

Development of Device for Measuring EDC Flux in Groundwater

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The USEPA long term research goal one (LTG1) is to develop approaches to assess the risk of emerging contaminants to humans and wildlife. One of the routes of exposure to endocrine disrupting chemicals (EDCs) is through contact with contaminated groundwater. Thus, the passive flux meter (PFM) team at the University of Florida (UF) is working on the development of a method to identify, monitor, and quantify the presence of these chemicals in groundwater. The PFM has been developed and patented at to simultaneously quantify groundwater and organic and inorganic contaminant flux in groundwater. It has been deployed at over 20 chlorinated solvent field sites to date, but has not been configured and tested for ultra-low concentration EDCs. The PFM device is inserted into an existing monitoring well comprised of a sleeve filled with a sorbent to trap subsurface mobile contaminants. Additionally, tracers are pre-sorbed to the sorbent media and they are advectively removed proportional to the groundwater velocity. Different sources of silver impregnated activated carbon (SAC) were employed as the sorbents for this research. A number of EDCs found in groundwater occurrence studies were interrogated for their sorption and extraction efficiency on the SACs through batch tests. These compounds selected spanned a range of Log K_{ow} values. One of the goals of this work is to deploy EDC PFMs at a field site, a concentrated animal feeding operation (CAFO) at Purdue University, in the fall of 2008. The development of this device will allow EDC flux detection from point sources and multiple deployments will permit performance assessment of best management practices, septic system amendments, advance wastewater implementation, and additional attempts to reduce EDC discharges to groundwater resources.