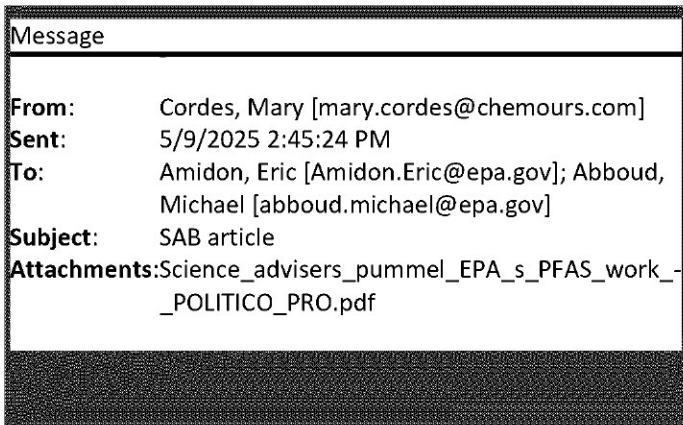




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Perfluorooctanoate (PFOA) is a substance that has garnered interest of both regulators and the general public, primarily because PFOA can be found in the environment as it does not readily breakdown as other chemicals may and is found in the blood of nearly all people. Because of these observations several government agencies or expert groups have determined a reference dose, which is a dose that is believed to be protective of human health. Interestingly, most of the data used in setting a reference dose is publicly available in scientific literature. Despite these expert groups using the same data there is a very wide discrepancy between the values they derive, sometimes as much as 100,000-fold. This huge discrepancy in values results in confusion from the lay public and risk assessors alike.

In 2022, under the Steering Committee of the Alliance for Risk Assessment, a group of 24 scientists from eight countries joined together to review all available and relevant data and reach a consensus on an appropriate Reference Dose for PFOA. Based on the available data, this expert group came to the consensus value of 10-70 ng/kg per day as protective of human health. The work of this group was shared with the scientific community in a peer-reviewed publication (Burgoon et al., 2023). To convert these reference doses to the equivalent drinking water concentrations it is necessary to adjust for water consumption, body weight, and a factor to account for other exposure routes known as “relative source contribution” which is typically a default of 20% used by the EPA. Using standard values for those parameters of 60 kg body weight, 3 L of water per day, this range corresponds to 40 – 280 parts per trillion (ppt) in drinking water.

The value derived in the Burgoon paper aligns with the 20 ng/kg-day PFOA reference dose proposed by the U.S. EPA’s Office of Water in 2016 and the 31ng/kg per day PFOA reference dose set by the U.S. EPA’s Office of Research & Development, which was derived using cutting edge transcriptomics techniques.

In 2022, the Office of Water released a revised reference dose for PFOA. The 2022 value is an astonishingly low value: 0.0015 ng/kg per day. Approximately one year later, the EPA’s *Public Comment Draft Toxicity Assessment and Proposed Maximum Contaminant Level Goal for Perfluorooctanoic Acid (PFOA) in Drinking Water* proposed a reference dose of 0.03 ng/kg per day, also surprisingly low based on the data.

One clear difference between the work of Burgoon and the EPA 2022 and 2023 values was that the Burgoon team of experts discounted the human epidemiology studies, primarily because the correlated observation was not an adverse effect and therefore has limited use for risk assessment. The team of experts determined that the available epidemiologic information was not reliable enough to be the basis for a PFOA reference dose. Instead, the expert panel relied on data from five high quality laboratory animal studies. The Burgoon paper reference dose range for PFOA considered to be protective of human health at 10-70 ng/kg per day is over 300 times higher than the EPA reference dose for PFOA of 0.03 ng/kg per day that was used to inform the final Maximum Contaminant Level (MCL).

References

Burgoon et al. Range of the perfluorooctanoate (PFOA) safe dose for human health: An international collaboration. Regul Toxicol Pharmacol. 2023 Dec;145:105502. doi: 10.1016/j.yrtph.2023.105502. Epub 2023 Oct 29. PMID: 38832926.

Perfluorooctanoic acid EPA OW 2016 Drinking Water Health Advisory: [HYPERLINK "https://www.epa.gov/sites/default/files/2016-05/documents/pfoa_health_advisory_final_508.pdf"]

EPA ORD 2023 Standard Methods for Development of EPA Transcriptomic Assessment Products (ETAPs) [HYPERLINK "https://www.epa.gov/system/files/documents/2023-06/ETAP%20Standard%20Methods%20Doc_BOSC%20Report_Draft%20Final_5_19_23_508%20Tagged.pdf"]