

Persistent organic pollutants and mercury in chum salmon (*Oncorhynchus keta*) from Puget Sound, Washington

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ABSTRACT

Relatively high levels of persistent organic pollutants (POPs), such as PCBs have been reported for resident hatchery Puget Sound Chinook salmon, leading to concern over the consumption of salmon caught in Washington inland waters. The objective of the present study was to determine levels of persistent organic pollutant and mercury levels in chum salmon (*Oncorhynchus keta*) from Puget Sound and to evaluate potential risks for human consumption. Adult bright male and female chum were collected from two fishing zones within the Central Sound during the beginning, middle and end of the fishing season ($n=24$). Whole fish fillets including skin were analyzed for PCBs, PBDEs, mercury, and percent total lipid. Concentrations (wet weight) of all contaminants evaluated were low. PCBs were not detected in any of the fish analyzed, and PBDEs were found in less than half of the samples. The mean \sum PBDE concentration was 0.81 ± 0.46 ppb, largely driven by one value (11.47 ppb) greater than 0.75 ppb. The mean mercury concentration was 0.0341 ± 0.0024 mg/kg with levels ranging from non-detectable to 0.0527 mg/kg and within levels considered safe for human consumption (0.2-1 ppm). Mean percent total lipid was $2.82\pm 0.32\%$. No significant differences in the concentrations of any analyte were found between sexes, regions, or time of capture. Levels of the contaminants detected in chum salmon may be considered trace amounts, with concentrations of POPs comparable to those of wild salmon from Alaska. Chum likely receive lower contaminant loads than resident Chinook caught in the same region due to life-history characteristics such as lower trophic level, and migration to offshore environments soon after emergence. Our results indicate that Puget Sound chum are safe for human consumption and are not contributing to contaminant levels of concern within the Sound.