

Transfer Rate of Organic Water Contaminants through a Passive Sampler Membrane of Polyethersulfone (PES)

Authors : Hamidreza Sharifan, Audra Morse

Abstract : Accurate assessments of contaminant concentrations based on traditional grab sampling methods are not always possible. Passive samplers offer an attractive alternative to traditional sampling methods that overcomes these limitations. The POCIS approach has been used as a screening tool for determining the presence/absence, possible sources and relative amounts of organic compounds at field sites. The objective for the present research is on mass transfer of five water contaminants (atrazine, caffeine, bentazon, ibuprofen, atenolol) through the Water Boundary Layer (WBL) and membrane. More specific objectives followed by establishing a relationship between the sampling rate and water solubility of the compounds, as well as comparing the molecular weight of the compounds and concentration of the compounds at the time of equilibrium. To determine whether water boundary layer effects transport rate through the membrane is another main objective in this paper. After GC mass analysis of compounds, regarding the WBL effect in this experiment, Sherwood number for the experimental tank developed. A close relationship between feed concentration of compound and sampling rate has been observed.

Keywords : passive sampler, water contaminants, PES-transfer rate, contaminant concentrations

Conference Title : ICW 2016 : International Conference on Water

Conference Location : Montreal, Canada

Conference Dates : May 16-17, 2016