

SOIL Discuss., referee comment RC1
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Comment on soil-2022-1

Anonymous Referee #1

Referee comment on "Meso- and microplastic distribution and spatial connections to metal contaminations in highly cultivated and urbanised floodplain soilsclapes – a case study from the Nidda River (Germany)" by Collin J. Weber et al., SOIL Discuss., <https://doi.org/10.5194/soil-2022-1-RC1>, 2022

- This was a very interesting study, and very well thought out and presented in the manuscript. It was clear and pleasant reading.
- Although the introduction was very informative it may benefit from being a little shorter.

Specific comments:

- I do not think it is necessary to refer to "(micro-)plastics" as they are in lines 11 and 12. Reference could just be made to "plastics" which would encompass plastics particles/pieces of all sizes.
- Line 37: Do "physical processes" also include the role of biota in the fragmentation of plastics? Animals intentionally or unintentionally grazing on plastics results in fragmentation.
- Line 83: "In the Lahn River" should be "in the Lahn River"
- There are several instances where "River" is not capitalised in the river name. This needs to be corrected in all instances through the manuscript.
- Line 122: "enters" should be 'enter'.
- Spaces before degree symbols should be removed. E.g. Line 134.
- Spaces after '<' or '>' signs should be removed. E.g. Line 156 & 160.
- Line 167: "result" should be "results".
- Line 173: There is something wrong with the reference.
- Line 177: "back swamp" should be "backswamp".
- Line 199: it would be good if more information could be provided about the material the bags are made from. The definition of "bioplastic" can be variable, and misleading. For example, it can be used to describe a plastic made from a feedstock of biological origin

(e.g. starch, not fossil fuel) however be a traditional polymer like PE, PVC; or alternatively it can be used to describe biodegradability. Care is taken in the methods to control for the presence of it in the sample by taking spectra, but I feel it would be good here to include a bit more information and make it clear what the polymer is.

- Line 202-3: Suggest rewording the sentence "Visible plastics fragments were collected on a 20 m² area around the drill points by walking straight lines with two persons (four-eyes-principle),....." to "Visible plastic fragments were collected in a 20 m² area around the drill points, by two people walking straight lines in parallel (four-eyes-principle),.....".

It would also be good to give dimensions of how the 20 m² area was obtained to show it was an equally distributed area around the central drill point.

- Line 212: Provide detail on what containers they were in for drying, or whether they were in the open bags.
- Line 202: I am not familiar with these standards and am unable to access them, however I feel that "loss of ignition" is not the right wording. Should it be combustion at 550°C until steady weight obtained?
- Line 242: I am unfamiliar with 'rim jars'. More detail needs to be given as to what they are made from.
- Line 254: space needed after $\emptyset = \emptyset 47 \text{ mm}'$ and $\emptyset 90 \text{ mm}'$
- Line 258: It is not clear what "sprayer" is. Can more detail be given or a clear description of what this is?
- Line 281: reword 'for safety reasons'. I don't think you mean it in the sense it reads. You are doing it to ensure that if any fragments of the bag have entered the sample you are able to account for this contamination and remove it from the analysis.
- Line 282: The use of cotton lab coats specifically avoids contamination of the air by synthetic fibres that would potentially come off synthetic lab coats. Contamination would still be still but they'd be cotton, and therefore not included in your analysis.
- Line 357: Can you please provide information about what is included in your definition of "rubber" as this is a class or group of polymers, not a single type and it includes both fully synthetic and semi-synthetic alternatives. This will also influence the EPO ages, with only the natural rubber being used in 1820s, and first synthetic rubber developed in 1910, and another alternative in the 1930s.
- Line 366: The following sentence needs rewording "The plastics contain of HDPE ...". Is it means to read "The plastics consists of HDPE...." Or "The plastics found included HDPE...."?
- Line 368: As this is intended for an intentional audience it may be best to avoid colloquial naming of things. Could 'fries fork' be changes to 'plastic fork', and 'DIY store shed' seems like a very broad category or description. Is there something more specific that can be said?
- Line: 390: ', at depths below 100 cm.' is confusing. Is it meant that they are deeper, as in more >100 cm; or shallower? Please check and confirm to ensure it is less ambiguous.
- Line 426: It is not clear why 'Meso- and single macroplastic particles....' Is written like this. Can this be made clear, or changed to remove the 'single'?
- Line 448: What depths do "From 45.98% to 62.5%" refer to?
- Line 489: Change "Figure 8a and Figure 8b" to "Figure 8".
- Line 536: Is this mislabelled? "Table T1". Should it be S1?
- Line 555: Change "incipient alteration surface structure" to "incipient alteration of surface structure".

- Line 589: '(Table)' is this meant to be here?
- Line 682: Add "River" after "Nidda". Other occurrences like this may occur elsewhere in the document.

FIGURE

Figure 1: Add in W (wastewater treatment plants) and ID (industrial discharge) in to the figure legend.

Figure 2: a) Both resin and rubber are broad categories of polymer. You should explain somewhere what is included within these definitions. See previous note about 'rubber'.

The scale bars and associated distance in the photos need to be larger as they are currently impossible to read. **c)** It may be advantageous to add in labels of Course and Fine soil to the figure to make it clearer what the reader is looking at.

Figure 3: Adding Titles to the graphs would make it clearer what the reader is looking at. **a) & b)** both the y and x-axis labels need to be centred on the axes. **Legend:** Suggest rewording "(with transect site location and river km) " to "(with transect site location and river length (km)). This also needs to be changed in the axes labels. Add text to "dotted boxes indicate anthropogenic influence" = "dotted boxes indicate **sites exposed to anthropogenic influences**"

Figure 4: y-axis label: the '(-)' needs to be removed.

Figure 5: x-axes labels: the '(-)' needs to be removed from EF(-) and PLI(-).

Figure 6: it is not clear why for both **a)** and **b)** why the smaller particles are also presented as an additional graph inset as they are clearly presented in the total particles graphs. By removing them from both **a** and **b** the graphs showing all sized particles can widened.

Figure 7: the '(-)' needs to be removed from PLI(-). Can the circles for the floodplain positions be made larger so it is easier to see the different colours?

Figure 8: y-axis on both **a** and **b** need to be flipped around 180°. the '(-)' needs to be

removed from EF(-).

TABLES:

Table S1: a different footnote symbol for 'Shape' needs to be used as you also use 'a' to refer to a picture.

Table 2: It is not immediately clear what "low, moderate and high" are referring to. If they are referring to the Indices is it possible to change the format and have "low, moderate and high" right justified in the column?

Tables A1 and A2: are referred to a lot. Could they go in the main body of the article rather than as an Appendix?

Table A1: It was not clear to me why are some of the words in bold.