

Statewide PFAS Sampling of Public Water Supplies in Michigan

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Background/Objectives. Per- and polyfluoroalkyl substances (PFAS) are ubiquitous compounds found in both the indoor and outdoor environments. Human exposures to PFAS occur from a multitude of sources and pathways (ATSDR, 2015). Dietary exposure is estimated to contribute to approximately 60-80 percent of total exposure to PFAS, particularly long-chain PFAS (Trudel et al., 2008; Vestergren and Cousins, 2009; Vestergren et al., 2012). Exposure to PFAS that are known to be highly soluble in water through drinking water has become a concern (Hu et al., 2016). The USEPA conducted a national screening during their third Unregulated Contaminant Monitoring Rule (UCMR3) study of all 4,064 public water supplies serving >10,000 people and 800 (0.5%) public water supplies serving < 10,000 people. The screening for PFAS was done for only six PFAS with minimum reporting limits set between 10 to 90 ng/L. To better evaluate the potential of PFAS exposure through drinking water in Michigan, a statewide PFAS sampling was performed.

Approach/Activities. In Michigan, 3 out of 93 facilities tested positive for PFAS during the UCMR3 sampling. However, a minimal subset of facilities serving <10,000 people were sampled in Michigan during the UCMR3 sampling. To better assess the potential impact of public water supply, the Michigan Department of Environmental Quality (MDEQ) initiated a statewide initiative of sampling over 1,500 community water supplies (CWS) and 460 schools with a maximum reporting limit of 2 ng/L. The drinking water for approximately 75% of Michigan's population was sampled for PFAS. The drinking water source of 75 municipalities have intakes in one of the Great Lakes, connecting channels, or inland rivers, and the remaining facilities including the schools rely on groundwater wells. All of the drinking water samples were sampled and analyzed using USEPA Method 537 Rev. 1.1 (USEPA Method 537). The difference between the isotope dilution method versus USEPA Method 537 was also evaluated. Split samples were collected and analyzed using both analysis methods at all of the facilities that relied on surface water sources.

Results/Lessons Learned. The current Michigan statewide PFAS sampling provides a much better screening for possible PFAS impacts of drinking water having a much lower reporting limit and being more comprehensive than UCMR3 testing. The results for the entire statewide program will be presented with detection frequencies of all 14 individual PFAS. A side by side comparison will also be provided for the split samples between the isotope dilution method and USEPA Method 537. On July 29, 2018, a state of emergency was declared for Kalamazoo County due to the detection of 1,410 ng/L of total PFOA and PFOS in the City of Parchment Michigan drinking water. The Parchment drinking water plant served a population of over 3,000 people and was not part of the initial UCMR3 sampling. Potential PFAS sources identified during this statewide sampling will be presented. The results of the current study will provide information on the possible PFAS contamination of drinking water sources.