

Dear Chair Pugh, Vice Chair Wood, and Members of the House Committee on Human Services:

I am attaching the Harvard School of Public Health study that links PFAS exposure with worse COVID-19 impacts. A summary of the study is located here:

<https://www.hsph.harvard.edu/news/hsph-in-the-news/pfas-exposure-linked-with-worse-covid-19-outcomes/#:~:text=Researchers%20looked%20at%20PFAS%20levels,than%20those%20with%20lower%20levels>. On page 2 of the paper, the researchers discuss how PFAS may directly and indirectly impact COVID-19 outcomes:

Elevated exposure to community pollution is associated with a worsened outcome of coronavirus disease 2019 (COVID-19) [1–4]. While replicated in different populations, this evidence relies solely on ecological study designs of air pollution without measures of individual exposures. Several environmental chemicals are known to suppress immune functions [5, 6] and worsen the course of infections [7]. Of particular relevance, the perfluorinated alkylate substances (PFASs) are persistent, globally disseminated chemicals known to be immunotoxic [8]. Thus, elevated blood-PFAS concentrations are associated with lower antibody responses to vaccinations in children [9] and in adults [10]. Also, infectious disease occurs more frequently in children with elevated exposure [11–13]. In support of the potential impact of these substances, a modeling study suggested that endocrine disruptors, including major PFASs, may interfere with proteins involved in critical pathways, such as IL-17, associated with severe clinical outcomes of the COVID-19 infection [14]. Substantial differences occur in the clinical course of the disease, and the reasons for this variability are only partially known [15, 16]. As a possible contributor, a deficient antibody response may be an important contributor to a more severe clinical course of the infection [17], as also suggested by the poorer prognosis in patients with bacterial co-infection [18]. The most serious clinical consequences are associated with male sex, older age, and the presence of co-morbidities, including obesity and diabetes [19–23]. In parallel, serum-PFAS concentrations are higher in men than in women and also tend to increase with age [8, 24]. Because elevated PFAS exposure has been linked to both obesity and diabetes [25, 26], these substances may potentially affect the progression of COVID-19 directly as well as indirectly. Several PFASs can be reliably determined in human blood samples, where most of them show long biological half-lives of 2–3 years or more [27], thereby providing a measure of cumulated exposure. Still, blood concentrations may not accurately reflect the retention in specific organs, e.g., the short-chain perfluorobutanoic acid (PFBA), which accumulates in the lungs [28]. To assess if elevated background exposures to immunotoxic PFASs are associated with the clinical course of the infection, a study was undertaken in Denmark to determine individual plasma-PFAS concentrations in adults confirmed to be infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and examine the association with the severity of COVID-19 development.

The researchers concluded that:

Increased plasma-PFBA concentrations were associated with a greater severity of COVID-19 prognosis, and this tendency remained after adjustment for sex, age, comorbidities, national origin, sampling location and time. Although occurring in fairly low concentrations in plasma, PFBA is known to accumulate in the lungs. Thus, as immunotoxic substances, the PFASs may well contribute to the severity of COVID-19. The present findings on a short-chain PFAS at background exposures suggest a need to ascertain if elevated exposures to environmental immunotoxicants may worsen the outcome of the SARS-CoV-2 infection.

Note that the link between one PFAS (i.e. PFBA) and worse COVID-19 outcomes was found even where there were “background” exposures. Based on these findings, researchers noted the need to study COVID-19 outcomes in communities who are exposed to elevated concentrations of these chemicals (through contaminated drinking water, for example).

You may also be interested in an article that discusses the findings of this study here: <https://theintercept.com/2020/12/07/pfas-pfba-severe-covid-study/>.

Also, the Agency for Toxic Substances and Disease Registry has also issued a statement acknowledging the potential for PFAS exposure to worsen COVID-19 outcomes:

“CDC/ATSDR understands that many of the communities we are engaged with are concerned about how PFAS exposure may affect their risk of COVID-19 infection. We agree that this is an important question. CDC/ATSDR recognizes that exposure to high levels of PFAS may impact the immune system. There is evidence from human and animal studies that PFAS exposure may reduce antibody responses to vaccines (Grandjean et al., 2017, Looker et al., 2014), and may reduce infectious disease resistance (NTP, 2016). Because COVID-19 is a new public health concern, there is still much we don’t know. More research is needed to understand how PFAS exposure may affect illness from COVID-19.” <https://www.atsdr.cdc.gov/pfas/health-effects/index.html>

Thank you again for the opportunity to provide testimony in support of Senate Bill No. 20 this morning. Please don’t hesitate to let me know if you have any additional questions.

Best,

Jen

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