Thanks to the authors for the opportunity to review the results of the research.

The paper is devoted to the accumulation of mercury in oyster from two water areas differing in the degree of pollution. Particularly interesting are the results obtained by the authors on the bioconcentration of mercury in the food chain in different seasons.

The authors investigated the bioconcentration (when it is being compared to the external environment, i.e. seawater) or mercury content in the samples. Bioaccumulation is the change in mercury concentration over time. We therefore strongly recommend to replace the term ‘bioaccumulation’ with ‘bioconcentration’.

The issue of mercury accumulation by differently aged molluscs has always been controversial, which is not clearly understood in this paper and requires further investigation. In addition, it is more appropriate to rely on age rather than mollusk size to assess the age-related changes in mercury content (as growth rates may vary under different conditions).

The paper presents the comparison on of the mercury content in the oyster with the acceptable limit for human consumption, but the value of the limit of 0.5 µg/g body weight is not clear. Is this the value of mercury intake in an oyster per day, week, or month? Over what period of time? Therefore the conclusion that mercury levels in oysters from the conditionally clean site remained below the permissible limit is not clear. It is not also clear what risk is being discussed, contamination risk or consumption risk? Lines 593-596 should be rewritten.

1. BASIC REPORTING

The reviewer is not a native speaker, so cannot assess the quality of the language.

Introduction and background correspond to the context. References are relevant.

Structure conforms to PeerJ standards, however, the following should be added - Additional information and declarations: Funding; Grant Disclosures; Competing Interests; Author Contributions; Data Availability

Figures are relevant, of high quality, well labelled and described. Raw data are supplied.

2. EXPERIMENTAL DESIGN

Original primary research is within the scope of the journal.

Research question is well defined, relevant and meaningful.

The study provides new data on the mercury content in the mangrove oyster *Crassostrea rhizophorae,* in sediments, and in the seston from the Ciénaga Grande de Santa Marta (CGSM) and Cispatá Bay (BhC) during two climatic seasons (rainy and dry ones).

Rigorous investigation corresponds to a high technical and ethical standard.

Methods are described with sufficient detail except some methodological incorrectness.

In all the studied objects (sediments, seiston and oysters), some mercury may be present in volatile form (organic mercury, e.g. $Hg(CH_3)_2$, $Hg(C_2H_5)_2$, which is lost during thermal treatment of the samples (the authors used heating to 450-500 ^{0}C during sample preparation). In particular (especially), microorganisms that form volatile organic forms of this metal are present in the sediments. These forms can also be formed in biota, i.e. seiston and oysters. Therefore, it is necessary to clarify whether the volatile form of mercury was captured. If not, it should be clarified in the methodology.

3. VALIDITY OF THE FINDINGS

All underlying data have been provided; they are robust, statistically sound, and controlled.

Conclusions require further elaboration

Lines 593-596 need to be rewritten (indicated above)

4. CRITICAL COMMENTS

Line 199-201 presents the method of atomic absorption spectrometry, but the reference to the source of the citation by Fernandez-Martinez et al., 2015 - atomic fluorescence spectrometry

Line 256 should indicate that the formula for calculating the Nemerow integral contamination index (Pc) has been modified

Table 1 and line 222 (BCFsd and BCFst) should be aligned.

Line 474-476: The word ‘hydroxides’ should be deleted as mercury hydroxides Hg^+OH^- and $Hg^{2+}(OH)^{2-}$ are not stables, and do not exist in aqueous medium, they decompose.

5. CONFIDENTIAL NOTES TO THE EDITOR

The paper is well readable, interesting, contains valuable data and can be recommended for publication in the journal after revision in accordance with the above comments.