

**TH258 Accumulation of Pharmaceuticals, Perfluorinated Compounds, Plasticisers and Illicit Drug Metabolite in Aquatic Sediment and Plants in Three Rivers of Greater London and SE England** J. Wilkinson, P.S. Hooda, Kingston University London /

Natural and Built Environments; J. Swinden, J. Barker, S. Barton, Kingston University London / Life Sciences Pharmacy Chemistry. Accumulation of persistent organic pollutants (POPs) in sediment (n=23) and aquatic plants (n=15) was assessed by ultrasonication-assisted extraction (UAE) followed by an in-house validated method for solid phase extraction (SPE) and liquid chromatography tandem mass spectrometry (LC-MS/MS). Eleven POPs were selected: *inter alia* pharmaceuticals acetaminophen, diclofenac and ethinylestradiol, illicit drug metabolite benzoylecgonine, perfluorinated compounds perfluorooctanoic acid (PFOA), perfluorononanoic acid, perfluorooctanesulfonic acid (PFOS) and perfluorobutane sulfonic acid (PFBS), and plasticisers bisphenol-A (BPA), 4'-hydroxyacetophenone (HAP) and bisphenol-S (BPS). Sediment samples were air dried, homogenised, sieved to 500 µm then subjected to UAE for 20 m at 45°C in an extraction solution of 50:50 acetonitrile (ACN):Methanol (MeOH) with 1% acetic acid (v/v) followed by SPE and LC-MS/MS analysis. Bioaccumulation in aquatic plants was assessed using two species: Water Starwort (*Callitriche* sp., n=8) and Pondweed (*Potamogeton* sp., n=7). All plant samples were air dried, powdered, homogenised then subjected to UAE for 20 m at 40°C in an extraction solution of 25:75 ACN:MeOH with 1% acetic acid (v/v) followed by SPE and LC-MS/MS analysis. Mean recoveries were 76% for sediment and 82% for plants. Ten of eleven POPs were detected in sediments with frequencies ranging from 22-83% (benzoylecgonine and BPA respectively) and mean quantifiable concentrations ranging from 0.84-11.1 ng/g (BPS and BPA respectively). Organic matter content in sediment samples was estimated using standard methods for loss on ignition and ranged from 1.2-6.4%. Seven of eleven POPs were detected in *Callitriche* sp. with frequencies ranging from 13% (acetaminophen) to 100% (HAP, BPS, PFBS and PFOA) and mean quantifiable concentrations ranging from 0.42-113 ng/g (diclofenac and PFOS respectively). Lastly, eight of eleven POPs were detected in *Potamogeton* sp. with frequencies ranging from 14-100% (acetaminophen and HAP respectively) and mean quantifiable concentrations from 0.38-71.0 ng/g (acetaminophen and HAP respectively). Overall, levels of target POPs were lowest in sediment and highest in *Callitriche* sp. with mean levels as much as 18.3 and 11.5 times higher (PFOS) than in sediment and *Potamogeton* sp. respectively. The extent to which POP bioaccumulation may affect higher trophic levels is unclear and warrants further investigation.