Environmental radiological risk assessment of algae from Algiers coastline

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Abstract:
During recent years there has been increased interest for knowledge on the concentration and the distribution of natural radionuclides in the marine environment. The latter is required not only to provide useful information to radiological monitoring programmes, but also to assess the radiological risk for marine biota and seafood consumers[1]. In Algeria, there are no studies that surveyed the quantities of radionuclides in algae and their potential effects on human health.

The main objectives of this preliminary work are the study of radionuclides distribution in algae species as well as the assessment of the linked environmental radiological risk.

Brown, red, and green algae were collected from five different parts of Algiers coastline on May 2022.
Algae species were identified at laboratory and an amount of 100 g dry weight of each species were taken for analysis.
The radionuclides that were analyzed by gamma spectrometry were ^{238}U daughters (^{234}Th, ^{226}Ra, ^{214}Pb and ^{214}Bi), ^{232}Th daughters (^{212}Pb, ^{208}Tl and ^{228}Ac), ^{7}Be and ^{40}K.
Activity concentrations (Bq·kg^{-1} d.w.) were found to be in the range of 138.75±6.41–1858.95 (^{40}K), 6.36±3.78–35.51±9.54 (^{7}Be), 0.58 ±0.14–5.08±0.76 (^{226}Ra), 0.61±0.21–3.02±1.47 (^{232}Th).
ERICA tool was used for the radiological risk assessment.
The total dose rates for algae species were found lower than **7µGy·h^{-1}** and the annual effective dose was found to be: **2.95·10^{-3} mSv·y^{-1}**.
The results indicate that algae from Algiers coastline do not pose a radiological health risk[2].

References:

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