

Perfluorinated alkyl substances, or PFAS, are synthetic chemicals that have widespread use in industrial, commercial, and consumer products like aqueous firefighting foams (AFFF), cookware, clothing, and more. They are characterized by long non-polar fluorinated carbon chains and a polar functional group. These compounds render surfaces both water and oil repellent. Their chemical structure lends PFAS to be resistant to degradation and have earned them the name of “forever chemicals”. PFAS are common contaminants found in soil, water, air, and biota. They have been linked to potential reproductive, developmental, immune, and cancer-related health effects in humans. This necessitates finding a reliable method to isolate and quantify these substances from varying sources. We sought to develop and validate an extraction and cleanup method to measure selected PFAS concentrations with a >70% recovery in mussel tissue samples. Mussels are filter feeders who uptake contaminants from their environment, making them key indicator species. Using store-bought mussels, we chose to compare two previously published methodologies: the QuEChERS and the Environmental Protection Agency (EPA) standardized method 1633. The QuEChERS methodology is a quick high salt-based extraction method whereas the EPA is a time-intensive alkaline digestion coupled with solid phase extraction cleanup process. We found that the EPA method produced more reliable and consistent recoveries ranging from 18% to 174%. The EPA method will be used to analyze various mussel tissue samples from rural and urban bays collected from the Puget Sound Region. This next phase of the study will provide data to assess regional contamination and to model potential human exposure from shellfish consumption.