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Journal Name:	**Advances in Research**
Manuscript Number:	**Ms_AIR_33307**
Title of the Manuscript:	**Evaluation of Radiation Health Risk Due to Gamma Exposure From River Water Around Oil Bunking Centre In Rivers State, Nigeria**
Type of the Article	**Original Research Article**

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PART 1: Review Comments

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Compulsory REVISION comments	**Not applicable**	
Minor REVISION comments	**Title:** Suggests should read '**Determination of Radiological Health Risk Due to Gamma Exposure From River Water Around Oil Bunking Centres In Rivers State, Nigeria'** **Abstract:** Effect corrections as indicated Line 5: kilometres; line 9: 4 weeks; line 13: adult citizens; line 14-16: 'The values of annual effective dose for infants and adults exceeded the reference levels of 0.26 and 0.2 0 $mSvy^{-1}$ respectively while that for children is within the 0.2 $mSvy^{-1}$ reference level.' Line 16: adult citizens **Introduction:** Line 13: water falls as rain, it picks…; line 14: moves..; lines 16-17:delete 'major sources of ' and delete 's' from results; Line 19: delete 'of elements including' and add 'which include, Also add Ra, Rn,Po and Pb after their appropriate elements; Lines 20-21: Rephrase thus 'Water can also become contaminated as it picks up radioactive materials from surrounding rocks, soils or cracked cement as it flows past'; line 22: add 'Th and U' appropriately; line 27: delete 'element'; line 33: replace 'thorium and uranium with Th and U respectively'; line 34: replace thorium with 'The former'; line 35: replace Thorium with 'This nuclide'; line 37: replace thorium with 'it'; line 38: should 'the radioactive decay of ^{234}U'; line 39: include 'Rn gas'….; line 40: after exist, insert 'Of these, ^{222}Rn is …..abundant'. delete from loss in this line up to chain in line 41; line 41: replace ^{222}Rn with 'it'; line 42: replace Ra-226 with '^{226}Ra' for consistency; line 43: replace initial part with 'A	

	$\frac{^{222}Rn}{^{226}Ra}$ activity ratio; line 44: change to ……..'contribution of Rn …'; lines 47-48: delete 'illegal …….the area'; line 49: 'State' and insert full stop after (soot) and delete 'covering everywhere …….metropolis'; line 54: For 'the' human race…..; line 61: 'Rivers State'; line 62: 'activities in the State'; **Materials and Methods** **2.1 Study Area** Line 67: 'between Abia and Rivers States'….line 69: (Figure 1). 'It flows 240 km'…; line 70: after ocean replace with 'With an estuary of about 40 km wide, it has an annual' ….; line 71: …'wetlands'. Its tributaries…….; line 71-72: 'the river serves'…… ; lines 74-75: …in this study……formations. Delete 'respectively'; line 76: 'The former consists of …..; line 78: to the South-West; line 79: ..and Umana. The last two outcrop……Imo….; line 80: …is composed; line 81: 70 m…., The Ebenebe sandstone; line 83: thickness of 130 m. The Ameki formation consists of ….; line 84: Its lithologic units fall into ….; line 91: …..showing….and study area **2.2 Sample Collection and Preparation** Line 94: ….to over seven kilometres along the Imo River.; lines 94-99: delete 'in order …..collected' and rephrase as follows ' The water samples (20 altogether) were collected with 1.5 l linear ….which were carefully washed using detergent ……container'. ; line 100-101: rephrase as ' 20 ml of 1 $MHNO_3$ was added immediately to each sample in the containers so as to fix the contained radioactive elements'; line 102: 'NIRPR'; line 103-106: rephrase thus '250 ml of each of the samples were measured into cylindrical containers. These were tightly sealed using vinyl tapes and subsequently stored for 4 weeks so that secular equilibrium between ^{238}U and ^{232}Th and their respective progenies is attained **2.3 Gamma Spectrometry** Lines 111-114:rephrase thus ' Activity count of the radionuclides contained in the sample were performed using a gamma spectrometry system having a thallium activated 3" x 3" sodium iodide	

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	NaI(Tl) detector connected to an…..'; lines 116-119: …of the spectrometry system, energy and efficiency calibrations of this system were carried out using ^{137}Cs and ^{60}Co; lines 120-126: rephrase as 'Standards of natural … $0.0175\ Bql^{-1}$' (noting that litre is lower case) and transfer entire section to the end of **2.2;** line 128: insert ' the background, standards and samples' for a period….; line 129: Note the unit 'keV'; lines 131-132: delete 'The detector……' to avoid repetition; Include mentioning how the activity concentrations of the identified radionuclides were determined (i.e.quantification). Indicate which method was used (absolute/efficiency) and supply the appropriate equation **3 Radiological Risk Estimation** Lines 136-137: …..estimated using the obtained mean activity concentrations of the identified radionuclide**s** **Conclusion** Line 307: …..concentrations; line 308: …….seven kilometres; line 311: replace are with is. Just edit this section to correct these slight grammatical Lines 329-331: restructure and be restricted to radiological health	
Optional/General comments	As indicated	

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