



EPA PFAS HAs – What’s Next for Minnesota?

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PFAS and Human Health

- To protect human health, MDH has developed health-based guidance values for six PFAS compounds commonly detected in water
- Prioritizing development of guidance values for other PFAS being detected in public water supplies for which we do not yet have values*
- Following developing science on the potential health effects of PFAS exposure to ensure guidance values use the best, most recent information
- Evaluating human health risks from other exposure pathways (air, fish, game)
- Supporting MPCA and other agencies in carrying out the PFAS Blueprint and Monitoring Plan

Minnesota Drinking Water Guidance

MDH health-based values are developed using the best science and public health policies available when derived and are updated as new research becomes available

- Based on protection of sensitive populations like fetuses and breastfed infants
- Guidance consider only potential health impacts and do not consider cost and technology of prevention and/or treatment
- An additivity approach is used to assess mixtures

MDH Guidance Values (ppb)

Year	Long-chain			Short-chain		
	PFOA	PFOS	PFHxS	PFHxA	PFBA	PFBS
2002	7	1				
2006	1	0.6			1	
2007	0.5	0.3			7	
2009	0.3	0.3			7	7
2013	0.3	0.3	0.3		7	7
2016	0.07	0.07	0.07		7	7
2017	0.035	0.027	0.027		7	2
2019	0.035	0.015	0.047		7	2
2022	0.035	0.015	0.047	0.2	7	0.1

Health Risk Limit, Health-based Value, Surrogate

EPA, states looking at PFAS “group” values

Additivity is a Key Step

PFAS always occur in mixtures. Exposure to multiple contaminants can cause effects differently than exposure to a single contaminant.

MDH uses an additivity approach – calculating a Health Risk Index (HRI) - to evaluate the combined health risk of mixtures.

Calculating a Health Risk Index (HRI)

- Risks are added together based on health endpoint (e.g., cancer, development, liver, thyroid)
- HRI > 1, considered an exceedance of an allowable health risk level

Example based on thyroid effects

$$\text{HRI} = \text{PFOAconc}/0.035 + \text{PFOSconc}/0.015 + \text{PFHxSconc}/0.047 + \text{PFHxAconc}/0.2 + \text{PFBAconc}/7 + \text{PFBSconc}/0.1$$

What is MDH Doing Next?

- In addition to EPA, the state of California and the European Union conducted their own analyses of the human epidemiological data that showed a decline in vaccine effectiveness directly related to the level of PFOA/PFOS in blood
- MDH Health Risk Assessment staff are reviewing the EPA, CA and EU documents carefully
- MDH will determine if we can use similar methodology to develop new Minnesota Health Based Values for PFOA and PFOS
- Bringing in our Environmental Epidemiology Unit for the first time
- Goal is to have this completed by the end of 2022 with new HBVs as needed

Thank you!

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