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Supplementary Materials

Influence of Immobilisation Agents on the Leaching Behaviour of Copper, Arsenic, and Chromium from Chromated Copper Arsenate-Treated Timber

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Table S1. Set up information for the column study.

Column Number	Sample	Immobilisation Agents
L1	Mulch-Fine	$FeSO_4$
L2	Mulch-Coarse	$FeSO_4$
L3	Mulch-Fine	-
L4	Mulch-Coarse	-
L5	Fresh Block Dripping	-
L6	Waste Block Dripping	-
L7	Mulch-Fine	Iron Powder
L8	Mulch-Coarse	Iron Powder
L9	Mulch-Fine	Steel Wool
L10	Mulch-Coarse	Steel Wool
L11	Mulch-Fine	Bentonite
L12	Mulch-Coarse	Bentonite
L13	Fresh Block submerge	-
L14	Waste Block submerge	-

Table S2. Concentrations of metal(loid)s in the CCA timber.

Timber Sample	Arsenic (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Reference
Used H5	2410 ± 492	2996 ± 578	1723 ± 397	This study
Fresh H4	2320	2590	1460	This study
CCA from Pinus pinaster (20 years out of service)	1950 ± 10	1490 ± 80	1680 ± 70	[1]
CCA type-C treated red pine poles	5230 ± 120	5310 ± 70	2620 ± 210	[2]
Weathered wood after service for 15 years	5430 ± 1340	10,650 ± 3350	2920 ± 970	[3]
Freshly treated wood	2060 ± 220	3310 ± 410	2110 ± 460	[3]
Eight years out of service, CCA treated P. pinaster Ait. poles	7537 ± 1223	7388 ± 1586	3251 ± 199	[4]
Timber specimens from urban and peri-urban areas in South Africa	513–3633	523–6624	349–1761	[5]

Table S3. Taxonomy summary (phylum) for bacteria and fungus.

Bacteria (Phylum)	Mulch	Iron Powder	Steel Wool
		OTU (%)	
Other	0.096	0.150	0.130
Acidobacteria	1.597	4.137	1.581
Actinobacteria	15.533	17.205	25.091
Armatimonadetes	0.006	0.125	0.081
Bacteroidetes	7.102	5.114	9.772
Chlamydiae	0.151	0.026	0.064
Chloroflexi	0.093	0.190	0.083
Cyanobacteria	0.049	0.154	0.124
FBP	0.000	0.006	0.019
Firmicutes	1.141	4.698	5.658
Gemmatimonadetes	0.007	0.005	0.016
Planctomycetes	0.144	0.134	0.183
Proteobacteria	72.049	67.160	53.811
TM6	0.236	0.022	0.066
TM7	1.188	0.121	0.250
Verrucomicrobia	0.597	0.728	3.068
WPS-2	0.012	0.026	0.005
Fungus (Phylum)		**OUT (%)**	
Other	0.346	0.132	0.189
Ascomycota	98.500	99.382	97.023
Basidiomycota	0.940	0.462	2.633
Chytridiomycota	0.000	0.000	0.016
Zygomycota	0.003	0.000	0.016
Unidentified	0.212	0.024	0.121
Cercozoa	0.000	0.000	0.000
Other	0.346	0.132	0.189

Table S4. The normalised atom ratio for steel wool after the column study via SEM-EDX analysis.

Figure 9 Region of Scan	Normalised Atom %						
	O	Fe	Si	Na	S	Mn	As
1	64.76	34.27	0.34	-	-	0.27	0.35
2	58.15	40.58	0.31	0.47	0.12	0.37	-
3	14.09	84.09	-	-	-	1.81	-
4	60.49	37.17	0.54	1.14	-	0.67	-

Figure S1. CCA-treated timber waste log and shredded mulch.

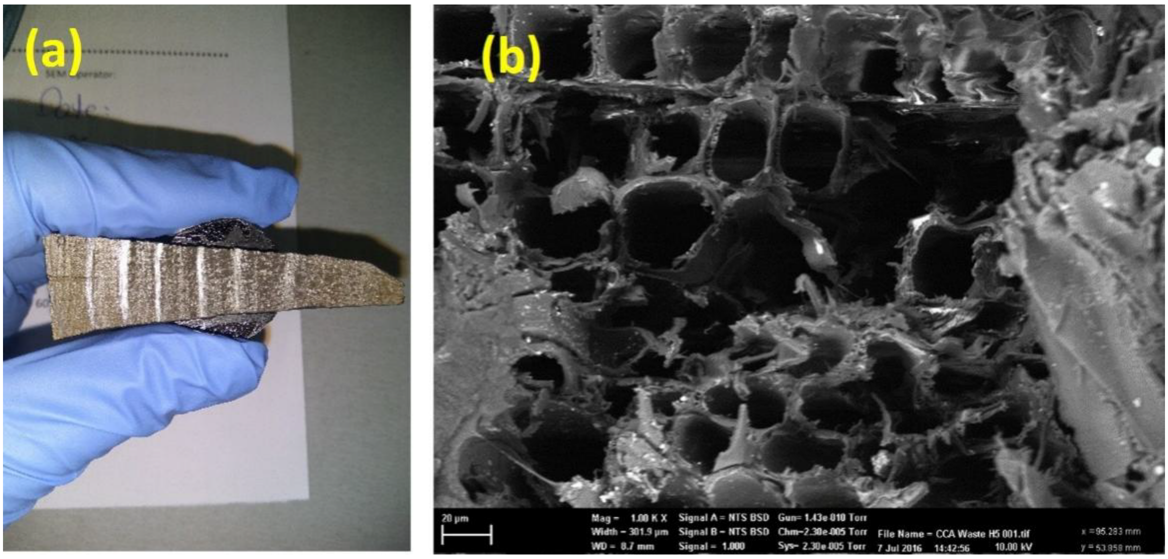


Figure S2. A slice of carbon-coated CCA-treated timber ready for SEM (**a**) and a back scatter image for SEM (**b**).

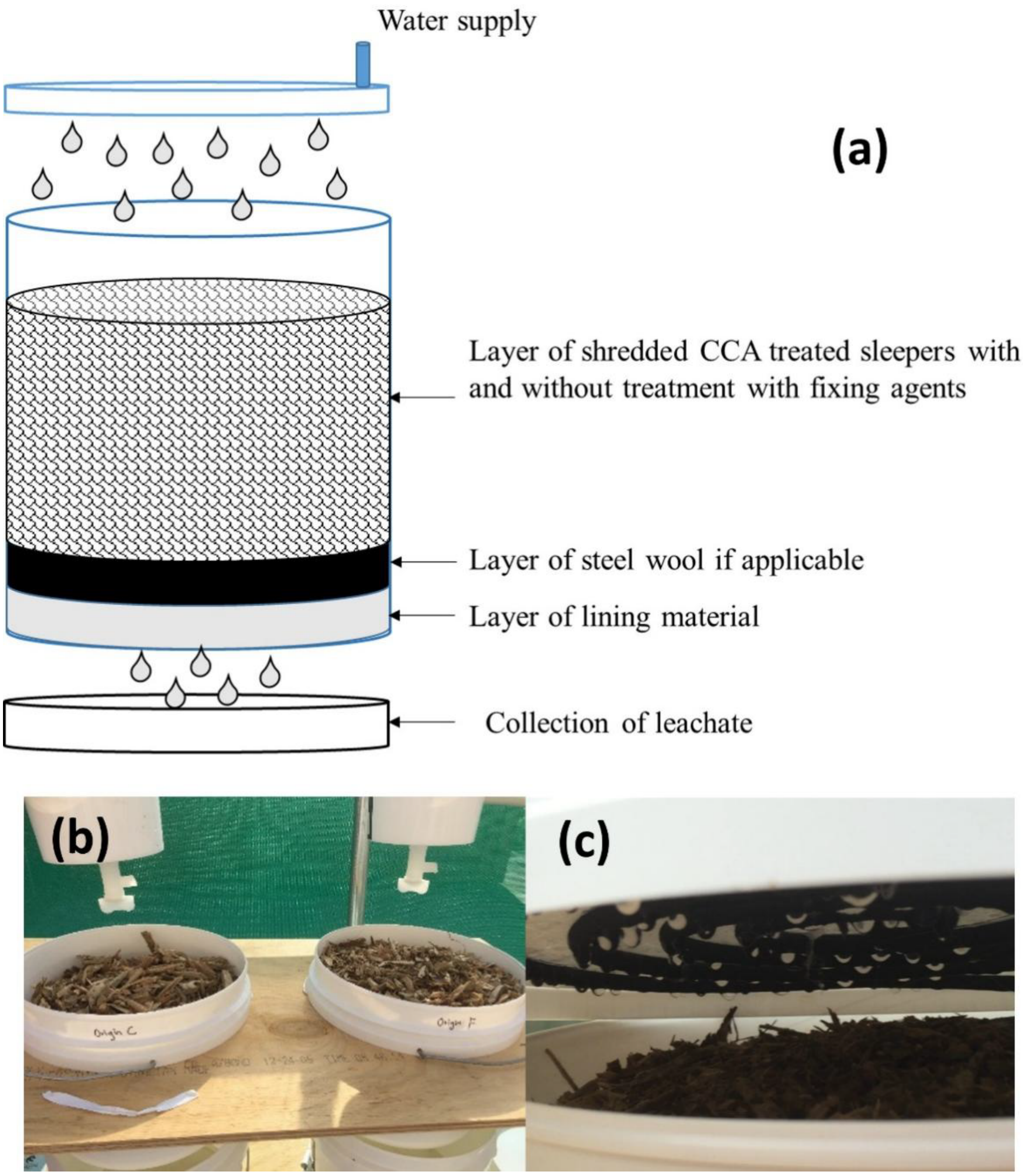


Figure S3. The setup of the column leaching study for heavy metal ions.

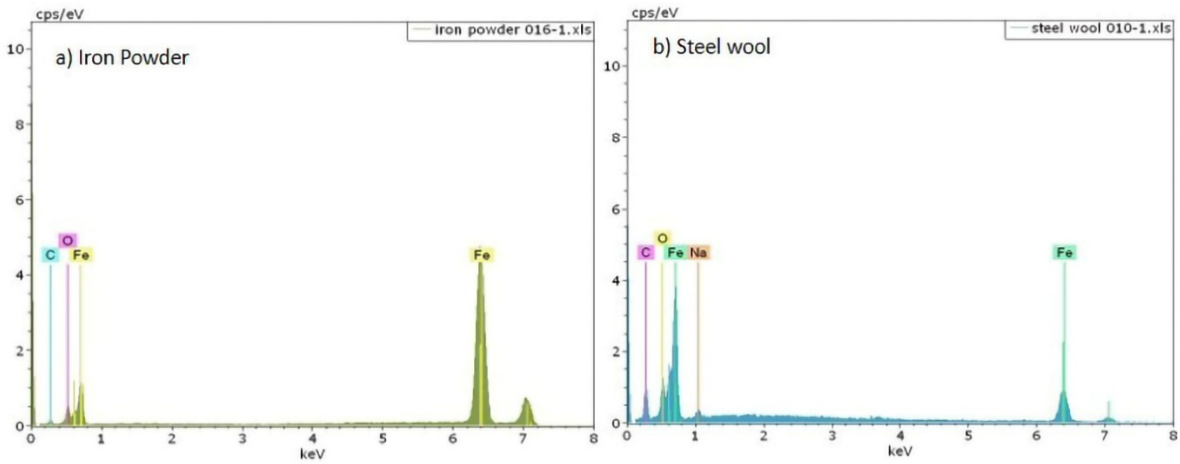


Figure S4. EDS spectra of the iron powder and steel wool samples.

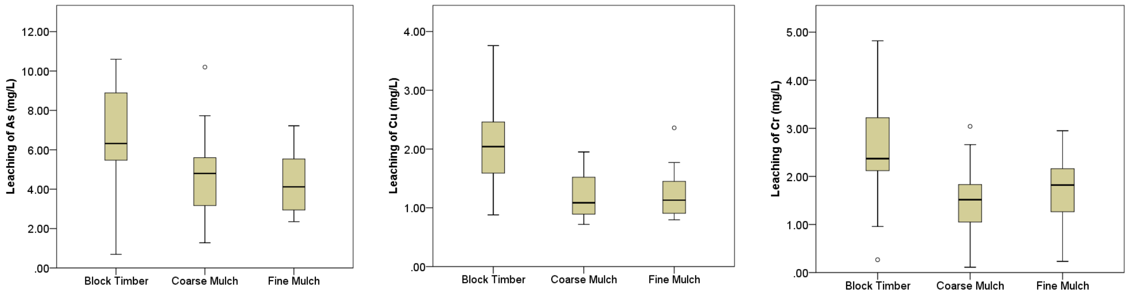


Figure S5. Boxplots of toxic metals leached by block timber, coarse mulch and fine mulch.

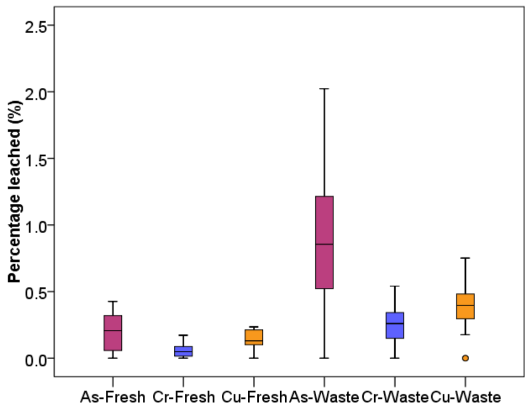


Figure S6. Percentage of metals leached from timber blocks with dripping.

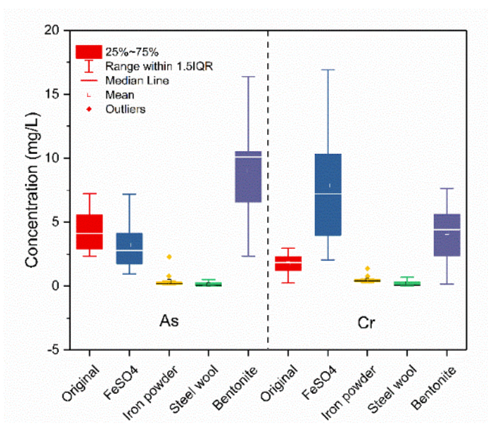
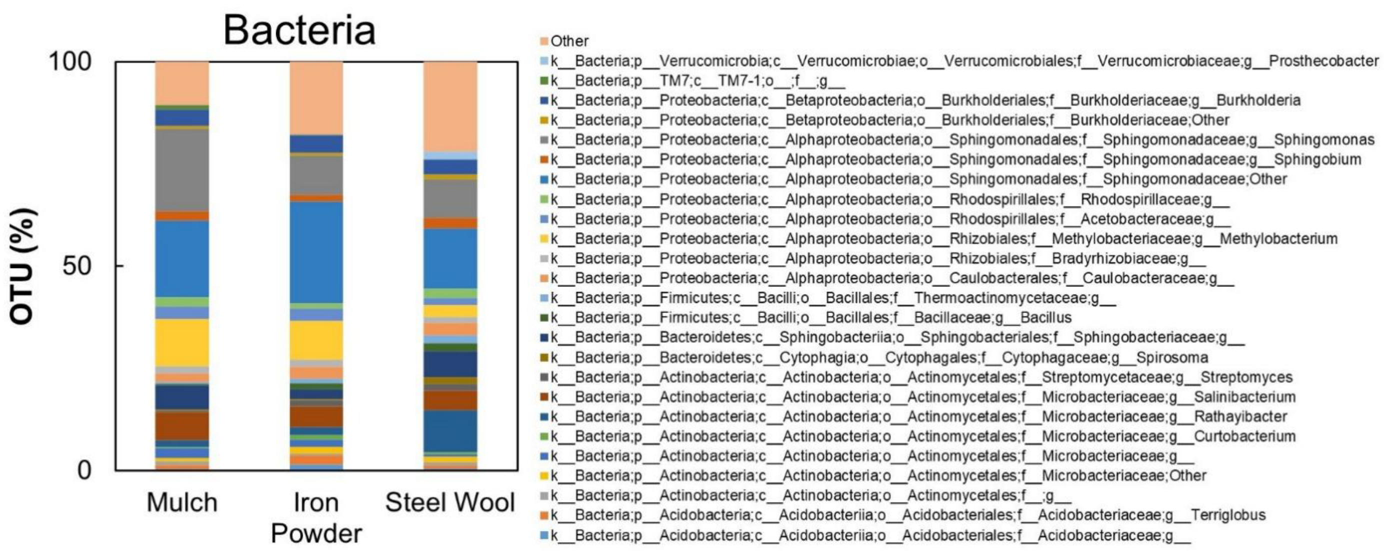
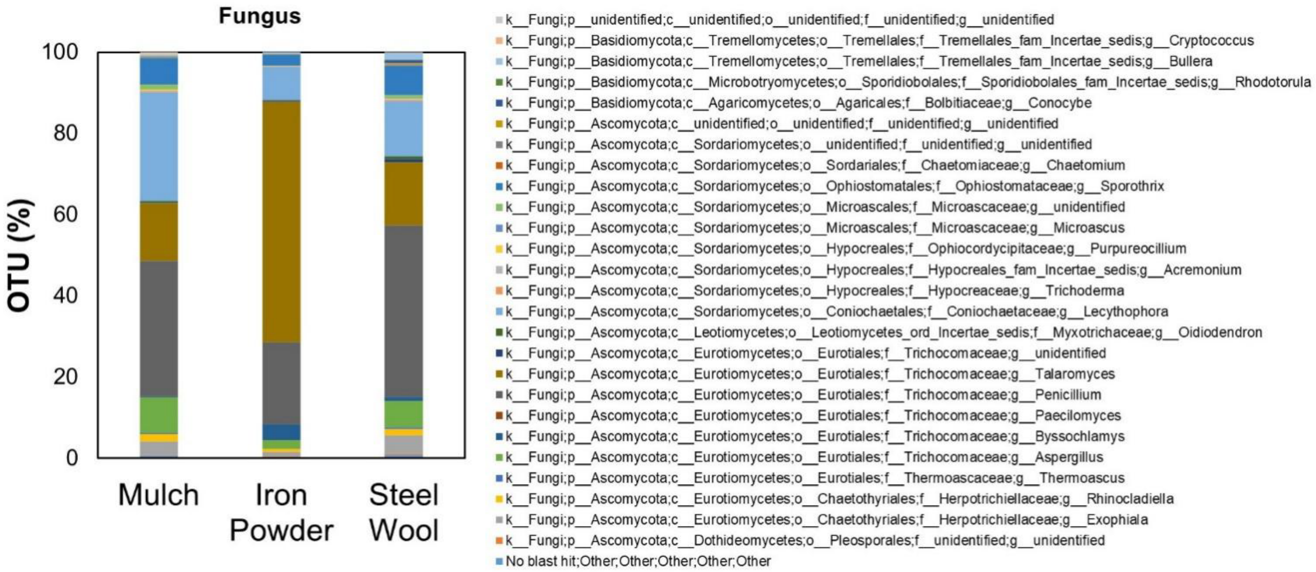


Figure S7. Leaching concentrations of As and Cr from original and treated timber mulch.



(**a**)



(**b**)

Figure S8. Major genera for (**a**) bacteria (16SV3V4) and (**b**) fungi (ITS) in mulch, mulch with iron powder, and steel wool samples.

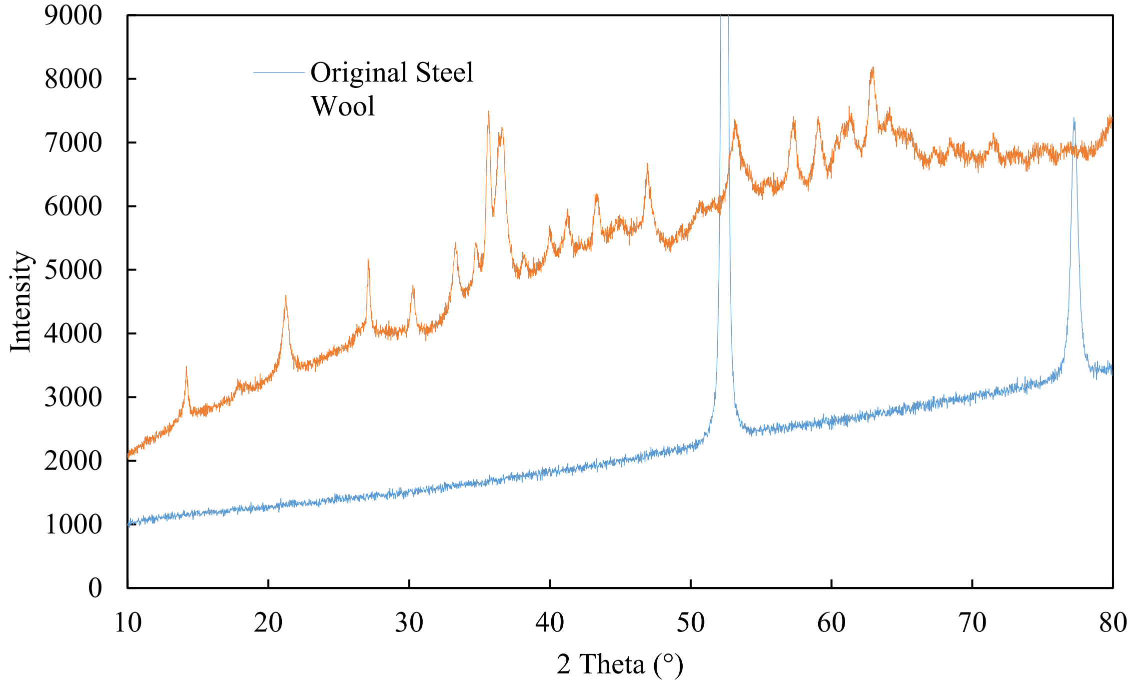


Figure S9. XRD patterns of steel wool before and after the column study.

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