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| Journal Name: | Chemical Science International Journal |
| Manuscript Number: | **Ms_CSIJ_43748** |
| Title of the Manuscript: | **Risk Assesment of Polycyclic Aromatic Hydrocarbons In Water Sample From Dadin Kowa Dam, Gombe State, Nigeria** |
| Type of the Article | **Review Paper** |

**General guideline for Peer Review process:**

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline)

SDI Review Form 1.6

**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)* |
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| **Compulsory** REVISION comments | **Although I'm not sure of it, this might be the first report on the occurrence of PAHs in this area of Nigeria and as such probably merits reporting.**<br>• **This appears to represent one series of samples at different geographic locations in summer and one series in winter – if so, this should be stated clearly and the title should reflect that it is a "survey" of PAHs.**<br>• **Recovery of analytes must be reported.**<br>• **The identification and parameters in equations 1 and 2 must be provided as well as the values used in the risk assessment. The use of the default USEPA intake criteria should be motivated. (In southern Africa, for example, some of the USEPA default values are invalid.)**<br>• **Tables 3, 4, 5 and 6: linear addition of risk to produce a total is invalid. Probabilities cannot be added in this way** | The reviewer's comment have been taking care of in the text. |
| **Minor** REVISION comments | • The purpose of the study is not clear – needs some clarification.<br>• The use of "plastic containers" in sampling for analysis and assessment of highly lipophilic substances is a potential source of error. How was this accounted for?<br>• What was the reason for choosing sampling points at 3 km intervals?<br>• This study appears to concentrate on the "dissolved" fraction since this is what is assumed to be bioavailable. However, a viable risk assessment needs to take cognisance of the actual exposure, accounting for all routes of exposure (particularly food like fish and irrigated crops if any). What was the turbidity and/or suspended solids concentration at the sampling points?<br>• The interpretation of the risk numbers should be seen against the background of the probability of carcinogenesis in the population in the area. In southern Africa the cancer rate is about 1 in 4 or 0.25 and one would suspect that it is > 0.1 in many part of Africa. So, would a probability of 1E-3 or even 1E-2 ever be distinguishable against such background rate? One would suspect that the value of these risk would largely be in rating environmental options or policies?<br>• The last sentence before conclusions: "…CR value over 1.00E-05 indicates potential carcinogenic risk, while the safe level of risk which<br>• requires risk management decision is $10^{-6}$." The latter is generally recognised as an arbitrary rule set by an American court decision and has little if any scientific foundation. Whether this paper needs to contextualise this assessment or not depends on what the intention of the paper was. The phrase "potential … risk" is a tautology because a risk in the context of 'carcinogen risk" is already a probability and a potential probability is actually senseless.<br>• What MAC's are used? Why these particularly- are they really applicable considering their background assumptions? | I have effected the comments in the text. |
| **Optional/General** comments | There is repetition under "Sampling" that could be eliminated.<br>Under "Study area", one would suspect that the reference William, (1994) is not a primary reference on the displacement and resettlement.<br>There are a few editorial matters, e.g. What does "800 million cubes" refer to? 800 million $m^3$? "… 300 kilometers square …" could possible be be "300$km^2$". The spelling of Dadin Kowa (kowa?) should be consistent. Just before Table 1: "The highest value of all the PAHs were detected in the adult, while the lowest value were detected in children." These values are calculated not detected. | I have observed the above comments in the text. |