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University of Manchester, Quarterly mercury monitoring, Autumn 2010.

Dear Melanie

Please find on pages 2 and 3 the results of the analyses of the atmospheric mercury samples collected in November.

I also include on the following pages tables showing all the data gathered by both the passive and the pumped sorbent sampling thus far.

Yours sincerely

Andrew Easterbrook

Table of results of monitoring in November 2010, in sampler order

HSL Sample no.	Sample ref. no.	Building	Room	Amount Mercury collected on sampler (µg)	Concentration Mercury in sampled air (µg/m3)
09301/10	Passive ID 1	Museum	G53	0.82	2.0
09302/10	Passive ID 2	Museum	G54	4.83	12.0
09303/10	Passive ID 3	Museum	B55	0.28	0.7
09304/10	Passive ID 4	Museum	B56	0.39	1.0
09305/10	Passive ID 5	Blank		<0.01	
09306/10	Passive ID 6	Museum	B58	0.88	2.2
09307/10	Passive ID 7	Museum	B61	0.02	0.0
09308/10	Passive ID 8	Museum	B62	0.57	1.4
09309/10	Passive ID 9	Museum - Herbarium	on cupboard door	0.07	0.2
09310/10	Passive ID 10	Museum - Herbarium	British ferns rack	0.07	0.2
09311/10	Passive ID 11	Museum - Herbarium	British flowering plants rack	0.06	0.1
09312/10	Passive ID 12	Museum - Herbarium	European flowering plants rack	0.05	0.1
09313/10	Passive ID 13	Museum - Herbarium	under Witches hat rack	0.05	0.1
09314/10	Passive ID 14	Psychology Annexe	1.31	1.69	4.2
09315/10	Passive ID 15	Blank		<0.01	
09316/10	Passive ID 16	Psychology Annexe	1.32	0.06	0.1
09317/10	Passive ID 17	Psychology Annexe	1.33	0.04	0.1
09318/10	Passive ID 18	Psychology Annexe	1.34	0.04	0.1
09319/10	Passive ID 19	Psychology Annexe	1.35	0.14	0.4
09320/10	Passive ID 20	Psychology Annexe	1.36	0.08	0.2
09321/10	Passive ID 21	Blank		<0.01	
09322/10	Passive ID 22	Psychology Annexe	1.37	0.12	0.3
09323/10	Passive ID 23	Psychology Annexe	1.38	0.56	1.4
09324/10	Passive ID 24	Psychology Annexe	1.39 – not used	<0.01	
09325/10	Passive ID 25	Blank		<0.01	
09326/10	Passive ID 26	Psychology Annexe	1.40	0.10	0.2
09327/10	Passive ID 27	Psychology Annexe	1.41	0.32	0.8
09328/10	Passive ID 28	Psychology Annexe	1.41b	0.59	1.5
09329/10	Passive ID 29	Psychology Annexe	1.41a	0.38	0.9
09330/10	Passive ID 30	Blank		<0.01	
09331/10	Passive ID 31	Rutherford	2.059	0.11	0.3
09332/10	Passive ID 32	Rutherford	2.054	0.08	0.2
09333/10	Passive ID 33	Rutherford	2.053	0.17	0.4
09334/10	Passive ID 34	Rutherford	2.058	0.17	0.4
09335/10	Passive ID 35	Rutherford	2.062	0.38	1.0
09293/10	1A-24hr	Psychology Annexe	1.41B	0.22	1.5
09294/10	1B-8hr	Psychology Annexe	1.41B	0.08	1.6
09295/10	2A-24hr	Museum	B58	0.20	1.2
09296/10	2B-8hr	Museum	B58	0.08	1.3
09297/10	3A-24hr	Rutherford	2.058	0.07	0.5
09298/10	3B-8hr	Rutherford	2.058	0.02	0.4
09299/10	4A-24hr	Rutherford	2.057	0.02	0.1
09300/10	4B-8hr	Rutherford	2.057	0.01	0.2

Tables of all monitoring data, sorted by building:

HSL Sample number	Date	Sample ref. No.	Sample locations: <u>Rutherford Building</u> Room no:	Concentration mercury in air (µg/m³)
03754/09	June 2009	4	G055	1.6
03755/09	June 2009	5	G056	0.3
03753/09	June 2009	3	G057	<0.2
03751/09	June 2009	1	G058	<0.2
03752/09	June 2009	2	G058A	<0.2
03760/09	June 2009	10	1.051	0.2
03759/09	June 2009	9	1.052	0.6
03758/09	June 2009	8	1.053	<0.2
03757/09	June 2009	7	1.057	0.4
03756/09	June 2009	6	1.058	0.4
03771/09	June 2009	21	2.051 by door to stairs	0.6
03772/09	June 2009	22	2.051 on desk partition	0.5
03773/09	June 2009	23	2.051B	0.4
03767/09	June 2009	17	2.052 on notice board	0.9
03768/09	June 2009	18	2.052A on widow opener nr. desk	2.0
03766/09	June 2009	16	2.052B on in-tray	0.8
03764/09	June 2009	14	2.053	0.7
06381/10	Jul-10	Passive ID 18	2.053	1.1
09333/10	Nov 2010	Passive ID 33	2.053	0.4
06380/10	Jul-10	Passive ID 17	2.054	1.0
03763/09	June 2009	13	2.054	0.3
09332/10	Nov 2010	Passive ID 32	2.054	0.2
03762/09	June 2009	12	2.057	0.9
09121/09	Dec 09	Passive 13	2.057	0.4
02646/10	March 2010	Passive 16	2.057	0.61
09299/10	Nov 2010	4A-24hr	2.057	0.1
09300/10	Nov 2010	4B-8hr	2.057	0.2
03761/09	June 2009	11	2.058	6.3
09122/09	Dec 09	passive 14	2.058	3.4
9131/09	Dec 09	pumped 2a	2.058 – 24-hr	6.0
9132/09	Dec 09	pumped 2b	2.058 – 8-hr	5.1
02638/10	March 2010	Passive 8	2.058	2.63

HSL Sample number	Date	Sample ref. No.	Sample locations: <u>Rutherford Building</u> Room no:	Concentration mercury in air (µg/m ³)
02655/10	March 2010	Pumped 3a	2.058– 24-hr	3.03
02656/10	March 2010	Pumped 3b	2.058– 8-hr	3.79
09334/10	Nov 2010	Passive ID 34	2.058	0.4
09297/10	Nov 2010	3A-24hr	2.058	0.5
09298/10	Nov 2010	3B-8hr	2.058	0.4
03765/09	June 2009	15	2.059	0.6
09123/09	Dec 09	passive 15	2.059	0.6
02643/10	March 2010	Passive 13	2.059	0.45
06379/10	Jul-10	Passive ID 16	2.059	1.8
06360/10	Jul-10	2A-24hr	2.059	3.0
06361/10	Jul-10	2B-8hr	2.059	0.7
09331/10	Nov 2010	Passive ID 31	2.059	0.3
09335/10	Nov 2010	Passive ID 35	2.062	1.0
03774/09	June 2009	24	3.2	0.5
03776/09	June 2009	26	3.4	0.9
03769/09	June 2009	19	3.5	1.2
03775/09	June 2009	25	3.1 (MA001.A)	0.5

Alternative presentation of data from Rutherford Building rooms 2.058 and 2.059:

Room 2.058	June 2009		Dec 2009		March 2010		July 2010		Nov 2010	
Passive	03761/09	6.3	09122/09	3.4	02638/10	2.63	-	-	09334/10	0.4
Pumped 24-hr			9131/09	6.0	02655/10	3.03			09297/10	0.5
Pumped 8-hr			9132/09	5.1	02656/10	3.79			09298/10	0.4

Room 2.059	June 2009		Dec 2009		March 2010		July 2010		Nov 2010	
Passive	03765/09	0.6	09123/09	0.6	02643/10	0.45	06379/10	1.8	09331/10	0.3
Pumped 24-hr							06360/10	3.0		
Pumped 8-hr							06361/10	0.7		

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Psychology Annexe</u> Room no:	Concentration mercury in air (µg/m³)
03855/09	June 2009	105	Common room	<0.2
03854/09	June 2009	104	Servery in common room	<0.2
03778/09	June 2009	28	G30	<0.2
03779/09	June 2009	29	G32	<0.2
03858/09	June 2009	108	G34	<0.2
03859/09	June 2009	109	G35	<0.2
03856/09	June 2009	106	G36	<0.2
03857/09	June 2009	107	G37	<0.2
03781/09	June 2009	31	H16	<0.2
03780/09	June 2009	30	H17	<0.2
03782/09	June 2009	32	H18	<0.2
03783/09	June 2009	33	H22	0.3
03784/09	June 2009	34	H23	1.5
06391/10	Jul-10	Passive ID 30	H23	1.7
03786/09	June 2009	36	H24 (room off corridor)	0.4
03785/09	June 2009	35	H24 (room with external wall)	0.5
03787/09	June 2009	37	Downstairs H24a	0.4
03788/09	June 2009	38	H24C	0.3
03789/09	June 2009	39	H25	0.3
03790/09	June 2009	40	H27	0.3
03853/09	June 2009	103	H28	0.3
03851/09	June 2009	101	H28 (1)	<0.2
03852/09	June 2009	102	H28 (2)	0.2
03845/09	June 2009	95	Pear lecture theatre 1.26 Front	<0.2
03846/09	June 2009	96	Pear lecture theatre 1.26 Rear	<0.2
03843/09	June 2009	93	1.29	<0.2
03844/09	June 2009	94	1.30	<0.2
03847/09	June 2009	97	1.31	2.5
09116/09	Dec 09	passive 8	1.31	3.0
02633/10	March 2010	Passive 3	1.31	3.9
06377/10	Jul-10	Passive ID 14	1.31	3.3

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Psychology Annexe</u> Room no:	Concentration mercury in air (µg/m³)
09314/10	Nov 2010	Passive ID 14	1.31	4.2
03848/09	June 2009	98	1.32	<0.2
06382/10	Jul-10	Passive ID 21	1.32	0.2
09316/10	Nov 2010	Passive ID 16	1.32	0.1
03869/09	June 2009	119	1.33	<0.2
06383/10	Jul-10	Passive ID 22	1.33	0.1
09317/10	Nov 2010	Passive ID 17	1.33	0.1
03850/09	June 2009	100	1.34	<0.2
06384/10	Jul-10	Passive ID 23	1.34	0.2
09318/10	Nov 2010	Passive ID 18	1.34	0.1
03849/09	June 2009	99	1.35	0.3
06385/10	Jul-10	Passive ID 24	1.35	0.4
09319/10	Nov 2010	Passive ID 19	1.35	0.4
09320/10	Nov 2010	Passive ID 20	1.36	0.2
03867/09	June 2009	117	1.36	0.5
06386/10	Jul-10	Passive ID 25	1.36	0.7
09322/10	Nov 2010	Passive ID 22	1.37	0.3
03861/09	June 2009	111	1.37	0.5
06387/10	Jul-10	Passive ID 26	1.37	0.7
03862/09	June 2009	112	1.38	0.9
09120/09	Dec 09	passive 12	1.38	1.3
02642/10	March 2010	Passive 12	1.38	0.61
06374/10	Jul-10	Passive ID 11	1.38	1.1
09323/10	Nov 2010	Passive ID 23	1.38	1.4
03863/09	June 2009	113	1.39	9.3
09119/09	Dec 09	passive 11	1.39	5.3
02648/10	March 2010	Passive 18	1.39	14.04
06373/10	Jul-10	Passive ID 10	1.39	3.2
03864/09	June 2009	114	1.40.	0.5
09117/09	Dec 09	passive 9	1.40	0.6
02639/10	March 2010	Passive 9	1.40	0.37
06375/10	Jul-10	Passive ID 12	1.40	0.6
09326/10	Nov 2010	Passive ID 26	1.40	0.2

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Psychology Annexe</u> Room no:	Concentration mercury in air (µg/m ³)
03866/09	June 2009	116	1.41	2.2
06389/10	Jul-10	Passive ID 28	1.41	3.5
09327/10	Nov 2010	Passive ID 27	1.41	0.8
03865/09	June 2009	115	1.41A	2.2
06390/10	Jul-10	Passive ID 29	1.41A	3.8
09329/10	Nov 2010	Passive ID 29	1.41a	0.9
03868/09	June 2009	118	1.41B	3.8
09118/09	Dec 09	passive 10	1.41B	4.2
09133/09	Dec 09	pumped 3a	1.41B - 24-hr	7.6
09134/09	Dec 09	pumped 3b	1.41B – 8-hr	7.5
02641/10	March 2010	Passive 11	1.41b	2.92
02653/10	March 2010	Pumped 2a	1.41b - 24-hr	8.03
02654/10	March 2010	Pumped 2b	1.41b– 8-hr	7.86
06376/10	Jul-10	Passive ID 13	1.41B	5.8
06358/10	Jul-10	1A	1.41B-24hr	11.7
06359/10	Jul-10	1B	1.41B-8hr	12.8
09328/10	Nov 2010	Passive ID 28	1.41b	1.5
09293/10	Nov 2010	1A-24hr	1.41B	1.5
09294/10	Nov 2010	1B-8hr	1.41B	1.6

Alternative presentation of data from Psychology Annexe room 1.41B:

Room 1.41B	June 2009		Dec 09		March 2010		Jul-10		Nov-10	
Passive	03868/09	3.8	09118/09	4.2	02641/10	2.92	06376/10	5.8	09328/10	1.5
Pumped 24-hr	-		09133/09	7.6	02653/10	8.03	06358/10	11.7	09293/10	1.5
Pumped 8-hr	-		09134/09	7.5	02654/10	7.86	06359/10	12.8	09294/10	1.6

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Museum Building</u> Room no:-	Concentration mercury in air (µg/m³)
3805/09	June 2009	55	B17	<0.2
03804/09	June 2009	54	B18	<0.2
03803/09	June 2009	53	B21	0.2
03802/09	June 2009	52	B26	<0.2
03809/09	June 2009	59	B27	<0.2
03808/09	June 2009	58	B29	<0.2
03807/09	June 2009	57	B36	<0.2
03806/09	June 2009	56	B39	<0.2
02647/10	March 2010	Passive 17	B52	1.74
03791/09	June 2009	41	B55	0.3
09109/09	Dec 09	passive 1	B55	1.2
02637/10	March 2010	Passive 7	B55	1.18
06366/10	Jul-10	Passive ID 3	B55	7.1
09303/10	Nov 2010	Passive ID 3	B55	0.7
03792/09	June 2009	42	B56	7.5
09110/09	Dec 09	passive 2	B56	1.5
02636/10	March 2010	Passive 6	B56	1.46
06367/10	Jul-10	Passive ID 4	B56	9.9
09304/10	Nov 2010	Passive ID 4	B56	1.0
09111/09	Dec 09	passive 3	B58	1.9
9129/09	Dec 09	pumped 1a	B58 – 24-hr	3.44
9130/09	Dec 09	pumped 1b	B58 – 8-hr	4.00
02640/10	March 2010	Passive 10	B58	1.85
02651/10	March 2010	Pumped 1a	B58– 24-hr	5.18
02652/10	March 2010	Pumped 1b	B58– 8-hr	5.49
06364/10	Jul-10	Passive ID 1	B58	14.9
06362/10	Jul-10	3A	B58-24hr	14.2
06363/10	Jul-10	3B	B58-8hr	13.9
09306/10	Nov 2010	Passive ID 6	B58	2.2
09295/10	Nov 2010	2A	B58-24hr	1.2
09296/10	Nov 2010	2B	B58-8hr	1.3

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Museum Building</u> Room no:-	Concentration mercury in air (µg/m³)
03795/09	June 2009	45	B61	0.2
09112/09	Dec 09	passive 4	B61	0.1
02634/10	March 2010	Passive 4	B61	0.05
06369/10	Jul-10	Passive ID 6	B61	0.2
09307/10	Nov 2010	Passive ID 7	B61	0.0
03796/09	June 2009	46	B62	5.4
09113/09	Dec 09	passive 5	B62	2.6
06365/10	Jul-10	Passive ID 2	B62	10.2
09308/10	Nov 2010	Passive ID 8	B62	1.4
03797/09	June 2009	47	B63	1.1
03799/09	June 2009	49	B65	<0.2
03798/09	June 2009	48	B68	0.3
03794/09	June 2009	44	B110	1.0
03801/09	June 2009	51	ex 114 Workshop system	<0.2
03800/09	June 2009	50	ex 116	<0.2
03813/09	June 2009	63	G8	<0.2
03812/09	June 2009	62	G13, end adj loading bay	<0.2
03811/09	June 2009	61	G18	0.3
03810/09	June 2009	60	G23	<0.2
03814/09	June 2009	64	G52	0.9
03815/09	June 2009	65	G53	1.9
09114/09	Dec 09	passive 6	G53	2.9
02632/10	March 2010	Passive 2	G53	1.81
06371/10	Jul-10	Passive ID 8	G53	6.1
09301/10	Nov 2010	Passive ID 1	G53	2.0
03816/09	June 2009	66	G54	4
09115/09	Dec 09	passive 7	G54	11.0
02631/10	March 2010	Passive 1	G54	7.14
06370/10	Jul-10	Passive ID 7	G54	3.5
09302/10	Nov 2010	Passive ID 2	G54	12.0

HSL Sample number	Date	Sample ref. No.	Sample location: <u>Museum Building</u> Room no:-	Concentration mercury in air (µg/m ³)
03825/09	June 2009	75	1.2	<0.2
03817/09	June 2009	67	1.8	<0.2
03820/09	June 2009	70	1.10.	<0.2
03821/09	June 2009	71	1.11	0.5
03822/09	June 2009	72	1.13	0.4
03823/09	June 2009	73	1.14	<0.2
03830/09	June 2009	80	1.15	<0.2
03824/09	June 2009	74	1.17	<0.2
03826/09	June 2009	76	1.22	<0.2
03827/09	June 2009	77	1.26	<0.2
03828/09	June 2009	78	1.28	<0.2
03819/09	June 2009	69	1.50 (?)	1.6
03818/09	June 2009	68	1.52	0.6
03840/09	June 2009	90	2.11	<0.2
03841/09	June 2009	91	2.13	<0.2
03833/09	June 2009	83	2.17	<0.2
03832/09	June 2009	82	2.18	<0.2
03831/09	June 2009	81	2.19	<0.2
03834/09	June 2009	84	2.20.	<0.2
03835/09	June 2009	85	2.27	<0.2
03836/09	June 2009	86	2.32	<0.2
03837/09	June 2009	87	2.36	<0.2
03838/09	June 2009	88	2.37	<0.2
03839/09	June 2009	89	2.39	<0.2
			<u>Herbarium</u>	
09309/10	Nov 2010	Passive ID 9	on cupboard door	0.2
09310/10	Nov 2010	Passive ID 10	British ferns rack	0.2
09311/10	Nov 2010	Passive ID 11	British flowering plants rack	0.1
09312/10	Nov 2010	Passive ID 12	European flowering plants rack	0.1
09313/10	Nov 2010	Passive ID 13	under Witches hat rack	0.1

Alternative presentation of data from Museum room B58

Room B58	June 2009		Dec 09		March 2010		Jul-10		Nov-10	
Passive			09111/09	1.9	02640/10	1.85	06364/10	14.9	09306/10	2.2
Pumped 24-hr			9129/09	3.44	02651/10	5.18	06362/10	14.2	09295/10	1.2
Pumped 8-hr			9130/09	4.00	02652/10	5.49	06363/10	13.9	09296/10	1.3