Mr. Bruce Gordon
Unit Head, Water, Sanitation, Hygiene and Health
World Health Organization

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Re: PFOS and PFOA in Drinking-water Background document for development of WHO Guidelines for Drinking-water Quality

Environmental Working Group (EWG) is a non-profit public health and environmental research and advocacy organization based in Washington, DC, USA. We focus our research on potential health risks from chemical contamination of water, food, consumer products, and the environment.

With this comment letter that we submit to the World Health Organization we respectfully request significant revision or withdrawal of the draft guidelines. The draft, "Background document for development of WHO Guidelines for Drinking-water Quality," disregards WHO's mission of putting public health first: It creates the potential for doubt about how PFOA and PFOS harm human health. Instead, the WHO draft emphasizes cutting the cost of removing the chemicals from water.

The proposal falls far short of meeting the stated vision and mission of, "the attainment by all peoples of the lowest possible burden of water and sanitation-related disease through primary prevention."

The draft analysis disregards hundreds of health risk studies, claiming there are too many uncertainties to calculate a safe exposure level for the substances.

The two chemicals are PFOA, formerly used by chemical company DuPont to make Teflon, and PFOS, formerly an ingredient in 3M's Scotchgard, both members of the class of per- and polyfluoroalkyl substances, or **PFAS**.

Across the globe, PFAS exposure is an urgent public health priority. Decades of widespread PFAS use have contaminated water, soil and animals in the farthest corners of the world. Today PFAS are found in the blood of virtually everyone, **including newborn babies** who are exposed when PFAS cross from the pregnant body to **cord blood**.

We know very low doses of PFAS have been linked to suppression of the immune system, including **reduced vaccine efficacy**. These chemicals **harm development and the reproductive system**, such as reduced birth weight and impacts on fertility; increase the risk of certain cancers; and affect metabolism, such as changes in cholesterol and weight gain.

The U.S. Environmental Protection Agency acknowledges these risks, recently proposing significantly stricter but non-binding advisories for levels of PFOA and PFOS in drinking water above which health harms could be expected following a lifetime of exposure. These safe exposure concentrations calculated by the U.S. Environmental Protection Agency are 25,000 and 5,000 times below the concentrations proposed in the WHO draft.

The WHO draft sows unnecessary doubt where hard facts already exist. It resembles the tobacco and chemical **industry playbook** – raising already answered questions about legitimate scientific studies to create confusion over the risks of a particular substance. The draft says there are too many uncertainties about the science on PFOA and PFOS to know what level of exposure might be considered safe.

There are several specific aspects of the WHO report that are flawed and do not follow established risk assessment guidelines, leaving public health unprotected. The Table below summarizes these shortcomings and highlights the need for the final report to take a strong health-protective position on PFAS.

Position taken by the draft WHO report	Why it's problematic
"This document is not intended as a comprehensive summary of the primary literature and not all studies are cited" (Page 1).	WHO had the chance to include newer studies that support past scientific reviews finding health harms from PFOA and PFOS, yet instead selectively included evidence that made the findings more uncertain.
"The applicability of the adverse health effects reported in animals to human health is uncertain, recognizing species and sex-related differences in the toxicokinetics of PFAS" (Section 7.2, Page 66).	Differences between laboratory animals and humans, as well as between different people, are not uncommon in toxicity assessments. Established methods exist to account for these differences, which have been used in previous reviews of PFAS.
"… the uncertainty and lack of consensus in the critical health end point to derive a [Health-Based Guidance Value] is evident from the diverse range of endpoints utilized by other agencies to derive tolerable daily intakes or similar values, and the resulting range in proposed drinking-water values" (Section 9.1, Page 79).	This is a biased and non-factual statement. The diverse range of endpoints can reflect many aspects of risk assessment, including which studies were available at the time or the legal requirements for the assessment. The diversity in endpoints is likely more a reflection of the ability of PFAS to harm multiple systems in the body.
Incorrect assessment of how "science on PFAS is evolving very rapidly" (Section 9.1, Page 79).	Newer studies continue finding that PFAS are toxic to human health at lower concentrations. The WHO report does not detail how newer assessments suggest more health protective guidelines are needed.
Exclusion of two critical drinking water guideline reviews conducted by the EPA (Page 79, footnote) and California Office of Environmental Health Hazard Assessment.	The WHO report is not comprehensive and is therefore misleading, especially when the most recent U.S. EPA assessments led to stricter protective drinking water values.

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Dismissal of immune and cholesterol impacts, as well as other health effects (Section 4.2.4 and 4.2.6).	The WHO report recognized strong associations with immunotoxicity and metabolic parameters yet incorrectly dismissed them. Other authoritative agencies have used immune effects to derive exposure limits. Newer studies continue to support impacts of PFAS on the immune system and metabolic outcomes, yet they are not considered in the report.
Incorrect considerations of toxicokinetics.	The WHO report relies heavily on a single study on PFOA levels and elimination from the body. The U.S. EPA reviewed the same study and found (1) the results were at odds with established literature and (2) there were many concerns with the methodology.
Narrow focus on PFOA and PFOS.	Drinking water is contaminated by several other PFAS chemicals, in addition to PFOA and PFOS. Other assessments have incorporated more PFAS chemicals and acknowledged the importance of considering the exposures to multiple PFAS.

Instead of focusing on the health risks of PFAS, the draft document focuses on minimizing the cost of removing forever chemicals from contaminated water. This approach protects the **polluting industries** that have discharged PFAS for decades.

The World Health Organization should address the significant flaws in the draft to ensure that public health protection from PFAS is a priority.

Submitted on behalf of the Environmental Working Group,

Olga V. Naidenko, Ph.D.
Vice President, Science Investigations

David Q. Andrews, Ph.D.
Senior Scientist

Alexis M. Temkin, Ph.D.
Toxicologist

ENVIRONMENTAL WORKING GROUP

HEADQUARTERS 1250 Eye St. NW Suite 1000 Washington, DC 20005
P: 202.667.6982
SACRAMENTO OFFICE 910 K Street Suite 300 Sacramento, CA 95814
P: 916.333.0566
MIDWEST OFFICE 111 Third Avenue South Suite 240 Minneapolis, MN 55401
P: 612.435.8280