

Review Form 1.6

Journal Name:	Asian Journal of Applied Chemistry Research
Manuscript Number:	Ms_AJACR_93884
Title of the Manuscript:	Physicochemical quality and health risks associated with use of water from River Nyamwamba, Kasese, Western Uganda
Type of the Article	Original Research Article

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:

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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)
Compulsory REVISION comments	Corrections and suggestions were made directly in the manuscript, through the Microsoft Word review system, and in item 6 "Specific Comments".	
Minor REVISION comments	The article is not formatted according to the journal's rules. Authors should review the rules and rewrite the article within the standard template (Template.docx). To consult "General Guideline for Authors" to review the manuscript structure; reference style and nomenclature and units. To include the following terms "Authors' Contributions"; "Consent (Where Ever Applicable)" and "Ethical Approval (Where Ever Applicable)". The submission checklist to use Manuscript formatted as per SDI paper template (MS Word Template and Latex Template).	
Optional/General comments	<p>1- The article needs to be revised. There are syntax and grammar errors.</p> <p>2- Serious formatting issues, including line spacing, and font and font size.</p> <p>3- In Figure 1 (Map with Nyamwamba River) it is necessary to include at least one pair of coordinates (Lat and Long). It is also important to highlight the sampling positions on the map (Downstream, Midstream and Upstream).</p> <p>4- The tables are out of the standard of the margins of the sheet. Consult Word file – Template.docx.</p> <p>5- In Table 3 some values are not clearly visible, it is necessary to increase the font size.</p> <p>6- References are current and well placed. It is up to the editors to request or not the reduction of references (Total 66).</p> <p>7- Several page numbers are missing in the cited references. Consult file <Rev_AJACR_93884_Fab></p> <p>8- It remains to include the units of the physical-chemical parameters in some paragraphs.</p> <p>9- The results of the comparative analysis between the Nyamwamba and Mubuku rivers (control) presented in Table 1 should be further explored. The same procedure should be applied to the results in Tables 3-5.</p> <p>.</p> <p>Between the upstream and downstream stretches of the Kilembe mines, on the Nyamwamba River, there are certainly points of contamination from mining tailings disposal. This can be seen from the results of conductivity, TDS and concentrations of metallic elements (Tab. 1). In the rainy season, the leaching of adjacent soils contributes to increase the load of tailings transported by the river. Anyway, in both seasons (dry and wet seasons) the ionic composition and transported sediments are quite high. Authors should further discuss the effect of seasonality and the hydrological cycle on the variation in the input of tailings from the mining area.</p> <p>It would have been interesting to analyze the BOD (Biochemical Oxygen Demand) and COD (Chemical Oxygen Demand) in the water column, and associating seasonality. If authors do not have these values, they can indicate BOD and COD values of other authors who studied in or near the region. For example, BOD and COD values for the Mubuku River.</p> <p>Regarding metallic elements (HMs), a recent study by scientists at the Federal Polytechnic School of Lausanne (EPFL), Switzerland, suggests that consumption of copper, present in drinking water accelerates the growth of tumors in mice with cancer. Cu accelerates the development of cancer cells. Human exposure to toxic metals has been increasing rapidly, and the main culprits are petrochemical and mining discharges. Tailings containing toxic metallic minerals tend to accumulate at all trophic levels of the biota. Once adsorbed by the body, metals compromise metabolic pathways, interfere with enzymatic reactions, and accumulate in tissues. The main toxic metals are: As, Pb, Cd, Hg, Al. Among the essential metallic elements, which in higher concentrations can cause various health disorders are Co, Cu, Fe, Mn and Zn. As a suggestion, I include some references that can be consulted by the authors, especially in the area of public health due to contamination or ingestion of heavy metals.</p> <p>Andrews, N.C. 1999. Disorders of iron metabolism. N Engl J Med, 341(26), pp. 1986-1995.</p> <p>Atibu EK, Lacroix P, Sivalingam P, Ray N, Giuliani G, Mulaji CK, et al. High contamination in the areas surrounding abandoned mines and mining activities: an impact assessment of the Dilala, Luilu and Mpingiri Rivers, Democratic Republic of the Congo. Chemosphere. (2018) 191:1008–20. doi: 10.1016/j.chemosphere.2017.10.052</p> <p>Baerlocher, K., Solioz, M. 2003. Disorders of Copper, Zinc and Iron Metabolism. Physician's Guide to the Laboratory Diagnosis of Metabolic Diseases, pp 631-658.</p> <p>Bairele, M., et alii. 2010. Possible effects of blood copper on hematological parameters in elderly, J Bras Patol Med Lab, 46 (6), pp.463-470.</p> <p>Cruz, J.V.B. et al. 2021. Influence of heavy metals on cancer accommodation: A literature review. Research, Society and Development, v. 10, n. 6, e45810615992.</p>	

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	<p>Dermatology Information System. Disponível em http://www.dermis.net/dermisroot/pt/43483/imagep.htm</p> <p>Fernandes, A.G. e Mafra, D. 2005. Zinc and cancer: a review. Rev Sau Com, 1(2), pp. 144-156.</p> <p>Githaiga KB, Njuguna SM, Makokha VA, Wang J, Gituru RW, Yan X. Assessment of Cu, Zn, Mn, and Fe enrichment in Mt. Kenya soils: evidence for atmospheric deposition and contamination. EnvironMonit Assess. (2020) 192:167. doi: 10.1007/s10661-020-8123-7</p> <p>Kresovich JK, Erdal S, Chen HY, Gann PH, Argos M, Rauscher GH. Metallic air pollutants and breast cancer heterogeneity. Environ Res. (2019) 177:108639. doi:10.1016/j.envres.2019.108639</p> <p>Madani, R.A.; Kermani¹, S.; Sami, M; Esfandiari, Z.; Karamian, E. 2020. Risk assessment of heavy metals (chromium, nickel, lead, copper, and iron) in fast foods consumed in Isfahan, Iran. Journal of Bioenergy and Food Science. Vol.7: e3032020JBFS. https://doi.org/10.18067/jbfs.v7i4.303</p> <p>Pascalichio, A. 2002. Contaminação por metais pesados: Saúde pública e medicina ortomolecular. São Paulo. Annablume. http://www.ecolnews.com.br/toxicos_POPs_e_metalis_pesados.htm</p> <p>Shanbhag, V.C.; Gudekar, N.; Jasmer, K.; Papageorgiou, C.; Singh, K. Petris, M.J. 2021. Copper metabolism as a unique vulnerability in câncer. BBA - Molecular Cell Research, 1868 (2021) 118893</p> <p>Wang CT. Study of the concentrations of calcium, copper, iron, magnesium and zinc in the hair of breast cancer patients %. J Trace Elem Electrolytes. (2006) 4:281–86. doi: 10.5414/TEP23281</p> <p>The conclusion is weak and rather timid, it needs to be expanded.</p> <p>The analysis of the surface water quality of the Nyamwamba River, for the full and dry periods, suggests that there is strong contamination by mining tailings discarded along the river. These tailings, containing a high concentration of heavy metals, are the main indication of manifestation of non-carcinogenic and carcinogenic symptoms in the riverside population. This fact should be further explored in the conclusion, associating it with the limnological (environmental) results and with the THQ and TTHQ indices. This is important information (results), which should not be underestimated. It should also be mentioned in the conclusion that all HMs concentrations exceeded the limits established by the WHO guidelines for drinking water in the wet season.</p> <p>The topic addressed is of great relevance to environmental and medical research and science. This is a very important public health issue. The results can even help public bodies to establish more restrictive laws and protocols for the granting and licensing of mining activities in Uganda. I suggest that a thorough review of the manuscript be carried out and that it be resubmitted for publication in AJACR.</p>	
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PART 2:

	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)
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

Reviewer Details:

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