

## ***Interactive comment on “Potential ecological risk assessment and prediction of soil heavy metal pollution around coal gangue dump” by X. Jiang et al.***

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Dear anonymous referee, Thank you very much for your valuable comments that will improve the quality of the paper. The paper has been thoroughly and carefully revised according to your comments. The reply to each comment is following: (C=Comment; R=Reply) (1) C=The level of English is at times, below what would be desired and can make sections of the paper a little difficult to follow. Hence, the paper would benefit from a revision to improve the use of English. R=Thank you very much for your kind comment. The English expression of the paper has been double checked and improved as suggested. Some parts have been revised. (2) C= in section 3.1,

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the authors note that soil from a ‘depth of 0.4 m was chosen to evaluate the potential ecological risk’. This would be better stated in section 2.2.1 so that the sample depth used for heavy metal analysis is immediately clear. R=Thank you very much for your kind comment. We have revised as suggested. (3) C=Any information on soil properties would also be useful in either section 2.1 or 2.2.1, particularly properties which may affect erosion and windblown transportation such as soil texture. R=Thank you very much for your kind comment. We have Enriched some information on soil properties in section 2.1. (4) C=The number of tables used is slightly excessive and could be reduced by combining some of them together. For example, the heavy metal concentrations of the Coal gangue in Table 3 could be included as a final column in Table 4. R=Thank you very much for your kind comment. Table 1 was eliminated, and the heavy metal concentrations of the Coal gangue in Table 3 have been included as a final column in Table 4 as suggested. (5) C=Page 1978, lines 9 – 12: I found the following sentence in the abstract to be a little difficult to follow, ‘Based on the Cd pollution history, the cumulative acceleration and cumulative rate of Cd were estimated, and the fixed number of years exceeding the standard prediction model was established, which was used to predict the pollution trend of Cd under the accelerated accumulation mode and the uniform mode.’ Could this sentence be more concise or clarified to more clearly express what was achieved? R=Thank you very much for your kind comment. This sentence have been revised. (6) C=Page 1979, line 24 – 26: The sentence should read ‘However, the development trend of soil heavy metal pollution around coal gangue dumps has received less formal attention than it should have.’ R=Thank you very much for your kind comment. This sentence have been revised as suggested. (7) C=Page 1985, lines 18 - 21: The authors should clarify what they are stating with this sentence. I assume that they are suggesting that ‘increased industrial development will not change the impact on soil quality if strong environmental protection methods are implemented and hence, the accumulation of pollutants in soil will remain uniform’ as opposed to ‘develop with an increasing speed’ R=Thank you very much for your kind comment. Yes, you are right. (8) C= Page 1987, line 4-7:

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The authors state that the topsoil is highly complex and so soil from a depth of 0.4 m was chosen for heavy metal pollution analysis. Would heavy metal contamination by wind-driven transport and risk to human health via ingestion and dermal-contact not be most significant in the topsoil? Was any analysis performed on the topsoil? Do the concentrations of heavy metals differ significantly from the soil from 0.4 m? R=Thank you very much for your kind comment. Yes, heavy metal contamination by wind-driven transport and risk to human health via ingestion and dermal-contact is most significant in the topsoil. Because most of the topsoil surface have been covered with coal gangue, so soil from a depth of 0.4 m was chosen as topsoil for heavy metal pollution analysis based on field survey. The mean concentrations of the five kinds of heavy metals in coal gangue were all higher than topsoil (depth of 0.4 m) in the study area. (9) C=Page 2009, Fig.5: A more precise caption would be beneficial. For example 'Correspondence map of the relationship between. . ....' R=Thank you very much for your kind comment. This caption has been revised as suggested.

Many thanks for your kind comments. All the technical corrections suggested will be integrated into the final manuscript version. Best Regards, Xue Jiang, on behalf of all co-authors.

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