45 Spatial and temporal variations of PCBs and PBDEs in mudfish from the Vaal River, South Africa N.L. Vogt, North-West University / Environmental Sciences and Management; V. Wepener, North-West University - School of Biological Sciences / Unit for Environmental Sciences and Management; R. Pieters, North West University / Unit for Environmental Sciences and Management; A. Covaci, University of Antwerp, Toxicological Center / Toxicological Center; L. Bervoets, University of Antwerp / Biology. Polybrominated diphenyl ethers (PBDEs) and polychlorinated biphenyls (PCBs) are synthetically produced compounds that have been produced, and used in large quantities worldwide. These persistent organic pollutants are commonly detected in sediments and soils. Because of their mutagenic, carcinogenic and endocrine disrupting properties, in addition to their bioaccumulation and biomagnifying potential, they are of serious concern for biological and ecosystem health. These compounds have been used extensively in industries and are known to leach into the environment from incorrectly disposed equipment. For this reason, it is suspected that the Vaal River—which forms part of the largest river basin in South Africa, and the upper reaches flow through the highly industrialised regions of the country—and the species which inhabit the river would be exposed to the compounds. The aim of this study was to determine the levels of PCBs and PBDEs in Labeo capensis muscle tissue and compare the values to those measured previously in 2010. L. capensis were collected from two sites in the Vaal River, Vischgat, situated below the Vaal Dam, and farther downstream a second site, the Vaal Barrage, during September 2010 and October 2014. Muscle samples were analysed for 27 PCB and 6 PBDE congeners, by means of a gas chromatograph coupled to a mass spectrometer. The PCB and PBDE loadings were greater in the fish in 2010 than in 2014, significantly in regards to the PBDEs. The mean (± standard deviation) PCB levels at Vischgat were 570±193 ng/g lw and 350±655 ng/g lw, and the PBDE concentrations were 31.9 ± 11.3 ng/g lw and 2.8 ± 2.1 for 2010 and 2014 respectively. The Barrage site had slightly higher concentrations of both PCBs and PBDEs, however not significantly. The PCB loadings reduced from 894±400 ng/g lw to 297±373 ng/g lw from 2010 to 2014, and the PBDE levels were 43±15.2 ng/g lw and 20.5 ng/g lw in 2010 and 2014 respectively. Although the contaminant loadings in the muscle reduced, it is unlikely that the contaminant concentrations in the river sediment would have decreased, because these compounds are persistent. It is more likely that the fish spawned, and released their

contaminant loadings, which is highly probable as sampling was

conducted entering the spawning season in 2014.