

**Organohalogen contaminant exposure in wild bottlenose dolphins:
Combined influences of bioaccumulation, life history and tissue distribution.**

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Bottlenose dolphins (BNDs) are long-lived, piscivorous marine mammals which represent apex predators for many coastal ecosystems. As a result, they are vulnerable to accumulating heavy burdens of persistent organohalogen contaminants (POCs). Total concentrations of POCs in marine mammals are strongly influenced by diet, sex, body condition, and life history traits (i.e., age and reproductive state); however, less is known about how these parameters impact compound-specific patterns and contaminant mixtures. To evaluate the impact of each of these factors on organohalogen mixtures in BNDs, tissue samples (blubber, n= 107; blood, n=68) and dietary items (milk, n= 20; fish, 3 species, n=45) were collected from Sarasota Bay, FL and analyzed by GC/MS for 68 polychlorinated biphenyl congeners, 12 organochlorine pesticides and 5 polybrominated diphenyl ether congeners. Principal components analysis (PCA) was used to investigate mixture differences between dietary sources and three dolphin life history groups (juveniles, adult males and females). Contaminant mixtures of the two dietary items in Sarasota Bay differed, with milk containing a greater proportion of the lower chlorinated PCBs and fish containing higher proportions of the organochlorine pesticides. Contaminant mixtures in bottlenose dolphins also varied between life history stages. Mixtures in juveniles were not purely reflective of a milk or fish-based diet, but were affected by both diet and metabolism. Patterns in adult males were influenced by biotransformation and shift to contain higher proportions of non-metabolizable congeners with age. Alternatively, contaminant patterns in adult females appeared to be strongly influenced by the selective offloading of lower halogenated compounds through milk upon reaching reproductive maturity. Body condition was also investigated as a potential factor in blood and internal tissue contaminant concentrations and mixtures. Supportive data from live animals and necropsied animals will be presented.

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