

Discrete bands of petroleum hydrocarbons and molecular organic markers identified within massive coral skeletons

ABSTRACT

The tissues of corals deposit an aragonite exoskeleton beneath their outer living film at a rate dependent on growth and hence on environmental conditions. This typically results in annual (seasonal) bands being formed within colonies. By analysing molecular organic markers within these bands, our research suggests that coral skeletons record contamination from oil and potentially could be used to investigate other anthropogenic and biogenic organic inputs. Our analyses of sections from within corals (*Porites lutea*) sampled from the Gulf coasts of Kuwait and Saudi Arabia demonstrate discrete bands of oil contamination which, using selected terpenoid biomarkers, can be source-indexed to specific oil fields (i.e. Kuwait, Iranian or Arabian crude oils). Together with dating using microscopic and X-ray inspection, this offers the potential to investigate contamination during recent years. Further research is, however, necessary to elucidate degradation mechanisms during, and following, the occlusion process of organics within coral skeletons.

Keyword: Coral skeletons; Petroleum hydrocarbons; Oil pollution