

Dear Ms. Ruma Bag,

I am sending you the re-review of the manuscript **CSIJ\_45223**, titled: **Determination of heavy metals in soil and plants along major road in Hong local government area, Adamawastate**. My general opinion is that the work is interesting, considering the importance of the effect of roadside soil and plants contamination by heavy metals and their inclusion in food chain. However, the work needs major revision due to problems in statistical analysis and discussion. In following text I would give some remarks and suggestions for the improvement of the work.

**General remarks:**

- 1) References and citation are not formatted according to Author's guidelines (<http://www.sciencedomain.org/journal/53/authors-instruction>) and SDI\_Paper\_Template\_2003.docx
- 2) Forms of titles of the work, sections and subsections should be in concordance to Author's guidelines and SDI\_Paper\_Template\_2003.docx

**TITLE**

"Determination of heavy metals in soil and plants along major road in Hong local government area, Adamawastate, Nigeria"

**ABSTRACT**

Page 1:

"Most of the values of TF at the study area super pass 0.5, which~~this~~ implies that, generally, the ability of bioaccumulation of these heavy metals in examined plants was relatively high. "

**INTRODUCTION**

Page 2

"...are soil, air and fertilizers from ..."

**MATERIALS AND METHODS**

Page 2

The depth of samples from various distances from the road should be given.

"... another three twenty gram surface soil samples were randomly collected at distances of 10 m, 20 m, and 30 m away from the edge of the road, making a total of twenty four (24) soil samples. "

**Comment [BK1]:** The depth of surface layer from which the sample was collected should be notified.

Page 3

“Also, a total of twelve (12) fresh plant (same species) leave samples, three from each site, were randomly collected from the vicinity of the sampling points where the soil samples were collected.”

Transfer factor

Page 5

“Values higher than  $\geq 1$  indicate that plants are enriched in elements from soil (accumulator), ratios around 1 indicate that plants are not influenced by elements (indicator), and values lower than  $\leq 1$  show that plants exclude the element from soil (excluder)”

Data analysis

Page 5

“The obtained data for each examined metal were subjected to analysis of variance (ANOVA) by SPSS version 17, to determine the significance of influence of differences between sites on variation of in the mean metal concentration of each metal between different sites. Also Duncan multiple range was used to compare the means of metal concentration and the results were presented in the form of means  $\pm$ SD of triplicate determination”

## RESULTS AND DISCUSSION

Page 5

“The electrical conductivity ranges from  $0.19 \pm 0.01$  –  $0.27 \pm 0.02$  (Table 3) which ~~are~~ relatively high values, indicating ~~the~~ considerable presence of ionic species. The range value is almost the same with the one ( $0.18$  –  $0.31$ ) reported by [7] in Jos Plateau State Nigeria.”

Page 6-9, Table 1-4

“Mean ~~v~~ Variation of hHeavy ~~m~~ Metal concentration...”

Pages 6-13 Tables 1, 2, 8

All table titles should be in bold font weight

“The consequences of heavy metal in-toxication include: reduced intelligence ...”

Page 6

“Although individual metals exhibit specific signs of their toxicity, –some general signs have been reported to be associated with, iron, cadmium, –zinc, copper ~~poisoning~~ and lead ~~poisoning, like:~~ depression and pneumonia, when aerosols, volatile vapors and fumes are in-haled. The nature of the effects can be toxic (acute or chronic), carcinogenic, neurotoxic, muta-genic or teratogenic [37].”

Page 6

This sentence should be finished.

“Gastrointestinal (GI) disorders, diarrhea, hemoglobinuria causing a rust-red color to stool, ataxia, paralysis, stomatitis, tremor, vomiting and convulsion ~~([38].~~”

Page 11

“Table –6 Comparative ~~h~~Heavy ~~m~~Metal ~~c~~Concentration (mg/kg) in soil samples with similar works reported in literature and the maximum permissible limits in some countries”

Page 11, 12

The header row of Table 6 and 7 should be corrected

Page 12

“\*Maximum permissible limit of metals (mg/kg) in soil in Great Britain [\[18\]](#)

\*\*Maximum permissible limit of metals (mg/kg) in soil by USEPA [\[18\]](#)

ND – Not Detected

~~Source [18].~~

”

Page 12

“... lower than ~~those obtained by mentioned studies and bellow cited limitations, the compared result~~ with the exception of Fe.”

Page 12

“Source ~~for table if not labeled otherwise:~~ [\[18\]](#)

\*\* ~~Source:~~ [\[45\]](#)

”

Page 13

“~~Key:~~ ND – not detected

”

Page 14

The fact that values of transfer factor are mostly higher than 0.5 should not be conclusively attributed to low retention rate, because concentrations of examined metals and differences between examined depths are relatively small and it is probable that root system is developed in whole 30 cm – surface layer. Also, characteristics of plant species used in work are not discussed. Transfer factor is related to the mobility of element in soil, but it is considerably related to the plant's ability to uptake element from the soil solution and transfers it from roots to shoot. This should be notified if the factors affecting transfer factor are discussed.

“Most of the values of TF at the study area super pass 0.5. This implies that, generally, the ability of bioaccumulation of heavy metals in plant was relatively high, ~~which could be attributed to the low retention rate of the metal in soil.~~ Therefore, examined heavy metals were is more efficiently uptakenmobile from the soil and transferred in leaves in examined plants in the soil with the exception of Fe ~~in for all the whole studied areas~~ and of Pb in Shiwa for Pb (Table 8).”

Page 14

“ ~~—~~, Pb was not detected in plant samples from Damdrai, ~~while as well as~~ Cr and Co were not detected in plant samples from Pliafu, Shiwa and Fadamarake.”

## CONCLUSION

Page 14

„The result revealed that Iron has the highest concentration in both soil (317.90 mg/kg) and plants (69.93 mg/kg) samples which was above permissible limit of WHO/FAO, ~~probably due to natural soil characteristics and indicating that the study area was contaminated with Fe probably from anthropogenic contamination sources.~~“

Pages 16-21

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