

Supplemental Material Table 1. Comparison of methods to address extremely high values in TPM sample data (mg/m³). This table shows the arithmetic mean (AM) and geometric mean (GM) for the three considered methods for addressing outliers (include them unadjusted, omit them, or adjust them by some factor) for DEGs in which there was at least one sample greater than 50mg/m³.

Distinct exposure group						all samples included		high samples adjusted by respirator use (JEM concentration)		high samples omitted	
Job description	facility ID	process	# samples >50mg/m ³	total # of samples in DEG	% of samples over 50mg/m ³ in DEG	AM	GM	AM	GM	AM	GM
Potroom Service Operator	A	S	3	49	6%	14.98	2.37	14.98	2.37	3.07	1.79
Anode Assembly Operator	A	S	3	114	3%	5.62	2.54	5.62	2.54	3.96	2.33
Green Anode Operator	A	S	2	85	2%	2.94	0.65	1.55	0.62	1.43	0.58
Crane Operator	A	F	2	100	2%	3.84	1.18	3.84	1.18	1.81	1.08
Fume Control Servicer	A	S	2	10	20%	23.59	5.00	4.87	3.16	3.49	2.36
Utility Servicer	A	S	1	19	5%	8.4	2.90	5.18	2.57	5.09	2.43
Mechanical Maintenance	A	S/F	2	119	2%	4.55	0.88	2.96	0.86	2.21	0.81
Anode Changer	A	S	1	96	1%	9.32	5.35	9.32	5.35	8.34	5.18
Caster Furnace Operator	A	S	1	8	13%	11	1.34	11	1.34	3.46	0.77
Mobile Equipment Operator	A	S	4	161	2%	5.94	1.02	4.7	1.00	2.29	0.90
Furnace Repairer	A	S	1	39	3%	4.95	1.89	2.73	1.78	2.55	1.71
Reclamation Furnace Operator	A	S	4	95	4%	97.94	1.40	11.94	1.29	2.9	1.08
Utility Servicer	B	S	1	22	5%	10.29	5.54	6.6	4.99	6.49	4.85
Baked Anode Furnace Repairer	C	S	1	81	1%	5.18	2.62	5.18	2.62	4.17	2.51
Potroom Service Operator	C	S	5	87	6%	12.27	3.99	12.27	3.99	7.19	3.30
Potline Repairer	C	S	1	87	1%	3.06	1.32	3.06	1.32	2.43	1.26
Tapper	C	S	1	29	3%	4.63	2.44	4.63	2.44	2.93	2.18
Anode Changer	C	S	1	41	2%	13.07	8.93	13.07	8.93	11.9	8.51
Power Plant Operator	C	S	2	9	22%	20.54	8.05	13.28	5.63	9.46	4.57
Potline Repairer	D	S	2	103	2%	10.09	1.36	4.23	1.33	1.98	1.22
Baked Anode Operator	D	S	2	137	1%	2.66	0.82	1.59	0.80	1.5	0.77
Crane Operator	D	S	1	203	0%	2.65	0.76	2.65	0.76	2.16	0.74
Fume Control Servicer	D	S	8	151	5%	13.06	3.96	10.36	3.50	7.19	3.28

Mechanical Maintenance	D	S	1	112	1%	4.1	0.86	4.1	0.86	1.81	0.82
Anode Changer	D	S	6	290	2%	8.26	4.73	7.58	4.62	6.92	4.47
Mobile Equipment Operator	D	S	4	258	2%	10.24	3.75	9.83	3.69	7.26	3.56
Baked Anode Furnace											
Repairer	E	S	1	61	2%	4.64	1.65	4.64	1.65	3.74	1.56
Potroom Operator	E	S	2	101	2%	7.16	2.51	4.73	2.40	4.55	2.33
Potline Repairer	E	S	3	77	4%	18.51	2.91	13.65	2.68	6.01	2.42
Electrical Maintenance	E	S	2	71	3%	12.69	0.45	3.38	0.42	2.42	0.37
Anode Assembly Operator	E	S	1	19	5%	6.07	1.07	1.61	0.95	1.18	0.84
Green Anode Operator	E	S	14	108	13%	89.28	2.87	12.43	1.86	5.78	1.50
Crane Operator	E	S	7	99	7%	30.24	2.04	8.08	1.78	5.1	1.44
Fume Control Servicer	E	S	17	78	22%	73.01	7.15	12.01	4.07	7.88	2.89
Mechanical Maintenance	E	S	9	166	5%	16.63	0.80	5.97	0.73	2.47	0.58
Raw Material Operator	E	S/F	1	19	5%	10.88	1.41	4.73	1.25	4.27	1.10
Tapper	E	S	2	52	4%	77.38	5.49	24.67	5.25	6.54	4.40
Anode Changer	E	S	3	144	2%	6.95	3.41	6.19	3.30	5.64	3.20
Mobile Equipment Operator	E	S	6	91	7%	33.07	1.82	9.31	1.64	2.86	1.28
Vacuum Furnace Operator	H	F	1	19	5%	19.94	2.92	7.24	2.03	7.63	2.29
Raw Material Operator	K	R	2	59	3%	6.35	1.49	4.65	1.38	4.62	1.31
Calcination Operator	K	R	1	29	3%	4.59	1.11	2.97	1.03	2.89	0.97