

## **MEMORANDUM**

Initial Notes on Draft 2019 Cycle 10  
Scientific Documentation for Proposed Wisconsin NR140 Groundwater Quality  
Public Health Enforcement Standards for PFOA and PFOS  
February 17, 2020

### **SENT BY ELECTRONIC MAIL**

**TO:** Dr. Roy Irving, Hazard Assessment Section Chief, Bureau of Environmental and Occupational Health, WDOHS  
Dr. Sarah Yang, toxicologist, Bureau of Environmental and Occupational Health, WDOHS  
Steve Elmore, Director, Bureau of Drinking Water and Ground Water, WDNR

**FROM:** Laura Olah, Executive Director, Citizens for Safe Water Around Badger  
E12629 Weigand's Bay South, Merrimac, WI 53561 P: (608)643-3124 E: info@cswab.org

### **Perfluorooctanoic acid (PFOA) - 2019 Cycle 10**

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Recommendation based on Kieskamp et al. 2018 paper – modeled the level of exposure a pregnant woman would have to have to result in the baby's PFOA serum levels to be equivalent to the LOAEL (lowest observed adverse effect level) used by the EPA.

Model resulted in Human Equivalent Dose (HED) 540 ng/kg/d

- Protective – model incorporated 12 months of breastfeeding exposure to the baby, which is when people usually receive the highest dose of PFOA, so this is more protective of our most vulnerable (see Risks to Fetal Development and the Young section of the 2019 NRDC report\* starting on pg. 20)
- Not protective – WDOHS uses the same health endpoint as EPA, studies show adverse health effects occur at lower doses than the health effect chosen by the EPA (see Box 6 of the NRDC report starting on pg. 36)

Total uncertainty factor applied was 300; Results in a Reference Dose (RfD) of:  $(540 \text{ ng/kg/d}) / 300 = 1.8 \text{ ng/kg/d}$

- Protective – used a full uncertainty factor (10x) for account for differences between people and research animals
- Negative – WDOHS did not use a full uncertainty factor (3x) to account for differences among people, reviewers have not seen any agency use less than the full 10x uncertainty factor for human variation

WDOHS used the following drinking water exposure assumptions: 1 liter per day for a 10 kg person (0.1 L/kg/d), with a 100% relative source contribution (RSC)

$$(1.8 \text{ ng/kg/d}) / (0.1 \text{ L/kg/d}) \times 1 = 18 \text{ ng/L} = 18 \text{ ppt}$$

- Not Protective – WDOHS uses a 100% RSC, this means that it is allowing all of a person's exposure to come from drinking water. Many studies and analysis suggest this is not true - people are also being exposed through contaminated food, consumer products, dust in our homes, etc. Most agencies use a RSC of 20% or 50% to allow for exposures from other sources. (see Box 4 of NRDC report, on pg. 33)

Note – WDOHS used a drinking water rate of 0.1 L/kg/d, which is in between what has been used for nursing mothers (0.054 L/kg/d) and infants (0.143-0.175 L/kg/d), however WDOHS also notes that this is required by WI statute.

### **Perfluorooctane sulfonic acid (PFOS) - 2019 Cycle 10**

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WDOHS uses ATSDR's minimal risk level for its Reference Dose instead of generating its own. RfD = 2 ng/kg/d

- **\*\*Note – there is a typo in the WDOHS document.** It lists the RfD as 20 ng/kg/d, but ATSDR's is 2 ng/kg/d, and if one does the rest of the calculations with this drinking water exposure assumption, WDOHS must have also used 2 ng/kg/d to get its final number
- This RfD is a decent one to use, is fairly protective of the lowest observed health effects seen for PFOS (discussions concerning the choices ATSDR made begin on pg. 39 of the NRDC report)

WDOHS used the same drinking water exposure assumptions for PFOA: 1 liter per day for a 10 kg person (0.1 L/kg/d), with a 100% relative source contribution (RSC)

$$(2 \text{ ng/kg/d}) / (0.1 \text{ L/kg/d}) \times 1 = 20 \text{ ng/L} = 20 \text{ ppt}$$

- Same notes as above

### **Referenced 2019 NRDC report (enclosed as .pdf):**

\*Anna Reade, Ph.D. et al, Natural Resources Defense Council (NRDC), PFAS in Drinking Water 2019, Scientific and Policy Assessment for Addressing Per- and Polyfluoroalkyl Substances (PFAS) in Drinking Water, 12 April 2019.