Supporting information

Title: Impact of vanadium-containing stone coal smelting on trace metals in an agricultural soil-vegetable system: Accumulation, transfer, and health risks

Author: Zhichao Jiang, Xiyuan Xiao *, Zhaohui Guo, Yunxia Zhang, Xiaoxiao Huang

Address: School of Metallurgy and Environment, Central South University, Changsha 410083, China

*Corresponding author

E-mail address: xiaoxy@csu.edu.cn

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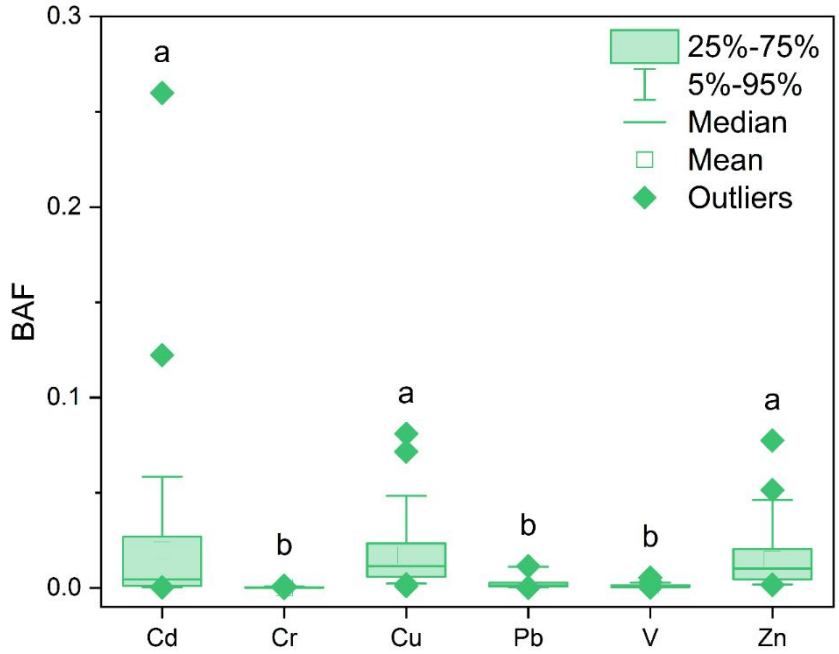

Figure S1 The bioaccumulation factor (BAF) of trace metals in vegetables around the V-containing stone coal smelting site. Values followed by different lowercase letters are significantly different at $\alpha = 0.05$.

Table S1 Seven classes of geo-accumulation index.

Class	Value	Soil quality
0	$I_{geo} \leq 0$	Practically uncontaminated
1	$0 < I_{geo} < 1$	Uncontaminated to moderately contaminated
2	$1 < I_{geo} < 2$	Moderately contaminated
3	$2 < I_{geo} < 3$	Moderately to heavily contaminated
4	$3 < I_{geo} < 4$	Heavily contaminated
5	$4 < I_{geo} < 5$	Heavily to extremely contaminated
6	$5 < I_{geo}$	Extremely contaminated

Table S2 Description and values of factors used in risk assessment **(Liu et al., 2021; USEPA, 2015)**.

Parameter	Abbreviation	Value	Unit
Body weight [a]	BW_a	60.0	kg
Body weight [c]	BW_c	26.0	kg
Vegetable ingestion rate [a]	IR^a_{vge}	244	g/day
Vegetable ingestion rate [c]	IR^c_{vge}	186	g/day
Exposure frequency	EF	365	day/year
Exposure duration [a]	ED_a	30	year
Exposure duration [c]	ED_c	7	year

[a] for adults; [c] for children.

Table S3 Reference dose (R*f*D) of trace metals **(USEPA, 2015)**.

Metal	R*f*D for ingestion (mg/kg-day)
Cd	1.00E-03
Cr	3.00E-03
Cu	4.00E-02
Pb	3.50E-03
V	5.00E-03
Zn	3.00E-01

Table S4 Correlation coefficient matrix of the total content of trace metals (TMs) in agricultural soils and their BAF values for vegetables.

BAF	Total TM contents
Cd	-0.424**
Cr	-0.438*
Cu	-0.561*
Pb	-0.240
V	-0.496**
Zn	-0.299

*, p <0.05, and **, p <0.01.

References

Liu, X., Gu, S., Yang, S., Deng, J., Xu, J., 2021. Heavy metals in soil-vegetable system around E-waste site and the health risk assessment. Sci. Total Environ. 779, 146438.

USEPA (United States Environmental Protection Agency). *Integrated Risk Information System-database*; USEPA: Washington, DC, USA, 2015.