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Spatial and temporal NORM studies in coastal areas of Greece near polymetallic mines

Spatial and temporal NORM studies have been held in two coastal areas of Greece, near an active polymetallic mine and an abandoned one. The metal exploitation resulted in enhanced concentrations of natural radioactivity and especially ^{226}Ra and ^{235}U in the marine sediment. Thus, the dispersion of the aforementioned radionuclides was estimated via ERICA Assessment Tool and revealed an affected marine area of 21 Km². Additionally, the radiological risk was assessed for marine biota utilizing ERICA, however the risk was found to be negligible. The temporal study was based on the radio-tracing techniques of ^{210}Pb and ^{137}Cs , which were applied in sediment cores and resulted in the reconstruction of the anthropogenic impact of the last 150 years. The vertical profiles of radionuclides (e.g. ^{226}Ra) were combined with metal concentrations to verify the history of the anthropogenic activity. The risk assessment for metals (both spatial and temporal) was determined by pollution indices and revealed extreme enrichment of metals in the sediments for both study areas.

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