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Plutonium, americium and radiocesium in coastal sediments of the Cuban island, in the Caribbean Sea

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In this study we report levels of plutonium, americium and radiocesium in sediments from coastal sites of the Cuban island (Caribbean Sea), a region from where there is very limited environmental information concerning anthropogenic radioactive pollution. One sediment core from the Havana Bay (HB) and two from the Batabano Gulf (BG), both sites located in the western part of Cuba, were collected for this study. The activity concentrations, vertical distributions and inventories of $^{239,240}\text{Pu}$, ^{238}Pu , ^{241}Pu , ^{241}Am and ^{137}Cs were determined in order to get insights on the sediment deposition processes.

The activity ratios of $^{238}\text{Pu}/^{239,240}\text{Pu}$, $^{241}\text{Am}/^{239,240}\text{Pu}$ and $^{241}\text{Pu}/^{239,240}\text{Pu}$ indicated that atmospheric nuclear weapon tests fallout is the main source of the anthropogenic radionuclides in this tropical region. The present study further confirmed earlier observations of low levels of ^{137}Cs in coastal sediments in the Cuban island region. $^{239,240}\text{Pu}$, contrary to ^{137}Cs , accumulated in the sediments with inventories two to four times higher than the expected fallout inventory in the Cuban region. The high fluxes of $^{239,240}\text{Pu}$ indicate that sediment focusing occurs in the investigated sites. The measurements of anthropogenic radionuclides in coastal sediments provided good estimates of past and present radioactive contamination in the Cuban marine environment.

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