SAMURS Abstract

Per- and polyfluoroalkyl substances (PFAS) are synthetic chemical compounds characterized by their nonpolar fluorine saturated carbon tail and polar head. The polar component of the structure varies and can incorporate carboxylate, phosphate, or sulfonate groups. PFAS are surface active compounds used to render textiles, upholstery or carpet to be both water and grease repellent. These same characteristics has led longer chained PFAS to bioaccumulate within biota, particularly those exposed to the marine food web. Ongoing research includes refining extraction and analytical methods for monitoring PFAS and its impact on biological matrices, as well as methodologies to appropriately remove PFAS contamination especially from areas that may lead to direct human exposure. The overall research objectives of this project are to quantify concentrations of PFAS contamination in mussel samples across the Puget Sound region. In addition, the project aims to potentially provide data to assess exposure levels from consumption of shellfish. Mussel tissue samples were provided by the Department of Fish and Wildlife (n>30) from artificially planted mussels from cages in various urban and non-urban bays across the Puget Sound and its waterfronts. These samples will be extracted using QuEChERS (Quick, Easy, Cheap, Rugged and Safe) extraction method and analyzed using LCMSMS (liquid chromatography tandem mass spectrometry). Spike and recovery experiments using store bought mussel samples were performed to assess the impact and effectiveness of “clean-up steps” in the extraction process. Improving the extraction is vital to detection and accurate and precise quantification of these compounds from complex biological matrices.