines.

Conclusion. Most people are aware of the link between the severity of COVID-19 and pre-existing health conditions. However, evidence suggests that PFAS, a family of chemicals we are exposed to regularly, deteriorates immune functioning, including response to COVID-19. It is essential to focus on an individual's health when battling COVID-19, but it is also important to be mindful of the environmental contaminants we are perpetually exposed to, as we develop research and policy responses to the pandemic.

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