

Viridor

Transforming waste™

**The Environmental Permitting (England
and Wales) Regulations 2010**

**Permit: EPR/LP3030XA
Cardiff Energy Recovery Facility**

**Environmental Monitoring Report
Q2 2020**

1 April – 30 June 2020

Prepared by:
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Quality Assurance

This report has been prepared with all reasonable skill, care and diligence. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

Report Details

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1. Introduction

Cardiff Energy Recovery Facility is located immediately north of Cardiff Docks. The facility has an annual throughput of up to 425,000 tonnes per year of residual municipal and C&I waste and has the capability of exporting approximately 30 MW of electrical power from the process.

In accordance with the requirements of Permit EPR/LP3030XA issued by Natural Resources Wales to Viridor Waste Management Limited (Viridor) on 4 May 2018, Viridor is required to submit an Environmental Monitoring Report on a quarterly basis.

This report summarises the environmental data collected at the site during the Q2 of 2020 (1 April – 30 June 2020).

The report will cover the following areas of environmental monitoring:

Section 2 – Point Source Emissions to Air

Section 3 – Point Source Emissions to Water

Section 4 – Residue Quality Monitoring Requirements

2. Point Source Emissions to Air

2.1. Introduction

Permit Condition 3.5.1(a) and Tables S3.1 and S3.1(a) require Viridor to undertake performance monitoring of the point source emissions to air arising at sample points A1 and A2 on a continuous and periodic basis.

A summary of the continuous point source emissions to air monitoring data at sample point A1 and A2, for the period, is included as Table 1.

The measurement frequency for periodic point source emissions to air monitoring data at sample point A1 and A2 is on a bi-annual basis, after 12 months of operation.

2.2 Commentary on Data

The concentrations recorded were obtained by running a quarterly continuous emissions report on CDAS software report.

Line 1 was in operation for 2169.5 hours (99.33%) of the quarter and Line 2 was in operation 2005.15 hours (91.74%) of the quarter. (AMJ = 91 days = 2,184 hours).

2.3 Schedule Notices Issued

No schedule notifications were issued by during the second quarter of 2020.

Table 1: Emissions to Air from A1 and A2 (CEMS)

Releases to Air from Incinerators – Continuous Monitoring – Air 2								
Parameter	Limit	Reference Period	A1		A2		Test Method	Uncertainty**
			Max	Avg	Max	Avg		
Oxides of nitrogen	200 mg/m ³	Daily mean	183.4	169.6	197.0	181.9	BS EN 15267-3	
	400 mg/m ³	½ hourly mean	248.7		307.7			
Particulate Matter	10 mg/m ³	Daily mean	0.6	0.5	0.6	0.5		
	30 mg/m ³	½ hourly mean	1.0		1.0			
Total Organic Carbon (TOC)	10 mg/m ³	Daily mean	1.1	0.1	0.3	0.1		
	20 mg/m ³	½ hourly mean	18.6		3.0			
Hydrogen chloride	10 mg/m ³	Daily mean	9.0	8.2	9.3	8.3		
	60 mg/m ³	½ hourly mean	23.8		26.1			
Sulphur dioxide	50 mg/m ³	Daily mean	30.8	17.5	24.5	13.7		
	200 mg/m ³	½ hourly mean	53.3		88.9			
Carbon monoxide	50 mg/m ³	Daily mean	196.7	10.7	117.2	8.5		
	100 mg/m ³	½ hourly mean*						
Ammonia	No limit set	Daily mean	1.4	1.4	4.1	1.6		

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Table 2: Emissions to Air from A1 and A2 Periodic

Substance / Parameter	Emission Limit Value	Reference Period	A1 Result	Uncertainty	Sample Date / Time	A2 Result	Uncertainty	Sample Date / Time	Test Method
Nitrous oxide	None set mg/m ³	Periodic over 30 minutes. Maximum 8 hours	11.1	0.8	14th April 2020 12:38-13:38	10.8	1	14th April 2020 11:10-12:10	EN 14792
Hydrogen fluoride	2 mg/m ³		0.02	0.016	14th April 2020 14:52-15:52	0.02	0.02	16th April 2020 14:40-15:40	SRM - BS ISO 15713
Hg and its compounds	0.05 mg/m ³		0.0055	0.0006	14 th April 2020 12:38-14:41	0.0031	0.0006	15th April 2020 15:10-17:15	SRM - BS EN 13211 / MID 14385
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds	0.5 mg/m ³		0.135	0.011		0.182	0.015		EN 14385
Dioxins & Furans (I-TEQ)	0.1 ng/m ³	Mean over period minimum 6 hours, maximum 8 hours	0.0278	0.0084	15th April 2020 08:40-14:50	0.0138	0.0042	16th April 2020 18:17-14:25	SRM - BS EN 1948-1
PCBs (WHO-TEQ Humans / Mammals)	None set ng/m ³		0.00146	0.00044		0.00083	0.00025		SRM - BS EN 1948-1
PCBs (WHO-TEQ Fish)	None set ng/m ³		0.00007	0.00002		0.00004	0.00001		SRM - BS EN 1948-1
PCBs (WHO-TEQ Birds)	None set ng/m ³		0.00330	0.00100		0.00241	0.00073		SRM - BS EN 1948-1
Dioxins/Furans (WHO-TEQ Humans/Mammals)	None set ng/m ³		0.0259	0.0078		0.0129	0.0039		SRM - BS EN 1948-1
Dioxins/Furans (WHO-TEQ Fish)	None set ng/m ³		0.0283	0.0085		0.0139	0.0042		SRM - BS EN 1948-1

Dioxins/Furans (WHO-TEQ Birds)	None set ng/m ³		0.0514	0.0155		0.0282	0.0085		EN 1948 1-3
Anthanthrene	None set µg/m ³	Mean over period minimum 6 hours, maximum 8 hours	0	44.2	14 April 2020 12:38-14:41	0	50.1%	15th April 2020 15:10-17:15	SRM - BS ISO 11338 - 1
Benzo(a)anthracene	None set µg/m ³		< 0.0006	202.3		0	169.4		
Benzo(a)pyrene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Benzo(b)fluoranthene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Benzo(b)naphtho(2,1-d)thiophene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Benzo(c)phenanthrene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Benzo(ghi)perylene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Benzo(k)fluoranthene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Cholanthrene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Chrysene	None set µg/m ³		0.00	88.6		0.00	69.4		
Cyclopenta(cd)pyrene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Dibenzo(ai)pyrene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Dibenzo(ah)anthracene	None set µg/m ³		< 0.0006	202.3		< 0.0007	202.3		
Fluoranthene	None set µg/m ³		0.00	42.7		0.01	36.0		
Indeno(123-cd)pyrene	None set µg/m ³	< 0.0006	202.3	< 0.0007	202.3				

Naphthalene	None set $\mu\text{g}/\text{m}^3$	0.17	30.2		0.21	30.2		
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3. Point Source Emissions to Water

3.1. Introduction

Permit Condition 3.5.1(a) and Table S3.2 requires Viridor to ensure sample point W1 is free of oil, grease and visible solids.

3.2 Commentary on Data

During the quarter monitoring point W1 has remained free of oil and grease.

3.3 Schedule Notices Issued

No Permit limit exceedances were recorded during the review period for emissions to water.

4. Residue Quality Monitoring Requirements

4.1. Introduction

Permit Condition 3.5.1(c) and Table S3.5 require Viridor to undertake residue quality monitoring at quarterly intervals following the first year of operation. This applies for both bottom ash and air pollution control residues.

4.2 Commentary on Data

Incinerator Bottom Ash

Figures shown in Table 3 detail the quarterly analysis undertaken in line with the criteria laid out in the ESA protocol.

Air Pollution Control Residues

Figures shown in Table 3 detail the analysis undertaken during the quarter.

Table 3: Residue Quality

Residue quality					
Parameter	Limit	Normal Operation			
		Bottom ash		APC Residues	
		Line 1	Line 2	Line 1	Line 2
		Received at lab 04_06_2020 Reported to Viridor 09_06_2020	Received at lab 04_06_2020 Reported to Viridor 09_06_2020		
Total Organic Carbon	3%	0.8%	1.3%		
		Composite			
		Received at lab 01_05_2020 Reported to Viridor 14_05_2020		Received at lab 16_04_2020 Metals reported 20_04_2020 D+F reported 27_04_2020	Received at lab 16_04_2020 Metals reported 20_04_2020 D+F reported 27_04_2020
Antimony (mg/kg)	---	153		843	836
Cadmium (mg/kg)	---	22.9		478	530
Thallium (mg/kg)	---	<0.1		1.2	1.2
Mercury (mg/kg)	---	<0.5		8.05	6.43

Lead (mg/kg)	---	554.5	1693	1807
Chromium (mg/kg)	---	94.5	48.1	48.6
Copper (mg/kg)	---	1780.9	744	790
Manganese (mg/kg)	---	1100	435	442
Nickel (mg/kg)	---	65.4	28.5	27.9
Arsenic (mg/kg)	---	16.3	102	59.7
Cobalt (mg/kg)	---	27.2	6.8	6.3
Vanadium (mg/kg)	---	26.2	11.8	12.1
Zinc (mg/kg)	---	2745.2	18050	18990
Dioxins / Furans (WHO 2005 TEQ) (ng/kg)	---	Dioxins = 1.79028 Furans = 2.44268	Dioxins = 122.444 Furans = 254.904	Dioxins = 143.602 Furans = 264.354
PCB (WHO 2005 TEQ) (ng/kg)	---	0.15396	11.4495	4.90073