

Ecological risk assessment of persistent organic pollutants (POPs) in surface sediments from aquaculture system

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Abstract	<p>Organochlorinated pesticides (OCPs) and Polychlorinated biphenyls (PCBs) in the surface sediments from shrimp ponds in four regions of the northern part of the Central Java coast (namely Brebes, Tegal, Pemalang, and Pekalongan) were investigated. The highest concentration of Sigma OCPs was found in Brebes Regency, ranging from 68.1 +/- 3.4 to 168.1 +/- 9.8 $\mu\text{g kg}^{-1}$ dw. As indicated by the DDT ratio and chlordan ratio, the value suggested that those compounds may mainly originate from historical inputs rather than a recent application. The concentrations of Sigma 7 indicator PCBs were determined, with the concentration ranged from 1.2 +/- 0.7 $\mu\text{g kg}^{-1}$ dw (Pekalongan) to 2.2 +/- 0.4 $\mu\text{g kg}^{-1}$ dw (Tegal). The most toxic PCB congener, PCB 118, was detected in all studied regions, with the highest proportion found in Tegal. Source analysis indicated that PCBs in the sediments mainly originated from Aroclor 1254 and Aroclor 1248. Compared to sediment quality guidelines (SQGs), some OCPs were found with concentrations which potentially posed an adverse effect. Our findings suggested that more attention should be paid to ensure sustainable shrimp culture facing such a risk of the OCPs and PCBs. (C) 2020 Elsevier Ltd. All rights reserved.</p>
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