Historical Contaminant Records from Sclerochronological Archives

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Abstract A number of marine and freshwater organisms, including scleractinian and proteinacious corals, coralline algae, sclerosponges, and bivalve mollusks, secrete skeletons that grow larger over time and may record environmental contaminants over the lifespan of an individual. Most of these organisms also form periodic growth patterns (growth increments, lines or bands) that can be used to accurately date contaminant archives produced from chemical or physical analysis of sequential skeletal samples (termed sclerochronology). The majority of records produced from these organisms thus far have focused on paleoclimate reconstructions, but there is a vast potential for information on changes in contaminant levels over time. Importantly, sclerochronological archives offer the potential for pre-anthropogenic baselines of naturally occurring substances to estimate the magnitude of anthropogenic pollution. This chapter presents an overview of existing contaminant records and discusses the limitations and potential for future work using archives derived from marine organism skeletons.

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