



Per- and polyfluoroalkyl substances (PFAS) are a group of manmade chemicals that are very persistent in the human body and environment and have emerged as a major source of concern among environmental groups and regulators. If you operate a facility that uses these chemicals or has a legacy of their use, it is important to understand how and where PFAS may be leaving your site and entering the environment. A multimedia mass balance can help you fully understand your PFAS emission situation.

A mass balance applies the law of conservation of mass to analyze physical systems. By controlling a system's processes, measuring what is going into and coming out of the facility, and comparing the amounts, a mass balance can show the effectiveness of treatment and controls or the persistence of legacy contamination. Mass balances for facilities that produce or use PFAS will account for air, waste, water, and product streams. Barr's 15 years of experience with PFAS mass balance studies has allowed us to develop tools and approaches needed to provide clients with accurate results and a comprehensive understanding of their facilities.

stack testing: setting the industry standard

In the early 2000s—when a confidential client asked Barr to perform mass balance studies for facilities that use ammonium perfluorooctanoate—the EPA had no established test methods for sampling PFAS in air. We collaborated with industry representatives to develop modifications to the EPA method for the quantification of particulate matter to allow us to conduct PFAS stack testing. Accepted by the EPA, the approach is now used and referenced by the entire U.S. dispersion-processing industry. We continue to adapt the method for an increasing range of PFAS compounds.

water sampling: developing an effective plan

The success of a water sampling plan depends on sampling in the correct location. Barr's process engineers can help evaluate a facility's water balance, assess key locations for sampling, and coordinate on-the-ground efforts to quantify PFAS entering and leaving a facility's water systems. Care must also be taken when analyzing water samples with PFAS. Water streams with high-polymer content can be damaging to laboratory equipment. Barr's laboratory quality control group can help make sure you get the most out of your sampling investment by coordinating directly with laboratories to develop cutting-edge methodologies.

waste sampling: providing useful data

Facilities that handle PFAS often have thick, sticky, sludge-like wastes that are difficult to analyze. This can result in confusing and misleading laboratory results and uncertainty. Our data-quality specialists work closely with analytical laboratories to make sure the data collected during sampling is correct and useful.

reporting: delivering accurate results

Because a PFAS mass balance uses analysis from multiple types of media, it is important to correctly convert the units of measurement from each sample for an accurate comparison. If there are discrepancies, Barr's experts can help you determine what they mean. Is it a data quality issue? Is there a source not accounted for? Or is there legacy material in the facility that's contributing to the PFAS discharges? Our reports provide context to these issues and recommendations for solving them.