

Supporting Information

Limitations of the Toxicity Characteristic Leaching Procedure for Providing a Conservative Estimate of Landfilled Municipal Solid Waste Incineration Ash Leaching

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Table S1 MSWI ashes Total Concentrations Data

Elements	Total Concentration (Average \pm Standard Deviation)			
	MSWI ashes (mg/kg)			
	BA_GT	BA_LT	Combined ash	Fly ash
Ag	190.7 \pm 70.17	5.760 \pm 1.836	0.7580 \pm 0.6292	14.87 \pm 0.7730
Al	37,580 \pm 9,816	45,900 \pm 13,600	17,800 \pm 2,022	20,700 \pm 1,104
As	10.37 \pm 1.420	14.84 \pm 2.375	49.58 \pm 19.30	79.03 \pm 5.104
Ba	319.3 \pm 33.30	353.3 \pm 12.70	339.5 \pm 91.28	497.8 \pm 20.61
Ca	79,700 \pm 6,467	97,700 \pm 1,879	100,000 \pm 11,800	235,000 \pm 15,700
Cd	13.81 \pm 6.650	50.29 \pm 2.760	36.38 \pm 6.146	112.4 \pm 4.815
Cr	60.88 \pm 16.30	97.70 \pm 13.70	102.2 \pm 46.36	72.23 \pm 4.505
Cu	3,200 \pm 2,000	2,884 \pm 1,829	888.2 \pm 377.1	619.1 \pm 20.31
Fe	32,100 \pm 17,800	34,200 \pm 4,425	55,200 \pm 36,100	6,473 \pm 420.6
K	2,400 \pm 242.2	4,500 \pm 298.6	4,317 \pm 238.5	24,500 \pm 1,806
Mg	4,694 \pm 303.6	6,183 \pm 629.5	5,257 \pm 812.9	8,991 \pm 584.1
Mn	496.00 \pm 93.40	1,294 \pm 60.26	562.0 \pm 546.9	818.6 \pm 41.69
Mo	11.95 \pm 3.145	11.60 \pm 1.906	7.990 \pm 2.402	10.63 \pm 0.3443
Na	7,813 \pm 742.3	10,300 \pm 430.4	12,700 \pm 5,170	31,800 \pm 2,251
Ni	107.9 \pm 78.85	170.6 \pm 45.08	49.60 \pm 43.26	42.00 \pm 0.2307
Pb	673.4 \pm 221.7	1,573 \pm 1,173	678.0 \pm 468.8	2,576 \pm 106.7
Sb	24.60 \pm 9.955	57.32 \pm 3.900	57.89 \pm 16.33	483.8 \pm 47.11
Se	0.6000 \pm 0.0000	\leq 0.4200	\leq 0.4200	\leq 0.4200
Sn	107.0 \pm 39.58	75.11 \pm 44.03	90.88 \pm 14.47	156.7 \pm 3.107
Sr	188.3 \pm 24.36	208.21 \pm 28.53	235.0 \pm 83.10	292.3 \pm 11.76
Ti	1,067 \pm 102.8	1,024 \pm 287.1	697.0 \pm 77.8	610.4 \pm 55.14
V	13.35 \pm 1.426	17.38 \pm 0.4045	14.57 \pm 3.892	16.30 \pm 1.005
Zn	2,665 \pm 1,010	5,510 \pm 377.9	5,440 \pm 851.8	8,482 \pm 184.4

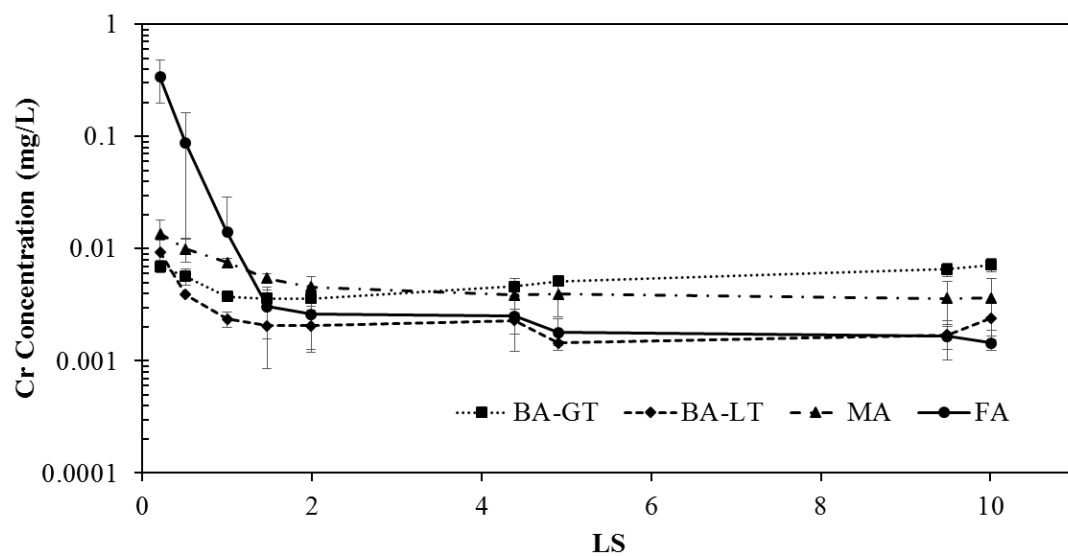


Figure S1. Chromium concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

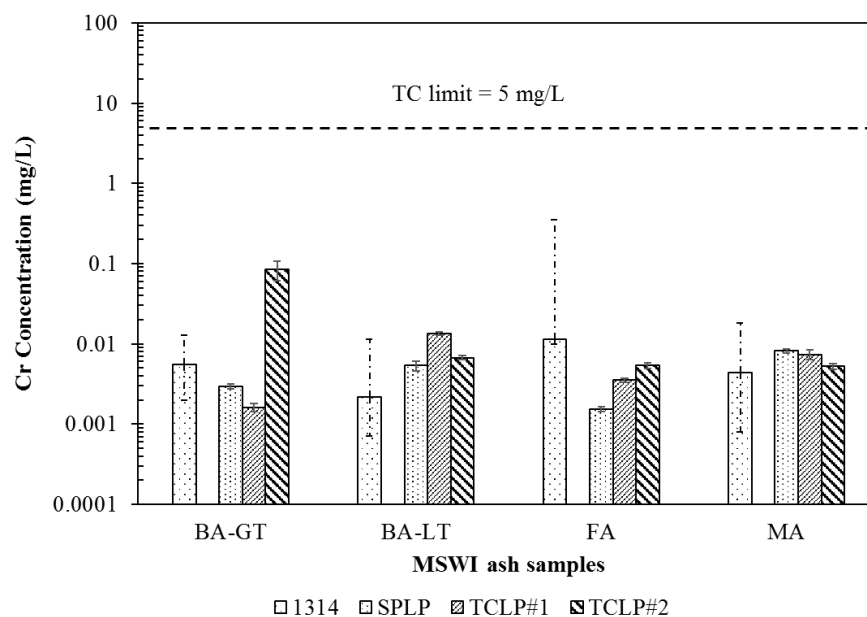


Figure S2. Comparison of Cr concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

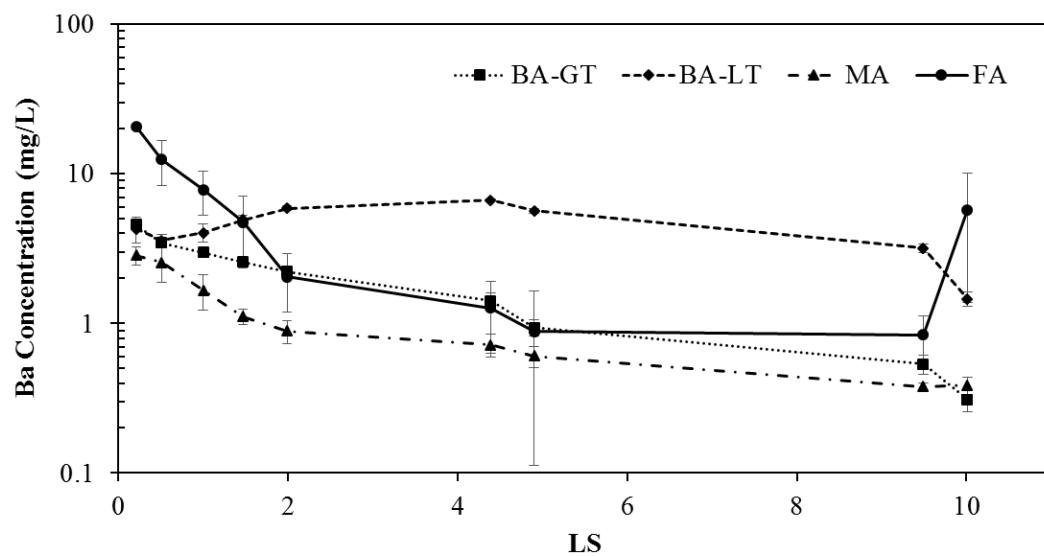


Figure S3. Barium concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

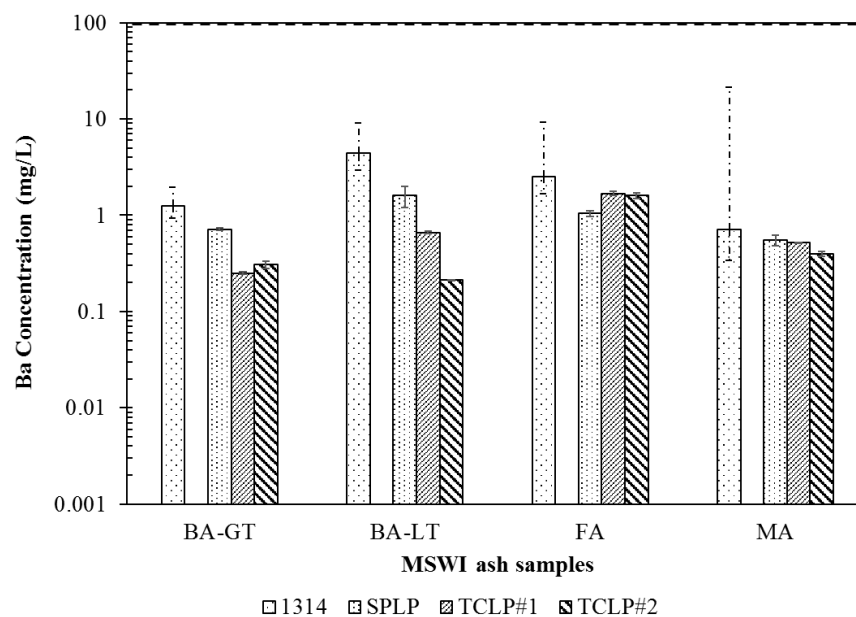


Figure S4. Comparison of Ba concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

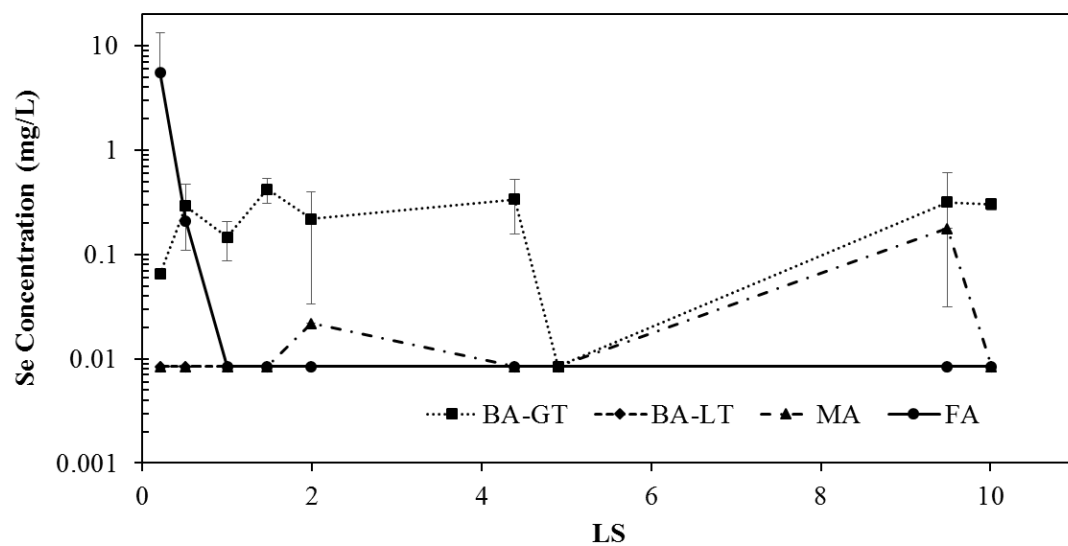


Figure S5. Selenium concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

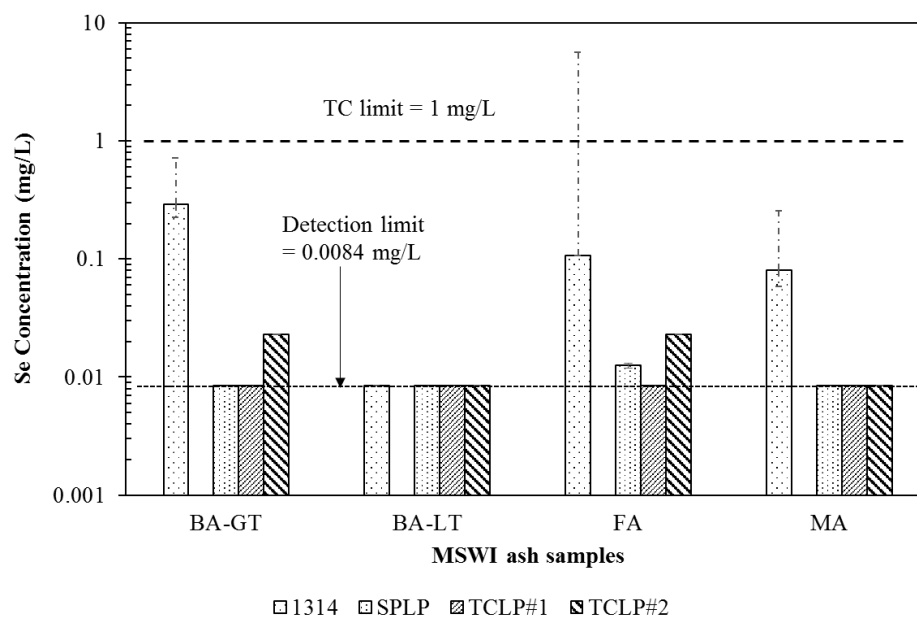


Figure S6. Comparison of Se concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

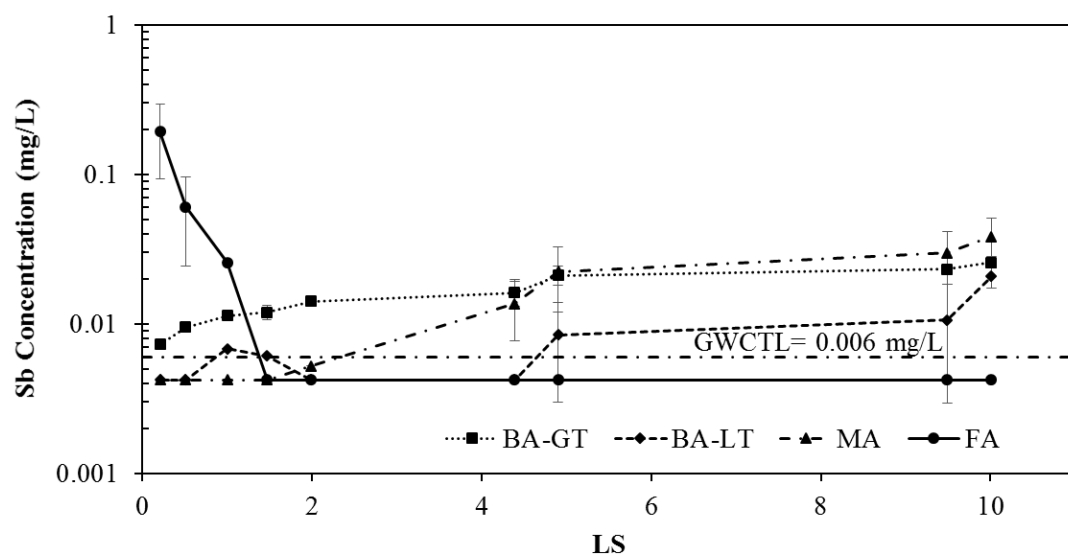


Figure S7. Antimony concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

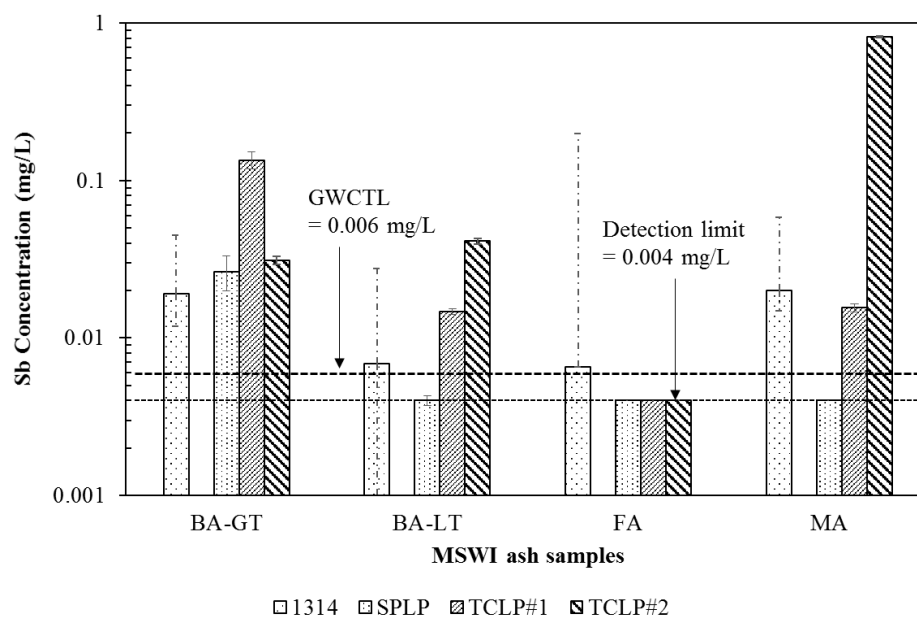


Figure S8. Comparison of Sb concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

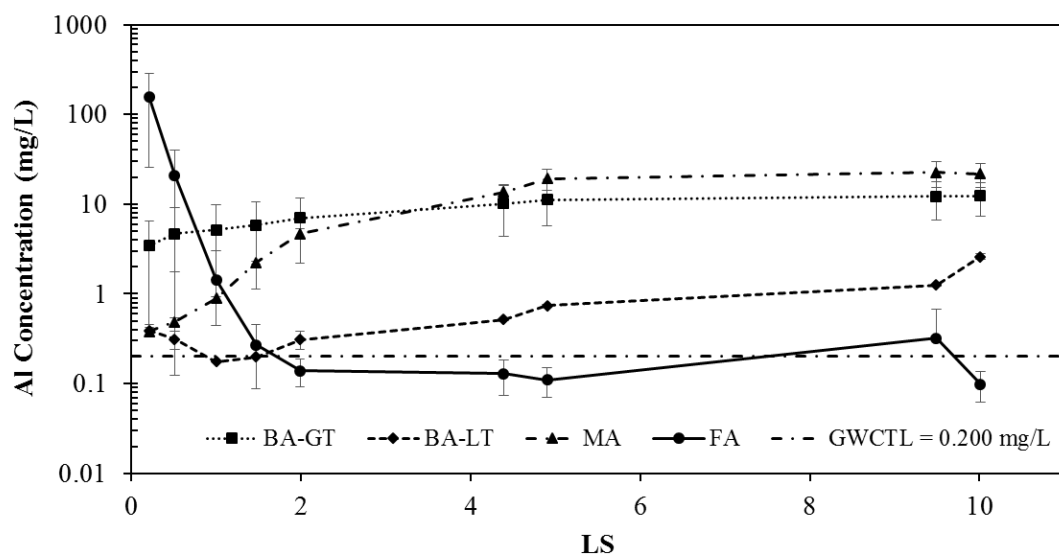


Figure S9. Aluminum concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

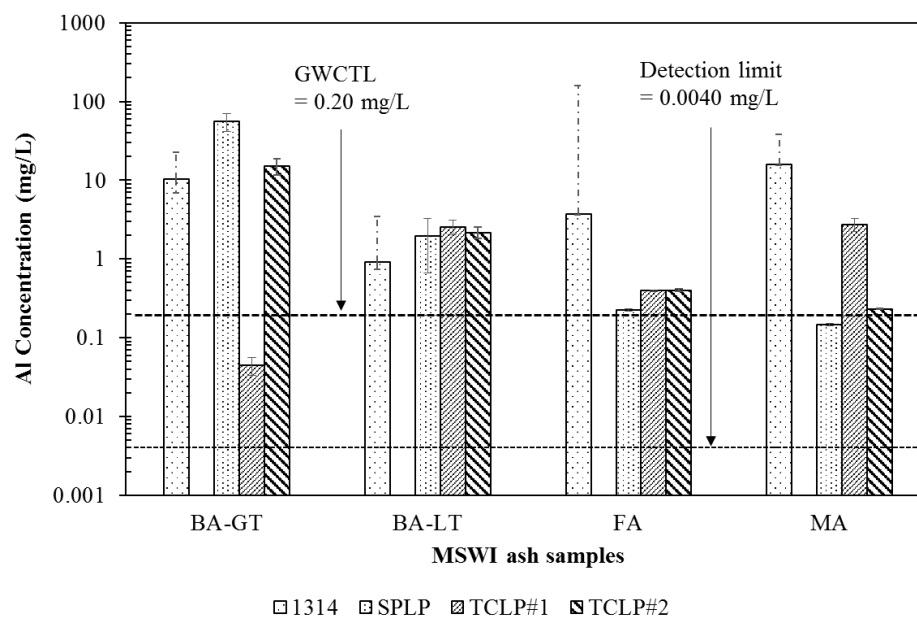


Figure S10. Comparison of Al concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

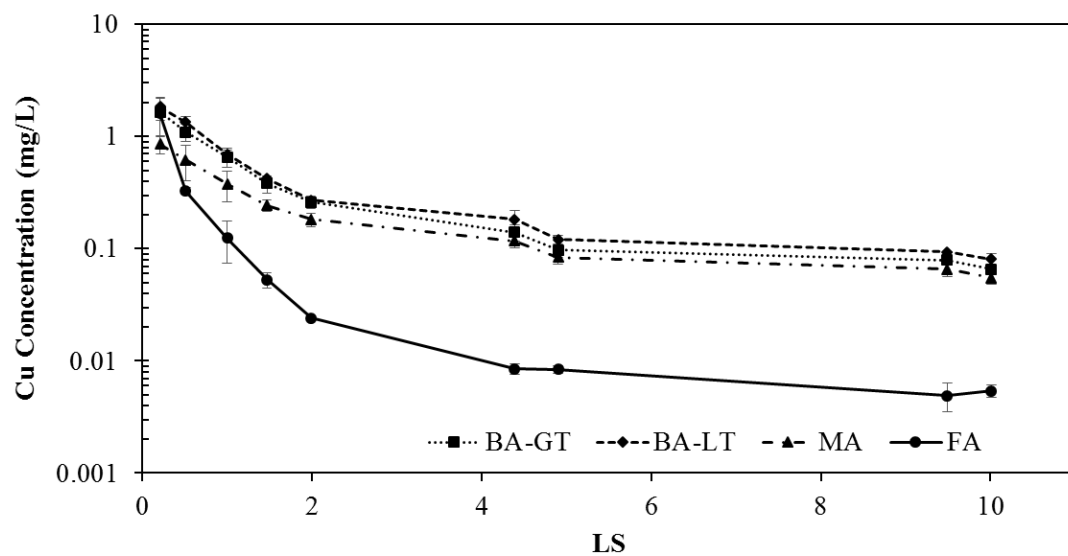


Figure S11. Copper concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

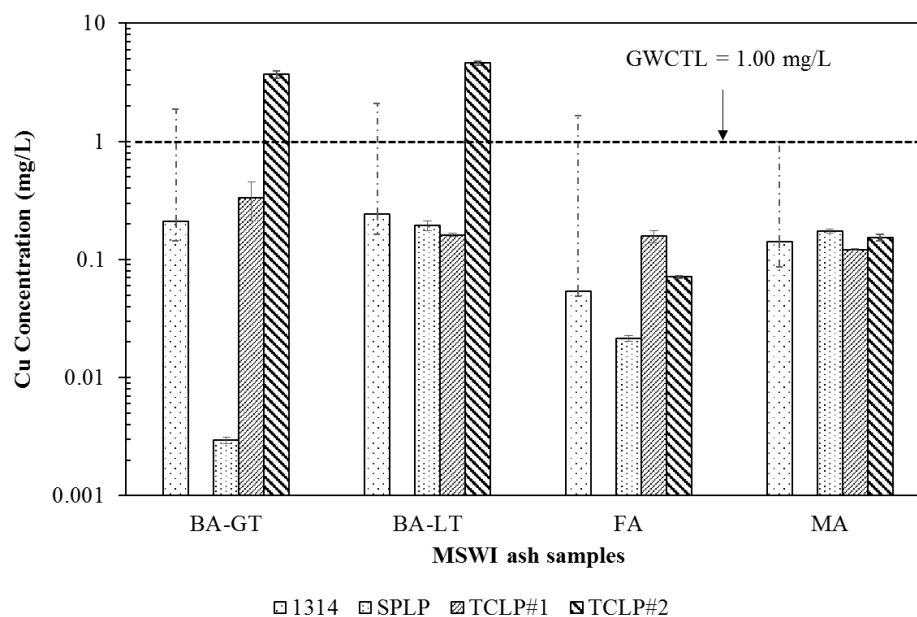


Figure S12. Comparison of Cu concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

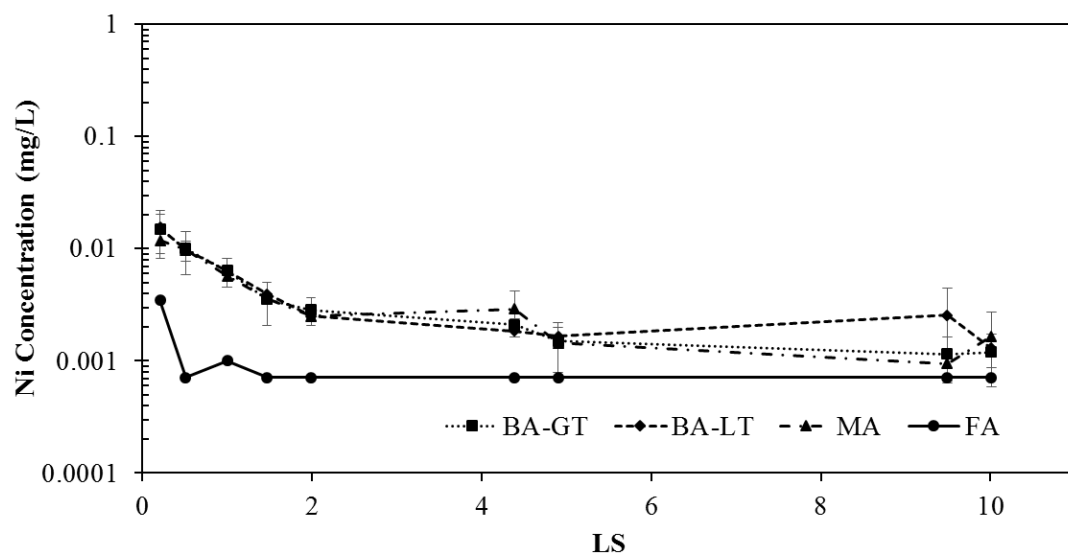


Figure S13. Nickel concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

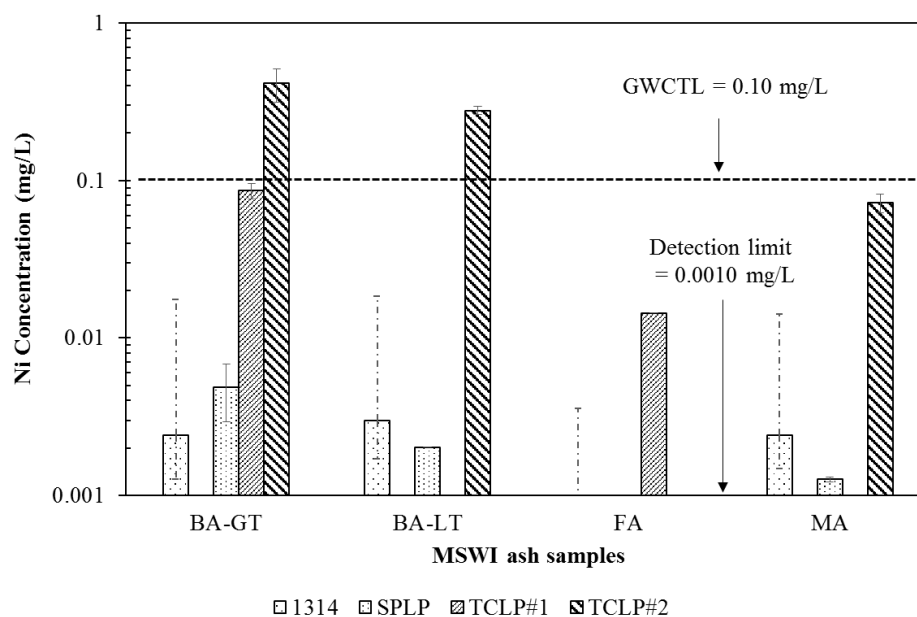


Figure S14. Comparison of Ni concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.

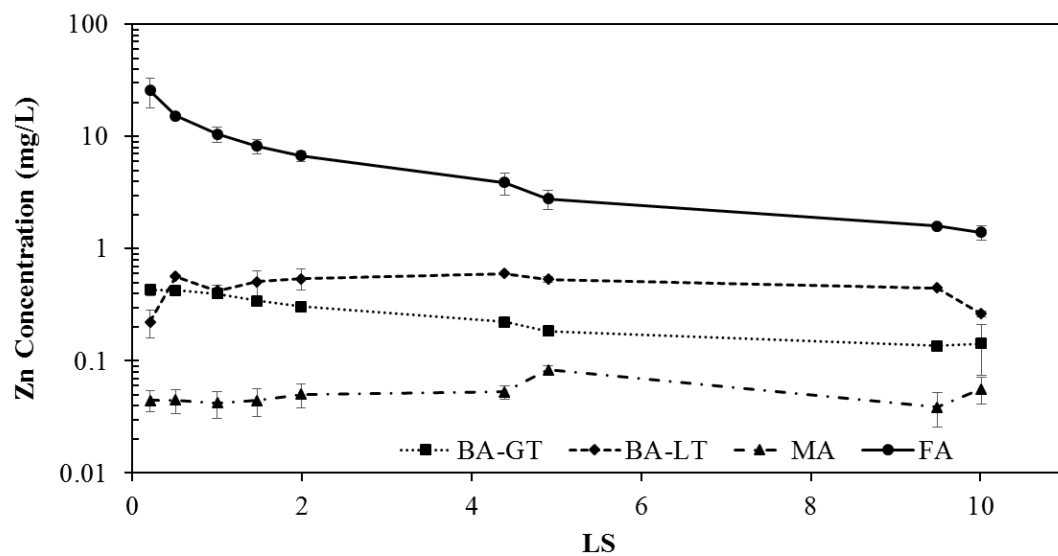


Figure S15. Zinc concentrations from four MSWI ash samples measured during 1314 leach testing. Results at each target LS represent the average of two column tests.

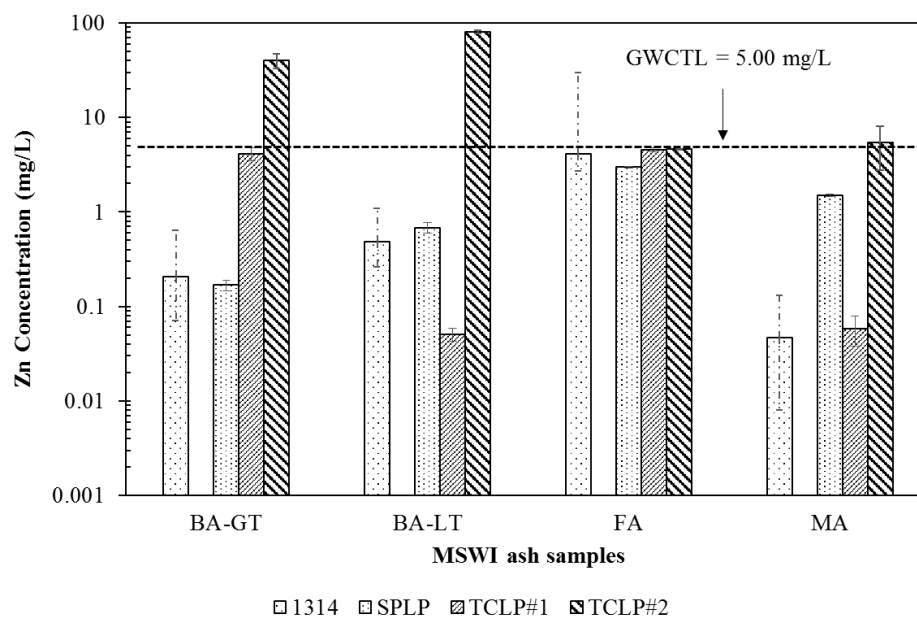


Figure S16. Comparison of Zn concentrations from different extraction solutions in four MSWI ash samples. For SPLP and TCLP, the average of triplicate measurements are presented along with standard deviation as the error bars. For 1314, the weighted average concentration is presented, while the error bars represent the minimum and maximum concentration measured.