

Interactive comment on “Natural and Fukushima-derived radioactivity in macroalgae and mussels along the Japanese shoreline” by Z. Baumann et al.

Anonymous Referee #2

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General Comments This manuscript is suitable for discussion in the Biogeosciences Special Issue on 'Impacts of the Fukushima nuclear power plant discharges on the ocean'. It does provide new and recent data of radiocaesium, ^{40}K , ^{210}Pb and ^{210}Po in macroalgae and mussels collected relatively locally to Fukushima. This dataset enables the authors to provide an 'anthropogenic v natural' perspective on marine biota samples.

Specific Comments 1. Now that ^{210}Pb data are included in Table 1, can the authors give some attention to the $^{210}\text{Po}/^{210}\text{Pb}$ ratios obtained and place them in perspective with previous marine work? e.g. Recent reviews by Fowler, S.W. Journal of Environ-

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mental Radioactivity 102 (2011) 448-461 and by Carvalho, F.P. Journal of Environmental Radioactivity 102 (2011) 462-472.

2. Sample preparation - if the periostracum (chitinous layer) is still intact on the outer surface of the mussel shell, then some radioactivity will be associated with the 'total' shell. If the periostracum is not present then the bulk matrix of the mussel shell will be very low in radioactivity.

3. ^{40}K is homeostatically controlled in humans therefore its role in dose delivery is limited. In UNSCEAR (1993), paragraph 61, page 43, a description is given where the typical annual dose from ^{40}K in the adult body is 165 μSv . Recommend concentrating on other radionuclides reported with regard to the human-health perspective rather than ^{40}K .

Technical corrections

Abstract, line 7 - replace 'Radioactivity from' with 'Activity concentrations of' line 13 - insert 'concentrations' for 'concentraitons'

Introduction, line 21 - replace with 'the Japanese public was anxious regarding the impact of radioactivity released from the damaged'

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