

MES Environmental Ltd
Dudley EFW Facility



Six-monthly Reporting of Emissions to Air for the period from January 2007 to June 2007

Emission Point	Substance / Parameter	Emission Limit Value (mg/m ³)	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]			Accreditation/ Certification ^[4]		Uncertainty ^[5]
					Date	Start	End	Sampling	Analysis	
A1	Hydrogen fluoride	2 ^[7]	<0.1	US EPA 26A	3.5.07	1027	1127	1296	1015	0.1
A1	Cadmium & thallium and their compounds (total)	0.05 ^[8]	0.0016	BS EN 14385	3.5.07	1143	1249	1296	1015	0.0016
A1	Mercury and its compounds	0.05 ^[9]	0.0063	BS EN 13211	3.5.07	1313	1420	1296	1015	0.0020
A1	Sb, As, Pb, Cr, Co, Cu, Mn, Ni & V and their compounds (total)	0.5 ^[10]	0.0469	BS EN 14385	3.5.07	1143	1249	1296	1015	0.0328
A1	Dioxin-like PCBs (WHO-TEQ Humans / Mammals) ^[6]	No limit applies	0.0012 - 0.0012	BS EN 1948	30.4.07	1145	1757	1296	1668	0.0003
A1	Dioxin-like PCBs (WHO-TEQ Fish) ^[6]	No limit applies	0.0001 - 0.0001							0.0001
A1	Dioxin-like PCBs (WHO-TEQ Birds) ^[6]	No limit applies	0.0026 - 0.0026							0.0006

Sent To Public Register	
PIR/PFC	
LA	
Comments	AB 1/8

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Emission Point	Substance / Parameter	Emission Limit Value (mg/m ³)	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]		Accreditation / Certification ^[4] Sampling Analysis		Uncertainty ^[5]	
A1	Dioxins / furans (I-TEQ) ^[6]	0.1 ^[10]	0.0203 - 0.0206	BS EN 1948	30.4.07	1145	1757	1296	1668	0.0047
A1	Dioxins / furans (WHO-TEQ Humans / Mammals) ^[9]	No limit applies	0.0216 - 0.0219							0.0050
A1	Dioxins / furans (WHO-TEQ Fish) ⁶	No limit applies	0.0205 - 0.0208							0.0048
A1	Dioxins / furans (WHO-TEQ Birds) ^[9]	No limit applies	0.0295 - 0.0298							0.0069
A1	Poly-cyclic aromatic hydrocarbons (PAHs) Total	No limit applies	1.9	BS ISO 11338-1,2	3.5.07	1445	1554	1296	1668	1.9
A1	Naphthalene	No limit applies	0.535	BS ISO 11338-1,2	3.5.07	1445	1554	1296	1668	0.535
A1	Fluoranthene		0.089							0.089
A1	Benzo(a)anthracene		0.089							0.089
A1	Chrysene		0.089							0.089
A1	Benzo(b) fluoranthene		0.089							0.089
A1	Benzo(k) fluoranthene		0.089							0.089
A1	Benzo(a)pyrene (BaP)		0.089							0.089
A1	Indeno(123-cd)pyrene		0.089							0.089
A1	Benzo(ghi)perylene		0.089							0.089
A1	Dibenzo(ah)anthracene		0.089							0.089
A1	Cyclopenta(cd)pyrene		0.089							0.089
A1	Anthanthrene		0.089							0.089
A1	Benzo(b)naph(2,1-d) thiophene		0.089							0.089
A1	Benzo(c)phenanthrene		0.089							0.089
A1	Cholanthrene		0.089							0.089
A1	Dibenzo(a,i)pyrene		0.089							0.089

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								Sampling	Analysis	
A2	Dioxins / furans (I-TEQ) ^[6]	0.1 ^[6]	0.0430 - 0.0430	BS EN 1948	1.5.07	1035	1646	1296	1668	0.0090
A2	Dioxins / furans (WHO-TEQ Humans / Mammals) ^[6]	No limit applies	0.0464 - 0.0464							0.0097
A2	Dioxins / furans (WHO-TEQ Fish) ⁶	No limit applies	0.0444 - 0.0444							0.0093
A2	Dioxins / furans (WHO-TEQ Birds) ^[6]	No limit applies	0.0775 - 0.0775							0.0162
A2	Poly-cyclic aromatic hydrocarbons (PAHs) Total	No limit applies	0.6	BS ISO 11338-1,2	2.5.07	1435	1541	1296	1668	0.6
A2	Naphthalene	No limit applies	5.30	BS ISO 11338-1,2	2.5.07	1435	1541	1296	1668	4.57
A2	Fluoranthene		0.10							0.10
A2	Benz(a)anthracene		0.10							0.10
A2	Chrysene		0.10							0.10
A2	Benzo(b) fluoranthene		0.10							0.10
A2	Benzo(k) fluoranthene		0.10							0.10
A2	Benzo(a)pyrene (BaP)		0.10							0.10
A2	Indeno(123-cd)pyrene		0.10							0.10
A2	Benzo(ghi)perylene		0.10							0.10
A2	Dibenzo(ah)anthracene		0.10							0.10
A2	Cyclopenta(cd)pyrene		0.10							0.10
A2	Anthanthrene		0.10							0.10
A2	Benzo(b)naph(2,1-d) thiophene		0.10							0.10
A2	Benzo(c)phenanthrene		0.10							0.10
A2	Cholanthrene		0.10							0.10
A2	Dibenzo(a,i)pyrene		0.10							0.10

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Emission Point	Substance / Parameter	Emission Limit Value (mg/m ³)	Result ^[1]	Test Method ^[2]	Sample Date and Times ^[3]			Accreditation/ Certification ^[4]		Uncertainty ^[5]
					Date	Start	End	Sampling	Analysis	
A2	Hydrogen fluoride	2 ^[7]	<0.1	US EPA 26A	2.5.07	1609	1709	1296	1015	0.1
A2	Cadmium & thallium and their compounds (total)	0.05 ^[8]	0.0046	BS EN 14385	2.5.07	1042	1150	1296	1015	0.0036
A2	Mercury and its compounds	0.05 ^[8]	0.0075	BS EN 13211	2.5.07	1232	1350	1296	1015	0.0028
A2	Sb, As, Pb, Cr, Co, Cu, Mn, Ni & V and their compounds (total)	0.5 ^[9]	0.0865	BS EN 14385	2.5.07	1042	1150	1296	1015	0.0421
A2	Dioxin-like PCBs (WHO-TEQ Humans / Mammals) ^[6]	No limit applies	0.0012 - 0.0012	BS EN 1948	1.5.07	1035	1646	1296	1668	0.0004
A2	Dioxin-like PCBs (WHO-TEQ Fish) ^[6]	No limit applies	0.0001 - 0.0001							0.0001
A2	Dioxin-like PCBs (WHO-TEQ Birds) ^[6]	No limit applies	0.0017 - 0.0017							0.0006

Plant	Quarter	Sample Date	Sample	Total Organic Carbon (%)
Wolverhampton	1 07	29/03/07	Boiler 1 IBA	2.3
Wolverhampton	2 07	02/07/07	Boiler 1 IBA	1.8
Wolverhampton	3 07	20-09-07	Boiler 1 IBA	0.95
Wolverhampton	1 07	29/03/07	Boiler 2 IBA	2.6
Wolverhampton	2 07	02/07/07	Boiler 2 IBA	1.6
Wolverhampton	3 07	20-09-07	Boiler 2 IBA	1.23
Dudley	1 07	29/03/07	Boiler 1 IBA	2.2
Dudley	2 07	25/06/07	Boiler 1 IBA	2.3
Dudley	3 07	20-09-07	Boiler 1 IBA	1.1
Dudley	1 07	29/03/07	Boiler 2 IBA	2.3
Dudley	2 07	25/06/07	Boiler 2 IBA	2
Dudley	3 07	20-09-07	Boiler 2 IBA	1.4

Loss on Ignition (%)
10
15
12.6
18
11
11.9
12
11
8.8
11
9.1
9

LOI Temp = 450C

Mia Cuthy
 07980
 059815
 01902
 352864

Appendix 3 Guidance on Analytical Requirements

The determinands required depend on the objectives of the Sampling Plan and will differ. This section therefore considers determinands for various purposes.

1. Analytical methods to be used by PIR Function

This is not a definitive list but includes the main determinands that should be considered when taking into account the composition of incinerator IBA and APC from those processes described in the Protocols within this document. For specific sites, other determinands may also be required. Further guidance on methods for these can be obtained from a suitably accredited contractor or laboratory.

Table 1

Determinand	Analytical method
Total Dioxins	Method based on EPA 1613*
Total Metals	Methods for the Determination of Metals in Soils, sediments, and Sewage Sludge, and Plants by Hydrochloric-Nitric Acid Digestion, with a note on the determination of Insoluble Metal Contents 1986 ISBN No 0117519081 **
Loss on Ignition	Method based on 2 hours at 550°C ***
Total Organic Carbon	HNC Elemental analyser (based on a method used for sediments)
Total Protein	Aqueous extraction followed by PITC derivitisation and subsequent analysis by HPLC

* This method gives a number of scenarios for extraction, analysis etc. The laboratory should use a method based on EPA 1613 that has been accredited by an external body such as UKAS

** Guidance is to be issued on comparison of methods for metals determination from various matrices

*** This is the method used by Agency NLS, variations do exist that can be discussed with the Agency Officer

The mass of sample to be forwarded to the laboratory is determined by the analysis method. Further information on this can be obtained from the laboratory and the relevant Protocol.

2. Analytical methods to be used to determine whether the Ash is considered as 'Special Waste'.

Table 2 details the determinand limits that are required to be met in determining whether a combined sample of IBA and APC are to be consigned as 'Special Waste' under the Special Waste Regulations 1996 (reference 10). Although a highly alkaline pH itself can determine

*only do TOC
 LOI should be done at 550°C*

Permit Reference Number : AP3435SD

Operator : MES Environmental Ltd

Installation : Dudley EFW Facility

Form Number : Ash1 (dated 04/10/2005)

Reporting of Ash Composition for the period from ...December 2006...to...March 2007...

Ash Composition (TOC/LOI)		
	LOI (%)	% Carbon (TOC) w/w
Bottom Ash (Line 1)	*	2.2
Bottom Ash (Line 2)	*	2.3

*At least one of LOI or TOC to be reported

Ash Composition (Metals, Dioxins, etc.)																	
	Cd %	Tl %	Hg %	Pb %	Cr %	Cu %	Mn %	Ni %	As %	Co %	V %	Zn %	DIOXIN ng/kg	I-TEQ	DIOXIN		
															WHO-TEQ ng/kg		
															Humans/ mammal	Birds	Fish
IBA Line 1	8.0E-4	<2E4	1.1E-4	7.5E-2	1.0E-2	1.6E-1	9.3E-2	1.1E-2	6.7E-4	3.3E-3	4.6E-3	2.7E-1	3.1		3.8	4.9	2.9
IBA Line 2	9.7E-4	<2E4	9.0E-5	4.9E-2	9.4E-3	1.4E-1	9.6E-2	6.3E-3	8.3E-4	2.2E-3	4.6E-3	2.7E-1	3.0		3.6	4.4	3.1
APCR Line 1	7.9E-3	<2E4	2.2E-4	7.4E-2	1.2E-2	4.5E-2	8.4E-2	3.1E-3	1.3E-3	1.5E-3	3.0E-3	5.4E-1	125.1		157.2	233.2	140.3
APCR Line 2	4.7E-3	<2E4	2.0E-4	6.5E-2	1.0E-2	4.2E-2	8.0E-2	4.6E-3	1.10E-3	1.7E-3	6.9E-3	4.5E-1	275.1		325.4	453.6	310.5

Signed
(authorised to sign as representative of Operator)

Date.....

Permit Reference Number : AP3435SD

Operator : MES Environmental Ltd

Installation : Dudley EFW Facility

Form Number : Ash2 (dated 04/10/2005)

Reporting of Ash Solubility for the period from ...December 2006...to...March 2007...

Ash solubility (Metals)												
	Cd mg/kg	TI mg/kg	Hg mg/kg	Pb mg/kg	Cr mg/kg	Cu mg/kg	Mn mg/kg	Ni mg/kg	As mg/kg	Co mg/kg	V mg/kg	Zn mg/kg
Bottom Ash Line 1	8	<2	1.1	750	100	1600	930	110	6.7	33	46	2700
Bottom Ash Line 2	9.7	<2	0.9	490	94	1400	960	63	8.3	22	46	2700
APC Residues Line 1	79	<2	2.2	740	120	450	840	31	13	15	30	5400
APC Residues Line 2	47	<2	2.0	650	100	420	860	46	11	17	69	4500

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Date.....

Permit Reference Number : AP3835SM

Operator : MES Environmental Ltd

Installation : Wolverhampton EFW Facility

Form Number : Ash1 (dated 04/10/2005)

Reporting of Ash Composition for the period from ...December 2006...to...March 2007...

Ash Composition (TOC/LOI)		
	LOI (%)	% Carbon (TOC) w/w
Bottom Ash (Line 1)	*	2.3
Bottom Ash (Line 2)	*	2.6

*At least one of LOI or TOC to be reported

Ash Composition (Metals, Dioxins, etc.)																
	Cd %	Tl %	Hg %	Pb %	Cr %	Cu %	Mn %	Ni %	As %	Co %	V %	Zn %	DIOXIN I-TEQ ng/kg	DIOXIN WHO-TEQ ng/kg		
														Humans/ mammal	Birds	Fish
IBA Line 1	5.3E-4	<2E-4	8.0E-5	3.5E-1	7.4E-3	2.8E-1	7.4E-2	6.5E-3	1.0E-3	1.7E-3	4.3E-3	2.9E-1	6.9	7.1	7.8	6.5
IBA Line 2	6.0E-4	<2E-4	<6E-5	6.8E-2	6.7E-3	1.7E-1	8.0E-2	6.0E-3	1.1E-3	1.5E-3	4.4E-3	2.5E-1	1.1	1.3	1.9	1.3
APCR Line 1	1.9E-2	<2E-4	4.4E-4	1.6E-1	6.8E-3	1.2E-1	5.4E-2	2.7E-3	4.4E-3	1.3E-3	3.0E-3	9.9E-1	146.2	175.4	286.9	157.5
APCR Line 2	2.3E-2	<2E-4	3.1E-4	2.1E-1	5.8E-3	1.9E-1	5.0E-2	2.3E-3	2.7E-3	1.1E-3	2.0E-3	1.3E0	542.2	610.3	1086.8	570.2

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Date.....

Permit Reference Number : AP3835SM

Operator : MES Environmental Ltd

Installation : Wolverhampton EFW Facility

Form Number : Ash2 (dated 04/10/2005)

Reporting of Ash Solubility for the period from ...December 2006...to...March 2007...

Ash solubility (Metals)												
	Cd mg/kg	Tl mg/kg	Hg mg/kg	Pb mg/kg	Cr mg/kg	Cu mg/kg	Mn mg/kg	Ni mg/kg	As mg/kg	Co mg/kg	V mg/kg	Zn mg/kg
Bottom Ash Line 1	5.3	<2	0.8	3500	74	2800	740	65	10	17	43	2900
Bottom Ash Line 2	6.0	<2	<0.6	680	67	1700	800	60	11	15	44	2500
APC Residues Line 1	190	<2	4.4	1600	68	1200	540	27	44	13	30	9900
APC Residues Line 2	230	<2	3.1	2100	58	1900	500	23	27	11	20	13000

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Permit Reference Number : AP3435SD

Operator : MES Environmental Ltd

Installation : Dudley EFW Facility

Form Number : Ash1 (dated 04/10/2005)

Reporting of Ash Composition for the period from ...March 2007...to...June 2007...

Ash Composition (TOC/LOI)		
	LOI (%)	% Carbon (TOC) w/w
Bottom Ash (Line 1)	*	2.3
Bottom Ash (Line 2)	*	2.0

*At least one of LOI or TOC to be reported

Ash Composition (Metals, Dioxins, etc.)																
	Cd %	TI %	Hg %	Pb %	Cr %	Cu %	Mn %	Ni %	As %	Co %	V %	Zn %	DIOXIN I-TEQ ng/kg	DIOXIN WHO-TEQ ng/kg		
														Humans/ mammal	Birds	Fish
IBA Line 1	7.3E-4	<2E4	1.0E-4	3.4E-2	1.2E-2	2.5E-1	1.00E-1	1.9E-2	5.8E-4	4.3E-3	2.3E-3	3.2E-1	2.8	3.2	6.7	2.6
IBA Line 2	1.9E-4	<2E4	9.0E-5	5.6E-2	9.3E-3	2.6E-1	8.8E-2	1.1E-2	5.1E-4	9.5E-3	2.2E-3	3.1E-1	1.1	1.5	2.2	1.0
APCR Line 1	1.2E-2	<2E4	2.9E-4	8.6E-2	9.7E-3	6.1E-2	6.6E-2	4.6E-3	1.1E-3	1.8E-3	1.3E-3	6.0E-1	726.2	798.2	1331.1	779.6
APCR Line 2	8.0E-3	<2E4	3.2E-4	6.8E-2	1.0E-2	4.9E-2	7.7E-2	3.0E-3	9.7E-4	1.7E-3	1.3E-3	5.4E-1	404.6	437.8	810.3	415.7

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Form Number : Ash2 (dated 04/10/2005)

Reporting of Ash Solubility for the period from ...March 2007...to...June 2007...

Ash solubility (Metals)												
	Cd mg/kg	Tl mg/kg	Hg mg/kg	Pb mg/kg	Cr mg/kg	Cu mg/kg	Mn mg/kg	Ni mg/kg	As mg/kg	Co mg/kg	V mg/kg	Zn mg/kg
Bottom Ash Line 1		<2										
Bottom Ash Line 2		<2										
APC Residues Line 1		<2										
APC Residues Line 2		<2										

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Installation : Wolverhampton EFW Facility

Form Number : Ash1 (dated 04/10/2005)

Reporting of Ash Composition for the period from ...March 2007...to...June 2007...

Ash Composition (TOC/LOI)		
	LOI (%)	% Carbon (TOC) w/w
Bottom Ash (Line 1)	*	1.8
Bottom Ash (Line 2)	*	1.6

*At least one of LOI or TOC to be reported

Ash Composition (Metals, Dioxins, etc.)																
	Cd %	Tl %	Hg %	Pb %	Cr %	Cu %	Mn %	Ni %	As %	Co %	V %	Zn %	DIOXIN I-TEQ ng/kg	DIOXIN WHO-TEQ ng/kg		
														Humans/ mammal	Birds	Fish
IBA Line 1	1.3E-3	<2E-4	9.0E-5	5.7E-2	8.8E-3	1.9E-1	7.7E-2	8.2E-3	1.0E-3	1.5E-3	2.5E-3	3.3E-1	5.6	6.0	8.0	4.7
IBA Line 2	1.0E-3	<2E-4	<6E-5	1.2E-1	7.6E-3	1.5E-1	7.2E-2	6.1E-3	8.0E-4	1.8E-3	2.5E-3	2.6E-1	25.5	29.7	33.8	23.7
APCR Line 1	1.8E-2	<2E-4	4.8E-4	1.5E-1	5.7E-3	6.4E-2	4.6E-2	2.4E-3	1.9E-3	1.0E-3	1.3E-3	1.0E0	499.1	579.2	765.1	487.2
APCR Line 2	9.7E-3	<2E-4	4.1E-4	9.2E-2	5.8E-3	4.6E-2	5.5E-2	2.6E-3	1.6E-3	1.5E-3	2.0E-3	6.0E-1	1368.8	1592.0	2174.4	1441.4

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Form Number : Ash2 (dated 04/10/2005)

Reporting of Ash Solubility for the period from ... March 2007...to...June 2007...

Ash solubility (Metals)												
	Cd mg/kg	TI mg/kg	Hg mg/kg	Pb mg/kg	Cr mg/kg	Cu mg/kg	Mn mg/kg	Ni mg/kg	As mg/kg	Co mg/kg	V mg/kg	Zn mg/kg
Bottom Ash Line 1	13	<2	0.9	570	88	1900	770	82	10	15	25	3300
Bottom Ash Line 2	10	<2	<0.6	1200	76	1500	720	61	8	18	25	2600
APC Residues Line 1	180	<2	4.8	1500	57	640	460	24	19	10	13	10000
APC Residues Line 2	97	<2	4.1	920	58	460	550	26	16	15	20	6000

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Date.....