

## Enantioselectivity of polychlorinated biphenyl atropisomers in sediment and biota from the Turtle/Brunswick River estuary, Georgia, USA

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### ABSTRACT

To investigate the potential for enantioselective transformation and accumulation, the enantiomer distributions of seven polychlorinated biphenyl (PCB) atropisomers were measured in the sediment and biota from a sub-tropical estuary heavily contaminated with Aroclor 1268, a technical mixture of highly chlorinated PCB congeners. Enantiomer fractions (EFs) of PCBs 91, 95, 136, 149, 174, 176, and 183 in marsh sediment, invertebrate, forage and predatory fish species, and bottlenose dolphins were determined. Non-racemic EFs greater than 0.75 were found in sediments for PCBs 136 and 174, likely the result of microbial dechlorination. Although enantiomer fractions in grass shrimp (*Palaemonetes* spp.) mirrored those of sediment, fish species had EFs that differed significantly from sediment or grass shrimp. Similarly, bottlenose dolphins were also found to contain non-racemic quantities of PCBs 91, 136, 174, 176, and 183. Non-racemic EFs in these biota were likely a result of both uptake of non-racemic proportions of PCBs from the diet and enantioselective biotransformation.

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