Viridor Transforming waste™

The Environmental Permitting (England and Wales) Regulations 2010

Permit: EPR/LP3030XA
Cardiff Energy Recovery Facility

Environmental Monitoring Report
Q4 2020

1 October – 30 December 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 Q4 of 2020 (1 October – 31 December 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 1849 hours (83.7%) of the quarter and
Line 2 was in operation for 2204 hours (99.8%) of the quarter.
(when OND = 92 days = max 2,208 hours).

2.3 Schedule Notices Issued

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

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	182.2	170	186.5	183.0	BS EN 15267-3	
	400 mg/m^3	½ hourly mean	287.8		298.7			
Particulate Matter	10 mg/m^3	Daily mean	0.6	0.5	0.5	0.5		
	30 mg/m^3	½ hourly mean	0.9		1.0			
Total Organic Carbon (TOC)	10 mg/m^3	Daily mean	0.6	0.2	0.4	0.2		
	20 mg/m^3	½ hourly mean	4.1		1.9			
Hydrogen chloride	10 mg/m^3	Daily mean	9.2	8.0	9.4	8.4		
	60 mg/m^3	½ hourly mean	30.6		38.6			
Sulphur dioxide	50 mg/m^3	Daily mean	34.2	17.2	30.4	18.8		
	200 mg/m^3	½ hourly mean	81.5		96.4			
Carbon monoxide	50 mg/m^3	Daily mean	13.7	7.2	17.0	11.0		
	100 mg/m^3	½ hourly mean*						
Ammonia	No limit set	Daily mean	2.3	2.3	12.3	4.2		

*Note. ½ hourly monitoring for CO is no longer required in the latest version of the permit
**Note. CEMS data figures are adjusted for the method uncertainty

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Table 2: Emissions to Air from A1 and A2 Periodic

Substance / Parameter	Emission Limit Value	Reference Period	A1 Result	Uncer-tainty	Sample Date / Time	A2 Result	Uncer-tainty	Sample Date / Time	Test Method
Nitrous oxide	None set mg/m^3	Periodic over 30 minutes. Maximum 8 hours	7.9	0.87	15th December 2020 12:00-13:00	13.6	0.087	15th December 2020 13:10-14:10	EN 14792
Hydrogen fluoride	2 mg/m^3		0.01	0.01	14th December 2020 13:35 -14:35	0.01	0.009	14th December 2020 12:20 - 13:20	SRM - BS ISO 15713
Hg and its compounds	0.05 mg/m^3		0.0033	0.0006	14th December 2020 14:50 -16:55	0.0027	0.0005	18th December 2020 07:50 - 09:58	SRM - BS EN 13211 / MID 14385
Sb, As, Pb, Cr, Co, Cu, Mn, Ni, V and their compounds	0.5 mg/m^3		0.285	0.0042		0.0247	0.0035		EN 14385
Dioxins & Furans (I-TEQ)	0.1 ng/m^3	Mean over period minimum 6 hours, maximum 8 hours	0.0088	0.0027	16th December 2020 09:00 – 15:10	0.0083	0.0025	17th December 2020 08:20 - 14:55	SRM - BS EN 1948-1
PCBs (WHO-TEQ Humans / Mammals)	None set ng/m^3		0.0005	0.0001		0.0005	0.0001		SRM - BS EN 1948-1
PCBs (WHO-TEQ Fish)	None set ng/m^3		0.00002	0.000003		0.0000	0.0000		SRM - BS EN 1948-1
PCBs (WHO-TEQ Birds)	None set ng/m^3		0.0012	0.0002		0.0014	0.0002		SRM - BS EN 1948-1

Dioxins/Furans (WHO-TEQ Humans/Mammals)	None set ng/m^3		0.0084	0.0025		0.0079	0.0024		SRM - BS EN 1948-1
Dioxins/Furans (WHO-TEQ Fish)	None set ng/m^3		0.0091	0.0028		0.0085	0.0026		SRM - BS EN 1948-1
Dioxins/Furans (WHO-TEQ Birds)	None set ng/m^3		0.0127	0.0038		0.0125	0.0038		EN 1948 1-3
Anthanthrene	None set µg/m^3	Mean over period minimum 6 hours, maximum 8 hours	< 0.0011	207.3	15th December 2020 09:55-16:10	< 0.001	202.6	15th December 2020 09:55 - 16:15	SRM - BS ISO 11338 - 1
Benzo(a)anthracene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Benzo(a)pyrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Benzo(b)fluoranthene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Benzo(b)naptho(2,1-d)thiophene	None set µg/m^3		0	207.3		< 0.001	202.6		
Benzo(c)phenanthrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Benzo(ghi)perylene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Benzo(k)fluoranthene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Cholanthrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Chrysene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Cyclopenta(cd)pyrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Dibenzo(ai)pyrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Dibenzo(ah)anthracene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		

Fluoranthene	None set µg/m^3		0.00	82.8		0.00	53.2		
Indeno(123-cd)pyrene	None set µg/m^3		< 0.0011	207.3		< 0.001	202.6		
Naphthalene	None set µg/m^3		0.20	54.5		0.36	32.2		

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 30_10_2020 Reported to Viridor 04-11-2020	Received at lab 30_10_2020 Reported to Viridor 04-11-2020		
Total Organic Carbon	3%	1.0%	1.2%		
		Composite			
		Received at lab 17_12_2020 Reported to Viridor 06_01_2021		Received at lab 06_11_2020 Metals reported 01_11_2020 D+F reported 18_11_2020	Received at lab 30_10_2020 Metals reported 04_11_2020 D+F reported 09_11_2020
Antimony (mg/kg)	---	151		979	1003
Cadmium (mg/kg)	---	33.8		264	275
Thallium (mg/kg)	---	<0.1		0.8	0.9
Mercury (mg/kg)	---	<0.5		5.01	7.61

Lead (mg/kg)	---	511.7	1800	1750
Chromium (mg/kg)	---	127	52.5	59.3
Copper (mg/kg)	---	2331.4	671	736
Manganese (mg/kg)	---	1136	468	460
Nickel (mg/kg)	---	88.5	26.9	26.2
Arsenic (mg/kg)	---	20.0	75.9	61.6
Cobalt (mg/kg)	---	35.7	8.3	8.5
Vanadium (mg/kg)	---	36.6	11.0	<10
Zinc (mg/kg)	---	3032.6	12800	14367
Dioxins / Furans (WHO 2005 TEQ) (ng/kg)	---	*Received at lab 24_11_2020* *Reported to Viridor 07_12_2020* *Dioxins = 2.5033* *Furans = 2.5266*	Dioxins = 165.616 Furans = 294.887	Dioxins = 166.696 Furans = 289.52
PCB (WHO 2005 TEQ) (ng/kg)	---	*Received at lab 24_11_2020* *Reported to Viridor 07_12_2020* *0.6572*	10.804	8.97136