Summary of Statewide Sampling to Determine Spatial Distribution, Prevalence, and Occurrence of Per- and Polyfluoroalkyl Substances (PFAS) in Illinois Community Water Supplies, 2020–21

Per- and polyfluoroalkyl substances (PFAS) are a group of synthetic chemicals that have been in use since the 1940s. In March 2023, USEPA proposed a National Primary Drinking Water Regulation to set legally enforceable levels, called Maximum Contaminant Levels (MCLs), for six PFAS in drinking water.

Recently, the United States Geological Survey (USGS) released a report titled "Statewide Sampling to Determine Spatial Distribution, Prevalence, and Occurrence of Per- and Polyfluoroalkyl Substances (PFAS) in Illinois Community Water Supplies". The report summarizes the occurrence and distribution of PFAS from samples collected by the Illinois Environmental Protection Agency (IEPA) in Community Water Systems (CWS) across Illinois. Below is a summary of key findings in the USGS report.

- The IEPA collected a total of 1,711 samples (including quality-control samples) of finished water at 1,428 entry points from 1,017 CWS systems in Illinois and analyzed the water samples for PFAS. The sources of drinking water include groundwater, surface water, or mixed. The number of PFAS detections grouped by drinking-water source are summarized in Table 1.

Table 1: Drinking-water source and number of detections of PFAS substances in community water supply systems in Illinois, 2020–21.

Drinking-water source	Number of PFAS detections at or above the minimum reporting level (2 ng/L)	Number of CWS with at least one PFAS detected at or above minimum reporting level (2 ng/L)	Number of samples	Number of detections at or above minimum reporting level (2 ng/L)						
				PFBS	PFHpA	PFHxA	PFHxS	PFNA	PFOA	PFOS
Groundwater	282	114	1,333	81	17	40	54	0	45	45
Surface water	67	30	85	6	1	14	2	0	21	23
Mixed	10	5	10	1	0	2	0	1	2	4
Total	359	149	1,428	88	18	56	56	1	68	72

- PFAS were detected in 149 of 1,428 entry points (about 10%), representing 118 of the 1,017 Illinois CWS systems.
- Of the nearly 7.4 million residents directly served by the CWS systems sampled, more than 1.3 million residents (about 18%) are served by CWS systems that had at least one detection of PFAS above the minimum reporting level of 2 nanograms per liter (ng/L).
- The most frequently detected PFAS in all samples were PFBS (6.2%), PFOS (5.0%), PFOA (4.8%).
- Accounting for the 18 analytes tested from every sample collected, 99 percent of all sample results were below the minimum reporting level of 2 ng/L. 90 percent of the samples with detections above the MRL (2 ng/L) had concentrations less than 10 ng/L (between 2 and 10 ng/L). Detections above 10 ng/L were most common for PFBS and PFHxS.
- The highest concentrations detected were 150 ng/L of PFOS and 140 ng/L of PFHxS at one CWS location. The system has since changed its water source.
- Distribution of PFAS among drinking-water sources indicated PFAS detections were more common in CWSs using surface-water sources (about 35%, 30 of 85) and mixed groundwater and surface-

water sources (50%, 5 of 10) compared to those using groundwater sources (about 9%, 114 of 1,333), but a greater range of PFAS concentrations were observed in groundwater (2 to 150 ng/L) than in surface water (2 to 15 ng/L).

- There are about 1.3 million Illinois residents that use private drinking-water wells. Private homeowners that obtain drinking water from groundwater were not included in this study and occurrence of PFAS in private drinking-water sources is currently unknown.

Reference:

Gahala, Amy M., Jennifer B. Sharpe, and Andrew M. Williams. *Statewide sampling to determine spatial distribution, prevalence, and occurrence of per-and polyfluoroalkyl substances (PFAS) in Illinois community water supplies, 2020–21*. No. 2023-5078. US Geological Survey, 2023.