Dioxins and PCBs in eel and Chinese mitten crabs in the Rhine-Meuse estuary

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Although concentrations of dioxins and PCB's in eel (*Anguilla anguilla*) from the Rhine-Meuse estuary have dropped markedly since the 1970s and 1980s, current levels in the Dutch part of these rivers are still above European consumption standards. During the 1980's the fishery and consumption of eel was restricted and since 2011 the fishery and trade of eel and Chinese mitten crab (*Eriocheir sinensis*) has been forbidden in most sections of the large rivers and connected waterways in the Netherlands. *E. sinensis* is an invasive species with high densities in the estuarine areas and the fisheries during the autumn months have increased during the last decade. The present study was focused on temporal variation in dioxin and PCB concentrations in different size classes of eel and Chinese mitten crabs at ten locations in the restricted area. Juvenile eel (28-32 cm) from an exposed location were translocated to a clean site (Berkenwoude) and the effect on the dioxin and PCB concentrations were followed. For both eel and Chinese mitten crabs a considerable variation was observed between locations, with in general relatively lower concentrations at the more coastal (Maasvlakte, Haringvliet). High concentrations were found in the hepatopancreas (or brown meat) of the Chinese mitten crabs; concentrations in the white muscle meat of legs, claws and body were low and well below the European consumption standards at all locations. In eel, concentrations increased markedly with size classes; for the small eel (28-32 cm) concentrations were below or around the consumption standard. In the translocation experiment, a marked decrease (almost 50%) was noted after 1 year and attributed to growth dilution and probable biotransformation of some congeners with lower chlorination. The results will be discussed in relation to the perspective of sustainable management and fisheries on eel and Chinese mitten crabs in the Netherlands.

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