

## **Mercury Toxicity in the Aquatic Oligochaete *Sparganophilus pearsei* II: Autonomy as a Novel Form of Protection**

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### **ABSTRACT**

Aquatic oligochaetes are commonly used for toxicity testing and for assessment of sediment impairment; some species can be relatively tolerant of sediment contaminants. However, there have been few studies of tolerance mechanisms; most work has focused on behavioral changes. The aquatic oligochaete worm, *Sparganophilus pearsei*, can be extremely tolerant to mercury in sediments depending on its prior history of exposure. Three *S. pearsei* populations, differing in their history of mercury exposure and in their tolerance to mercury, were assessed to determine tolerance mechanisms. In mercury-contaminated sediments, tolerant worms accumulated the contaminant in their caudal segments (*i.e.* their tails), which were then jettisoned via the process of autonomy, thus providing a mechanism of detoxification. This detoxification process appears to require a certain level of tolerance and may represent a novel exposure route for other organisms via feeding on discarded tails or release of accumulated contaminants as the tails decompose. Measurements of tissue mercury concentrations as contaminant body residues for this species (CBRs) are compared to other aquatic invertebrates.

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