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### Organic contaminants of emerging concern in sediments and flatfish collected near outfalls discharging treated municipal wastewater effluent to the Southern California Bight

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#### ABSTRACT

To investigate the occurrence and bioaccumulation of organic contaminants of emerging concern (CECs) in the vicinity of four ocean outfalls that discharge treated wastewater effluent into the southern California Bight (U.S.A), a comprehensive suite of pharmaceutical and personal care products; current use pesticides; industrial/ commercial chemicals; and legacy organic pollutants were analyzed in sediment and liver tissues of hornyhead turbot (*Pleuronichthys verticalis*), a locally abundant flatfish. Research grade GC-MS and LC-MS protocols validated using a performance based QA/QC approach were utilized. Although most CECs targeted (>75 individual analytes) were infrequently or not detected, triclosan, 4-nonylphenol (4-NP) and bis(2-ethylhexyl)phthalate were detected in all sediments analyzed at maximum concentrations of 8.6, 380 and 470 µg/kg, respectively. In liver, 4-NP and the sum of polybrominated diphenyl ether (PBDE) congeners 47 and 99 were detected in >90% of samples analyzed at maximum concentrations of 290 and 480 µg/kg, respectively. The sedative diazepam was detected in 100% of liver samples (110 µg/kg maximum concentration), but was infrequently detected in sediments. Sediment and liver concentrations ranged over several orders of magnitude across outfall locations and selected CECs (e.g. PBDEs) and legacy organochlorines were elevated relative to a reference site. Relative to sediment, accumulation in liver of PBDEs was comparable to that for legacy organochlorines (e.g. 4,4'-DDE and PCB 153), whereas triclosan and 4-NP exhibited low bioaccumulation potential. Mean tissue PBDE and diazepam concentrations were higher in livers from male vs. female *P. verticalis*, suggesting that gender differences be considered when assessing the exposure and impact of bioaccumulative CECs on sentinel fish species.

#### Full Text

[http://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2011AnnualReport/ar11\\_365\\_373.pdf](http://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2011AnnualReport/ar11_365_373.pdf)