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Critical but Constructive Comments on a Paper by Hadibrata et al. (2012) (DOI 10.1007/s11270-012-1095-7) Published in *Water, Air, and Soil Pollution*

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Firstly, I would like to congratulate the authors, Hadibarata et al. (2012) who recently published a paper entitled "Correlation study between land use, water quality, and heavy metals (Cd, Pb, and Zn) content in water and green-lipped mussels *Perna viridis* (Linnaeus.) at the Johor Strait" in *Water, Air, and Soil Pollution*, on 8 March 2012. This shows positively that more researchers are working on this interesting mussel species in Malaysia. Secondly, I have read the full paper with great interest because the paper reported the heavy metal (Cd, Pb, and Zn) concentrations in the marine seafood delicacy, *P. viridis*. However, the paper by Hadibarata et al. (2012) contained some serious weaknesses/problems that I would like to comment critically and constructively so that the information/discussion of the paper can still be used effectively by not misleading readers on this interesting paper.

Let me begin with (1) quality of data in question, followed by (2) wrong information on some references cited, (3) number and sizes of mussels analyzed in question, (4) invalid comparisons in Table 3, (5) wrong reference citations, and (6) other mistakes/weaknesses throughout the text.

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1. Quality of data in question

In page 4 (section 2.3), "Measurement of the ammoniacal nitrogen (AN) and heavy metals content was done in the laboratory using the HACH DR4000 spectrophotometer and the Perkin Elmer atomic absorption spectrophotometer." There is no information on the validation of heavy metal data including an analytical quality check with standard reference materials of any biological samples or at least recovery with quality control samples made from known concentrations for all metals. Without the analytical quality assurance, the heavy metal data obtained are questionable. "It is easy to make an analysis, but difficult to get the right result!" (Jorhem 2003).

2. Wrong information on some references cited

In page 4 (section 2.3), "Table 2 shows the parameters, methods, and equipment used to analyze the samples (Yap et al. 2003b)." In the paper written by Yap et al. (2003a) (myself) (cited as Yap et al. 2003b by the authors), they (I) did not mention the methods of YSI Multiparameter and HACH DR/4000 colorimetric. However, they (I) did mention "air-acetylene flame atomic absorption spectrophotometer (AAS) Perkin-Elmer Model 4100." Even so, the detailed method on metal analysis should be referred to Standard Methods.

In page 2, lines 2–5 (section 2.1) of the second paragraph, "Green mussel samples were collected at S3 (Sg. Danga Estuaries) to compare with the previous

years (1991, 1998, 2000, and 2006) data for heavy metals (Cd, Pb, and Zn) content." This sentence is quite confusing to the readers since the authors are actually compared to the previously reported data of years 1998 (Yap et al. 2002a), 2000 (Yap et al. 2003a, b), and 2006 (Edward et al. 2009). Without this clear information, the readers would understand that the data were obtained from the authors themselves and not been published previously. Furthermore, S3 as "Sg. Danga" is not the sampling site named as "Sg. Danga" but "Pantai Lido" as reported by Yap et al. (2003a).

In page 5, lines 5–7 under section 3.2 (second paragraph), "The heavy metal content in water and sediment correlates with the biological activities in the water (Yap et al. 2002)." The information reviewed from this citation is wrong because Yap et al. (2002a) only reported metal levels in sediments and total soft tissues of mussels. There are no water data reported and the correlations of metals are only based on mussels and sediments.

3. Number and sizes of mussels analyzed in question

The authors did mention "The green mussel samples were then collected and grouped according to size." in page 3 (section 2.2 Sample Preparations), but the sizes of the mussels such as shell lengths, shell widths, and shell heights (at least one of them) were not reported in the paper. Moreover, the number of individuals being analyzed from each sampling site is not reported, thus, leading to more confusion and an ambiguous methodology.

4. Invalid comparisons in Table 3

In Table 3, weight bases (dry or wet weight) of the metal data cited from the references are not presented. In particular, the metal levels by Yap et al. (2002a), Yap et al. (2003a, b), and Edward et al. (2009) were presented in micrograms per gram dry weight. Based on the Sample Preparation (section 2.3, in page 3), it is assumed that the fresh or wet total soft tissues of mussels were homogenized by mixing since there was no drying process being described on the shucked soft tissues of mussels. If the present metal data are presented in wet weight basis, then the comparison of metal concentrations with those reported by Yap et al. (2002a, 2003a, 2004) and Edward et al. (2009) would become invalid. Consequently, interpretation in section 3.5 in page 9 based on Table 3 is meaningless. Figure 5 should be deleted since it is a repetition of Table 3.

It is rather difficult to compare the concentrations of Cd, Pb, and Zn of all those previously reported with the present finding, in Table 3, without taking intrinsic factors (shell thickness (Yap et al. 2003b), size (Yap et al. 2009), spawning condition (Al-Barwani et al. 2007), gender (Yap et al. 2006), genetic structures (Yap et al. 2002b), etc.) and extrinsic factors (conductivity, salinity (Yap et al. 2005), etc.) into account or at least these factors should be discussed in the text. Therefore, the validity of comparisons of metals in the mussels is in doubt.

5. Wrong reference citations

The citation by "Yap et al. (2003a)" should be "Yap et al. (2004)" [see reference below]. In the reference list, the name of mussel species name in the paper reported by Yap et al. (2002a) was wrongly written as "veridis" and the name of the journal is *Environment International* [not Enviromental International]. Again, the citation by Chee et al. (2009) in the text should be written as Edward et al. (2009), "Haevy" and "Dofferent" should be corrected as "heavy" and "different" in the title of the paper, and the name of the journal is *Water, Air, and Soil Pollution* [not Journal of Water Air Soil Pollution]. In addition, inconsistency of journal format in this reference list is present.

6. Other mistakes/weaknesses throughout the text

In page 1, the first sentence under Introduction, the "The Johore Straits" is wrongly written as "The Johor Straitis."

In page 1, line 15, the citation (…Sivalinggam 1977) should be written as (…Sivalingam 1977), and these citations should be written chronologically. In page 1 line 18, the "byssus" is wrongly spelt as "bysus."

In the Abstract, there are no major findings reported in this very important section of a paper. Hence, the abstract does not reflect the answer to the objective of study. Obviously, readers could not find any major findings for comparison since this study was focused on heavy metal levels in *P. viridis*.

Regarding "Land Use Classification Images" in section 3.1 (page 4), there are no images/photos shown in this paper, for example, where are "Fig. S2" and "Table S3, Figs. S5, S6" in page 5?

As the title of the paper goes as "Correlation…," virtually, there is no such discussion on correlations between land use, water quality, and heavy metals (Cd, Pb, and Zn) content in analysis supported by any statistical outputs. The objective of the study did not focus on such correlation but the title would confuse the readers.

Lastly, all the six abovementioned points should be considered seriously before the paper by Hadibarata et al. (2012) is being referred to as a valid literature. Kindly be advised that "Please do the right writing, concise and simple but correct."

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