

WARD

Ward Nottingham_Protocol for Monitoring Point Source Emissions to Air at point A1a

This protocol summarises the proposals to undertake representative monitoring of the air discharged from metal shredder operations of the emissions to air from point A1a shown on the plan in Schedule 7 including the parameters to be monitored, frequencies of monitoring and methods to be used.

The protocol has been written with reference to guidance for “Monitoring Stack Emissions: Measurement Locations”.

Once approved by the Environment Agency, a copy of this protocol will be provided to relevant employees as well as all Site Managers and Supervisors and will form an integral part of the sites Environment Management System.

Site Specific Protocol (SSP)

As prescribed in the Environment Agency MCERTS Performance Standard, a Site Specific Protocol (SSP) will be undertaken by an MCERTS Level II qualified consultant. The SSP will include full details with respect to the determinants to be sampled, the methodologies to be used, sample port requirements, sampling platform(s) requirements, access and egress requirements, and health and safety requirements.

The key points are summarised below:

Health & Safety Considerations

Monitoring will be undertaken with due regard for Health and Safety considerations, such as safe access to monitoring locations, manual handling and PPE etc.

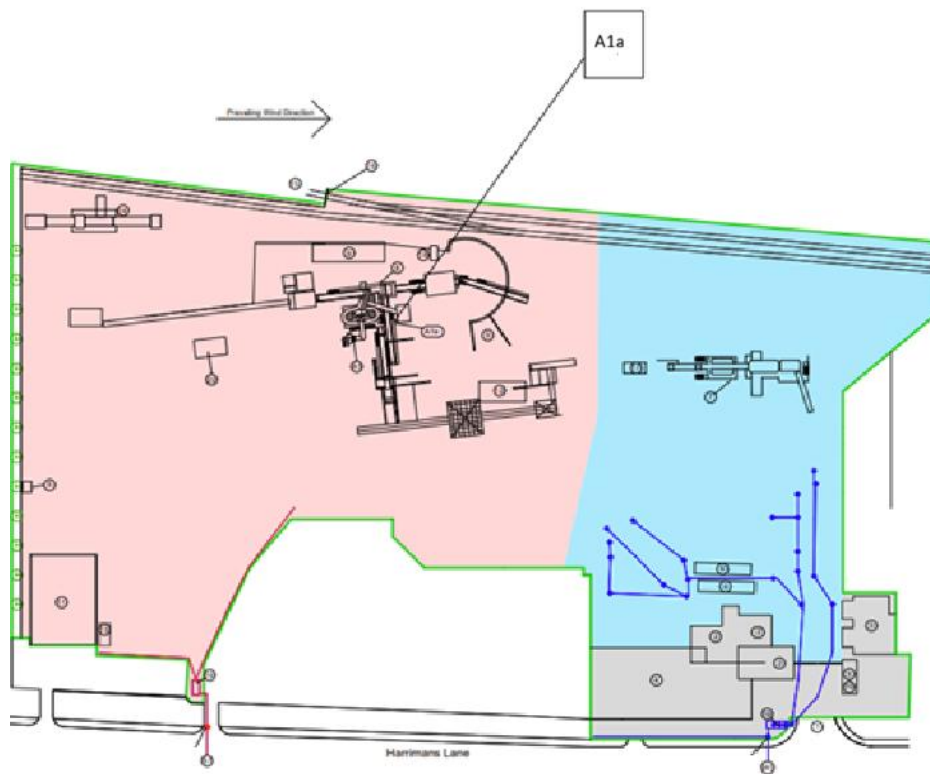
The SSP will detail that CES Environmental Instruments Ltd Technicians or suitably qualified subcontractors (the technicians) will be required to report to the Ward nominated employee on each visit. A site induction will be carried out prior to the first visit. There will be a requirement to sign in and out and a permit to work will be required. The nominated Ward employee will liaise with the technicians to ensure safe access to the monitoring location and co-ordinate liaison between the technicians and Ward operational employees as required.

Sampling locations

The emission point is reference A1a shown in Figure 1.

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Figure 1:



Sampling Frequency

Samples will be taken 6 monthly and as per the permit requirements set out below in Table 1.

Table 1 – Point source emissions to air – emission limits and monitoring requirements

Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency (Note 1) (Note 2)	Monitoring standard or method
A1a Emissions control system exhaust from metal shredder	Metal shredder air extraction and abatement system	Dust	5 mg/m ³	Average value of 3 consecutive measurements of at least 30 minutes	6 monthly	EN 13284-1
		Total VOCs	-	Average value of 3 consecutive measurements of at least 30 minutes	6 monthly	EN 12619

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Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency (Note 1) (Note 2)	Monitoring standard or method
		Brominated flame retardants (Note 3)	-	Average value of 3 consecutive measurements of at least 30 minutes	Annually	CEN TS 13649
		Dioxin-like polychlorinated biphenyls (PCBs) (Note 3)	-	One sampling period of at least 6 hours	Annually	EN 1948-1, 2, 4. (Note 4)
		Metals (As, Cd, Co, Cr, Cu, Mn, Ni, Pb, Sb, Se, Tl, V) (Note 3)	-	Average value of 3 consecutive measurements of at least 30 minutes	Annually	EN 14385
		Dioxins and furans (PCDD/F) (Note 3)	-	One sampling period of at least 6 hours	Annually	EN 1948-1, 2, 3 (Note 4)
<p>Note 1: An alternative monitoring frequency may be agreed in writing with Environment Agency following completion of IC 9 (a) and (b) (IC for emissions inventory).</p> <p>Note 2: Monitoring frequencies may be reduced with the written agreement of the Environment Agency if emission levels are proven to be sufficiently stable</p> <p>Note 3: This monitoring requirement and limit only applies when the substance is present in the waste gas stream</p> <p>Note 4: Instead of EN 1948-1, sampling may also be carried out according to CEN/TS 1948-5.</p>						

Parameters/Determinants

Parameters / determinants to be monitored are summarised in Table 2.

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Table 2 – Parameters/determinants

Determinand
Particulate Matter (PM)
Brominated Flame Retardants
Total, Organic Compounds (TOC)
VOC Top 10 Screen (GCMS Screen)
Total Cadmium (Cd) and Thallium (Tl)
Total Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Vanadium (V) & Selenium (Se)
Dioxins / Furans (I-TEQ)
Dioxins like PCBs
Moisture (H ₂ O)

Monitoring Methodology

The monitoring will be carried out in accordance with documented procedures and in accordance with UKAS / MCERTS accreditation, as far as the sampling facilities on the day of testing will allow. Any deviations from standard methodology will be stated in the final monitoring report. The methodology, standards and accreditation are presented below.

Methodology, standards and accreditation

Determinand	Standard Method	CESEI Work Instruction	Maximum Allowable Uncertainty (±)
Particulate Matter (PM)	BS EN 13284-1	WI4/1	20%
Brominated Flame Retardants	-	-	-
Total Organic Compounds (TOC)	BS EN 12619	WI4/28	25%
VOC Top 10 Screen	BS EN 13649	WI 4/57	25%
Total Cadmium (Cd) and Thallium (Tl)	BS EN 14385	WI4/30	15%
Total Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Vanadium (V) & Selenium (Se)	BS EN 14385	WI4/30	15%
Dioxins / Furans (I-TEQ)	BS EN 1948	WI4/31	30%
Dioxins like PCBs	BS EN 1948	WI4/31	30%
Moisture (H ₂ O)	BS EN 14790	WI4/40	20%

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Details of Monitoring

Determinand	Expected Emissions Values	Equipment Used	Analysis Method
Particulate Matter (PM)	<1 mg/m ³	Gravimat	Gravimetric
Brominated Flame Retardants	0.0000 mg/m ³	Tube (Silica 226-119)	GC-MS
Total Organic Compounds (TOC)	5-20 mgC/m ³	FID Analyser	Flame Ionisation
VOC Top 10 Screen	0.4431 mg/m ³ (Trimethyldecane)	226-09 Tube (Charcoal)	GC/MS
Total Cadmium (Cd) and Thallium (Tl)	0.0004 mg/m ³	MST	ICPMS
Total Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Vanadium (V) & Selenium (Se)	0.0069 mg/m ³	MST	ICPMS
Dioxins / Furans (I-TEQ)	0.0000-0.002 ng/m ³	MST	GC-MS
Dioxins like PCBs	0.0000-0.0042 ng/m ³	MST	GC-MS
Moisture (H ₂ O)	1-3%	MST	Gravimetric

Manual Methods

Determinands	Samples		Field Blank	Nozzle Size	Min Sample Volume	Sample Flow Rate	UKAS & MCERTS Accredited
	No	Time					
Particulate Matter (PM)	3	60mins	1	5.2mm	100l	1.363m ³ /h	Y
Moisture (H ₂ O)	2	60mins	-	-	>50l	-	Y
Brominated Flame Retardants	1	60mins	1	-	-	-	Y
VOC Top 10 Screen	1	60mins	1	-	2l	50ml/min	N
Total Cadmium and Thallium	1	60mins	1	6.4mm	1500l	0.9m ³ /h	Y
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V & Se	1	60mins	1	6.4mm	1500l	0.9m ³ /h	Y
Dioxins /Furans (I-TEQ)	1	360mins	1	6.4mm	6000l	1.0m ³ /h	Y
Dioxins like PCBs	1	360mins	1	6.4mm	6000l	1.0m ³ /h	Y

Comments:- Sample volume and sample flow rate are at reference conditions
Sample times are calculated from the total sample time equally divided by the no. of sample positions per plane. The minimum sample time per position is 3 minutes.

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Instrumental Methods

Determinand	Sample Duration	Analyser Range	Calibration Gas Concentration	UKAS & MCERTS Accredited
Total Organic Compounds (TOC)	1x120mins	100ppm	80.8ppm	Y

Range and Limit of Detection

Determinand	SRM Measurement Concentration Range	Limit of Detection
Particulate Matter (PM)	<50 mg/m ³	0.09mg
Brominated Flame Retardants	-	-
Total Organic Compounds (TOC)	0-20 mgC/m ³	0.1ppm
VOC Top 10 Screen	0.5-2000mgCm ³	5µg
Total Cadmium (Cd) and Thallium (Tl)	0.005-0.5 mg/m ³	0.5µg/ml
Total Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Vanadium (V) & Selenium (Se)	0.005-0.5 mg/m ³	0.5µg/ml
Dioxins / Furans (I-TEQ)	-	-
Dioxins like PCBs	-	-
Moisture (H ₂ O)	0-40%	0.5%

Sample Analysis Methods

Determinands	Method	Laboratory	UKAS Accredited
Particulate Matter (PM)	Gravimetric	CESEI	Y
Brominated Flame Retardants	Silica 226-119 Tube	RPS	Y
Total Organic Compounds (TOC)	FID	CESEI	Y
VOC Top 10 Screen	GC/MS Charcoal 226-09 Tube	RPS	N
Total Cadmium (Cd) and Thallium (Tl)	ICPMS	RPS	Y
Total Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Vanadium (V) & Selenium (Se)	ICPMS	RPS	Y
Dioxins / Furans (I-TEQ)	GC-MS	Marchwood	Y
Dioxins like PCBs	GC-MS	Marchwood	Y

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Employee Training & Responsibility

The monitoring will be undertaken by suitably qualified stack emissions monitoring team (the technicians) who hold all the relevant MCERTS accreditation for the emissions monitoring proposed. Sample teams will be led by a Team Leader with an MCERTS Level II qualification and technical endorsements appropriate to the type of monitoring being carried out.

Ward employees will be nominated to liaise with the technicians, to ensure the necessary site inductions have been completed, permits to work issued, arrange safe access to the monitoring locations etc. and to liaise with the technicians and oversee the monitoring. The nominated employee and other relevant employees (supervisors/ managers) will receive instruction and training in respect of this protocol.

The Site Manager will have overall responsible for ensuring that the technicians undertake monitoring in accordance with the protocol and to nominate the employee to liaise with the technicians and oversee the monitoring.

Sampling Equipment

The sampling equipment will be provided by the technicians. Sampling equipment will be detailed in the SSP.

Results

The results from the monitoring will be used to inform the H1 assessment.

Results will be compared to the emission limit as detailed in Table S3.1 of the permit or other level as agreed with the Environment Agency. Notification of a breach of the limit will be made using the form provided in Schedule 5 of the permit.

Results will be reported to the Environment Agency every 6 months unless otherwise agreed with the Environment Agency, using Form Air 1.

End of Protocol

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