

Trace Metals in Southern Californian Mussels

George V. Alexander¹, David R. Young²

¹ Laboratory of Nuclear Medicine and Radiation Biology, University of California at Los Angeles, Westwood, CA

² Southern California Coastal Water Research Project, El Segundo, CA

ABSTRACT

The intertidal mussels *Mytilus californianus* is a useful indicator of anthropogenic inputs of several trace metals off southern California. Highest metal concentrations were measured in the digestive glands, and no significant differences attributable to sex were found for this tissue. The distribution of lead appears to be dominated by diffuse inputs, while those of copper, chromium, and silver are most related to urban point sources. No distinct pattern was observed for nickel or zinc.

The coastal marine ecosystem off southern California is exposed to a number of different kinds of pollutants. These waters, known as the Southern California Bight, receive submarine inputs of municipal wastewater, direct industrial discharges, harbour-related materials such as vessel antifouling paints, surface runoff arial fallout from atmospheric pollutants, and advective inputs from the California Current, which sweeps through the Bight. Among the pollutants of concern are the trace metals. The intent of this report is to outline the distribution of 6 of these trace metals (Ag, Cr, Cu, Ni, Pb, and Zn) within the Bight as monitored by the digestive gland of the intertidal mussel, *Mytilus californianus*.

Young *et. al.* (1973) have summarized the known inputs of 10 metals of interest via most of the input routes. They found that during 1971, municipal wastewater was the dominant source of many of these metals to the coastal zone. Of the 25 municipal wastewater outfalls within the Bight, 5 discharge about 95 percent of the 4×10^9 l. released daily. This is approximately equal to the long-term median annual flow of surface runoff to the Bight (USGS, 1974) and for most metals (excluding lead), the inputs from these five large systems are an order-of-magnitude greater than from the runoff channels which are distributed more evenly along the coastal plain.

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