

**Annual performance report for:**  
**Bournemouth Waste to Energy facility**  
**Permit Number: EPR/PP3530XK**  
**Year: 2022**

This report is required under the Industrial Emissions Directive's Article 55(2) requirements on reporting and public information on waste incineration plants and co-incineration plants, which require the operator to produce an annual report on the functioning and monitoring of the plant and make it available to the public.

## 1. Introduction

Name and address of plant	The Incinerator Complex Royal Bournemouth Hospital Castle Lane East Bournemouth BH7 7DW
Description of waste input	The Bournemouth plant incinerates clinical waste, including clinical wastes classed as hazardous under the Hazardous Waste Regulations 2005. The bulk of the waste is produced at hospitals, but also includes smaller quantities from doctors' surgeries, dentists, health clinics, residential and nursing homes, and from medical research facilities. The hazardous wastes incinerated include infectious waste and waste containing cytotoxic or cytostatic medicines.  The plant also incinerates small amounts of specialised wastes.
Operator contact details if members of the public have any questions	<a href="mailto:supportuk@stericycle.com">supportuk@stericycle.com</a>

## 2. Plant description

<p>The Bournemouth Waste to Energy Facility is permitted to process 950 kilograms per hour and is of pulse hearth design.</p> <p>Healthcare wastes are loaded mechanically direct from the wheeled bins used to deliver the waste, into the hopper which provides the opportunity to visually inspect the waste before it is tipped into the incinerator charging hopper. Any non-conformant waste can be identified, intercepted and reported in-line with company procedures. Errors in waste content are flagged for follow up with the waste producer.</p> <p>Once inspection is complete, the waste is charged into the incinerator where the combustion process commences. The waste is burnt at a minimum temperature of 850°C, where it burns out to produce an ash. The residues are then dropped into an ash quench pit at the end of the process before being transferred into a skip.</p> <p>The flue gases from the incineration process then pass through a secondary chamber, or afterburner, where any gaseous products of combustion are burned out under oxygen rich conditions. This stage is designed to destroy any carbon monoxide, volatile organic compounds, and dioxins and furans produced by the combustion process.</p> <p>The flue gases are then cooled by directing them through a waste-heat boiler and economiser, before they pass into the final, abatement section of the process. Powdered lime (calcium hydroxide) and powdered activated carbon are added to the flue gases entering the abatement process to remove acid gases, heavy metals and residual dioxins and furans before discharge to atmosphere from the stack. The flue gases being</p>
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discharged from the stack are continuously monitored for hydrogen chloride, sulphur dioxide, carbon monoxide, oxides of nitrogen, particulate matter (dust), volatile organic compounds and oxygen.

The incineration process produces two residues; bottom ash and spent lime.

### 3. Summary of Plant Operation

#### 3.1 Annual Production Data

Hazardous waste received	3891.6	tonnes
Non-hazardous waste received	2038.4	tonnes
Cytotoxic & cytostatic wastes incinerated	97.7	tonnes
Total Waste Incinerated	6027.7	tonnes
Total plant operational hours	7217	hours
Total hours of "abnormal operation" (see permit for definition)	0	hours
Total quantity of incinerator bottom ash (IBA) produced	962	tonnes
Disposal or recovery route for IBA	D1 - Landfill	
Did any batches of IBA test as hazardous? If yes, state quantity	None	
Total quantity of air pollution control (APC) residues produced	566	tonnes
Disposal or recovery route for APC residues	D13 - Blending or mixing prior to submission to any of the operations numbered D1 to D12	
Total electricity energy generated	2694	MWh

### 3.2 Annual performance parameters

The performance parameters for the facility were as follows:

#### Waste Disposal and Recovery

Waste	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes	APC	566	0
2) Non-Hazardous Wastes	Ash	962	0

Trends in Waste Disposal and Recovery			
Year	Parameter		
	Named Waste	Total Waste	Waste per unit output
2021	total Waste	1431	0.23
2022	total Waste	1528	0.25

Reduction in usage associated reduction in quantity of waste processed, along with optimisations.

#### Water Usage

	Usage (m <sup>3</sup> )	Specific Usage (m <sup>3</sup> /t)
Mains water	4288	0.72
Water usage decreased associated with reduced usage of water sprays within process		

Trends in Water Usage			
Year	Parameter		
	Named Water source	Total Water usage	
2021	Water	4304	0.69
2022	Water	4288	0.71

#### Energy Usage

Energy Usage			
Energy Source	Quantity	Primary Energy (MWh)	CO <sub>2</sub> Produced (tonnes)
Electricity *	MWh	3,042	505
Natural Gas	MWh	324	62

Trends in Energy Usage			
Year	Parameter		
	Primary Energy usage		
2021	total energy	3629	0.59
2022	total energy	3,365	0.56

\* Conversion factor for delivered electricity to primary energy = 2.6

#### Performance Indicators

Parameter	Annual Average	Units
Gas Used	54	kwh/tonnes WI
Mass of bottom ash produced	0.16	kg \tonne WI
Mass of APC residues produced	0.09	kg \tonne WI
Mass of other solid residues	N/A	
Mass of carbon used	0.004	kg \tonne WI
Mass of lime used	0.078	kg \tonne WI
Potable Water Use	0.71	m3/tonne WI
Waste Hazard Score	4	
Waste Disposal Score	70	

## 4. Summary of Plant Emissions

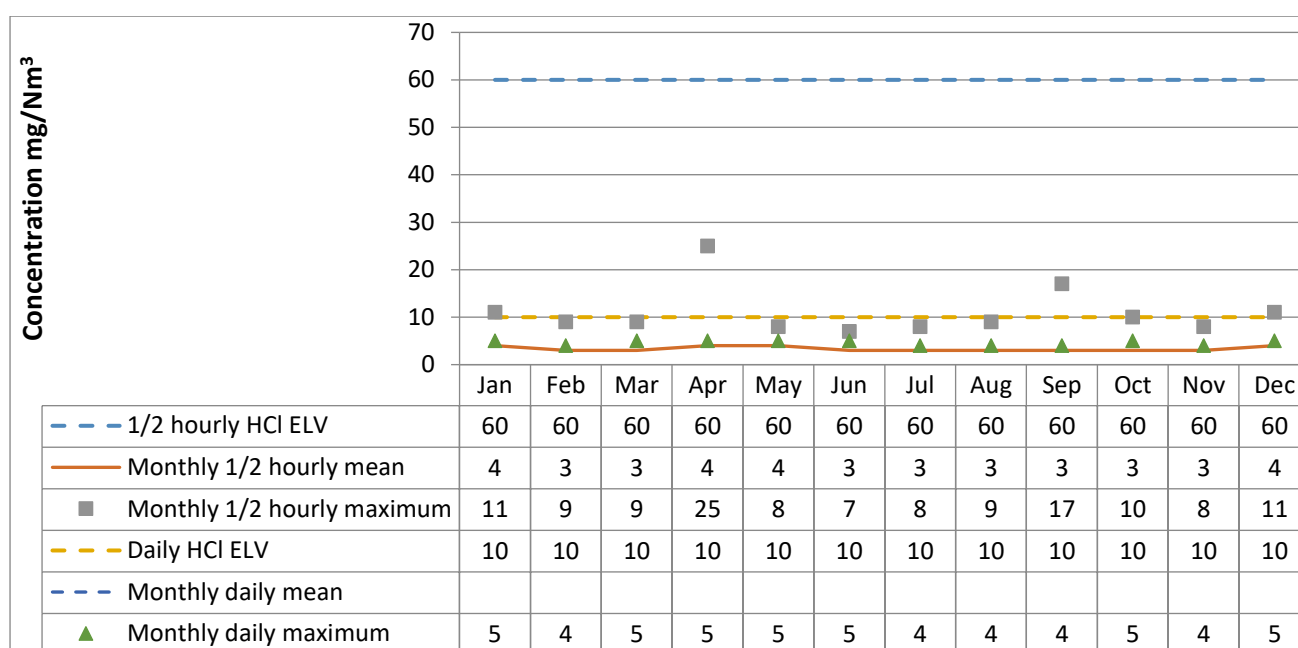
### 4.1 Summary of continuous emissions monitoring results for emissions to air

The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored.

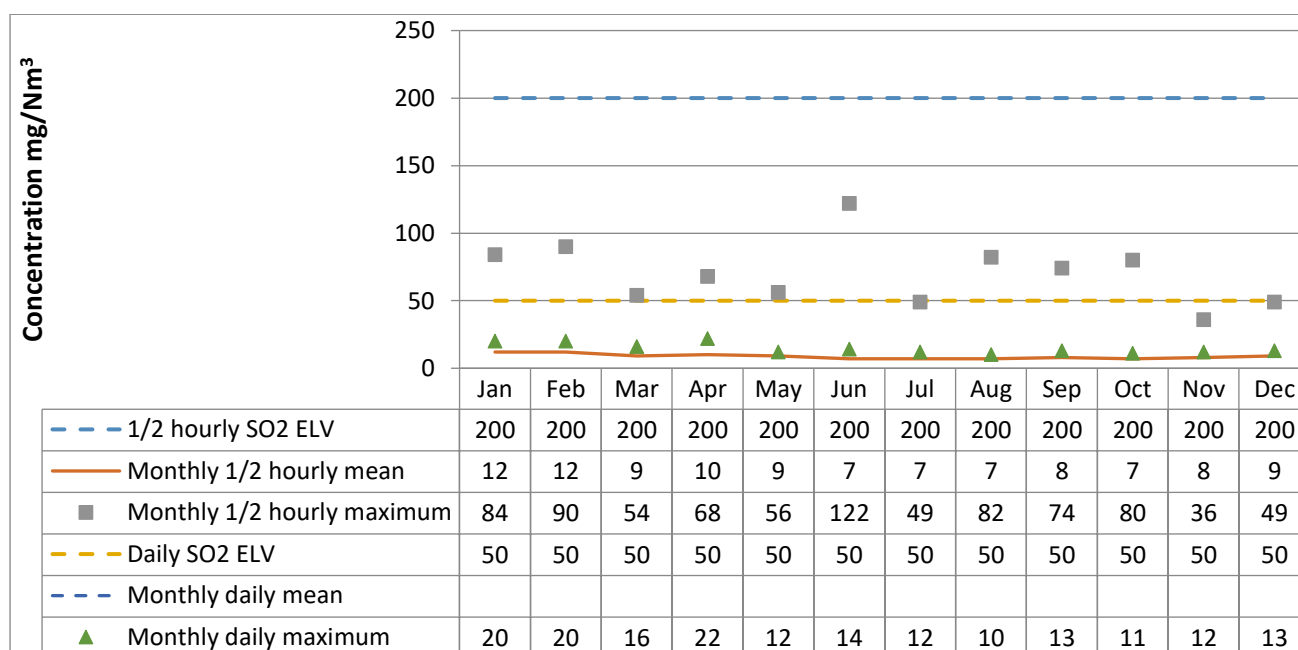


#### Monthly emissions summary incl half-hou

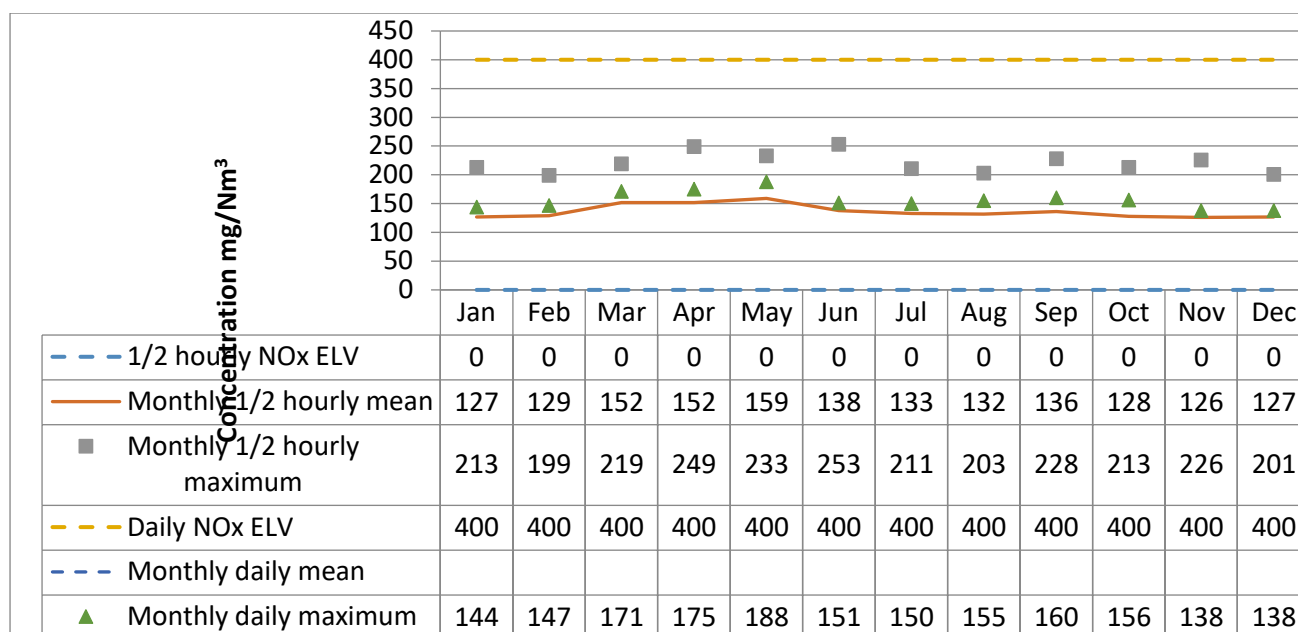
Hydrogen chloride



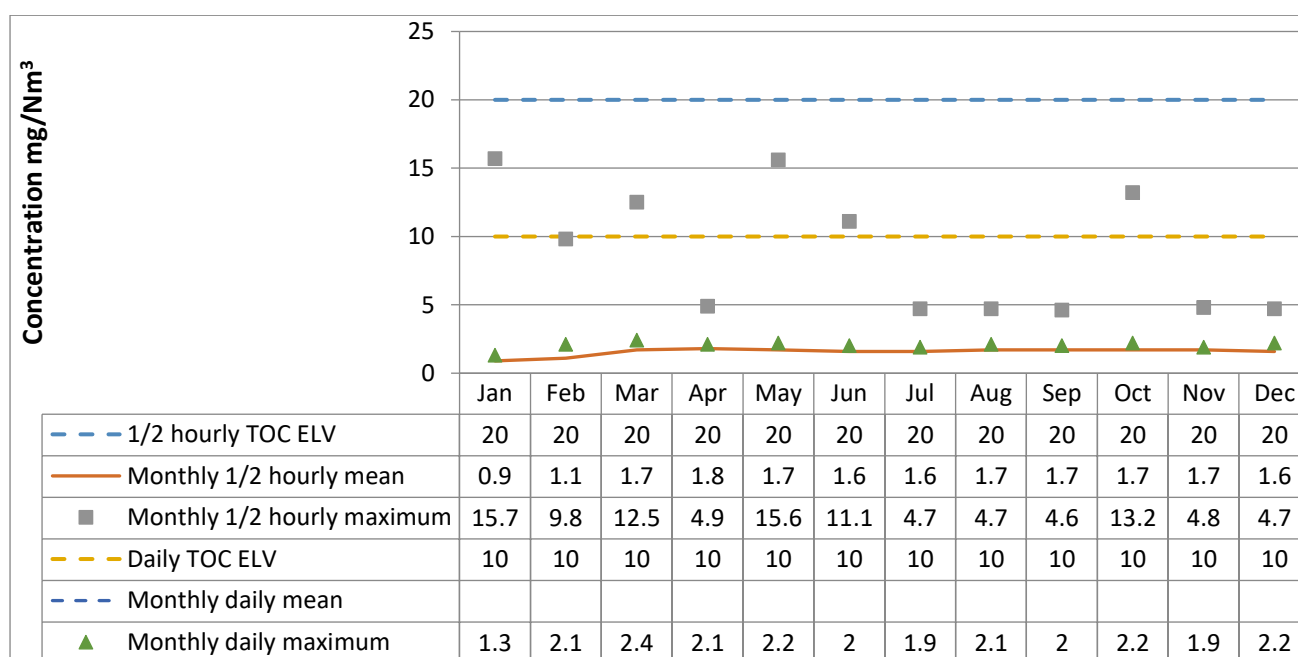
Sulphur dioxide



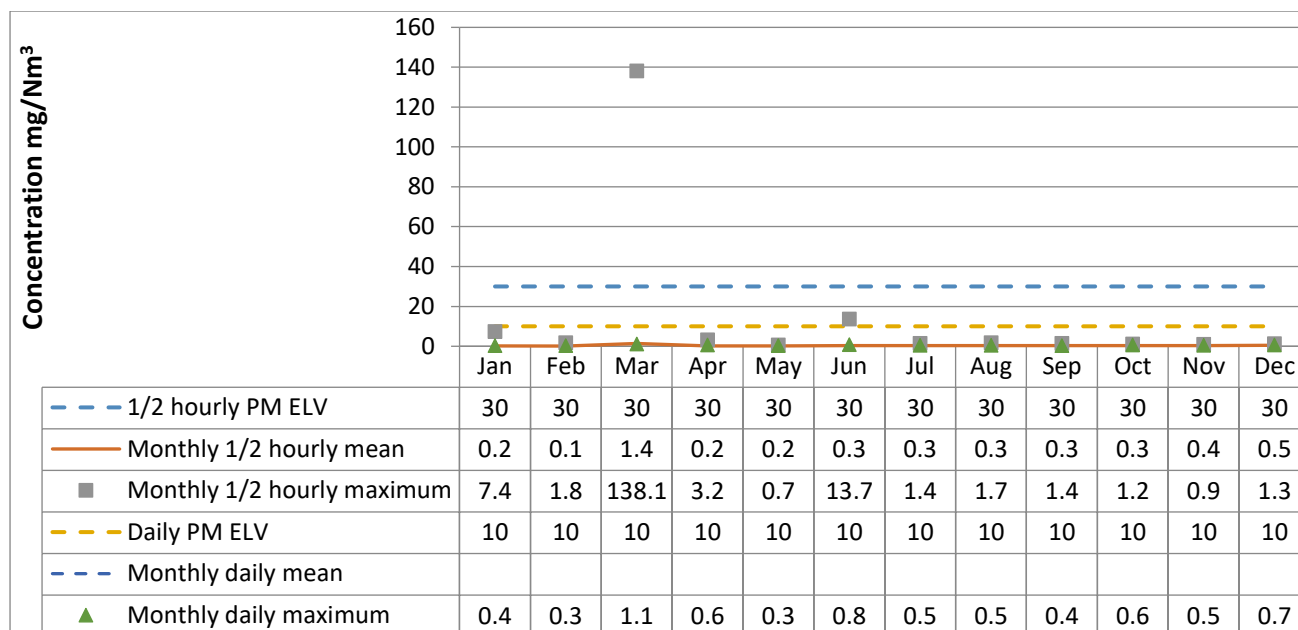
## Oxides of nitrogen



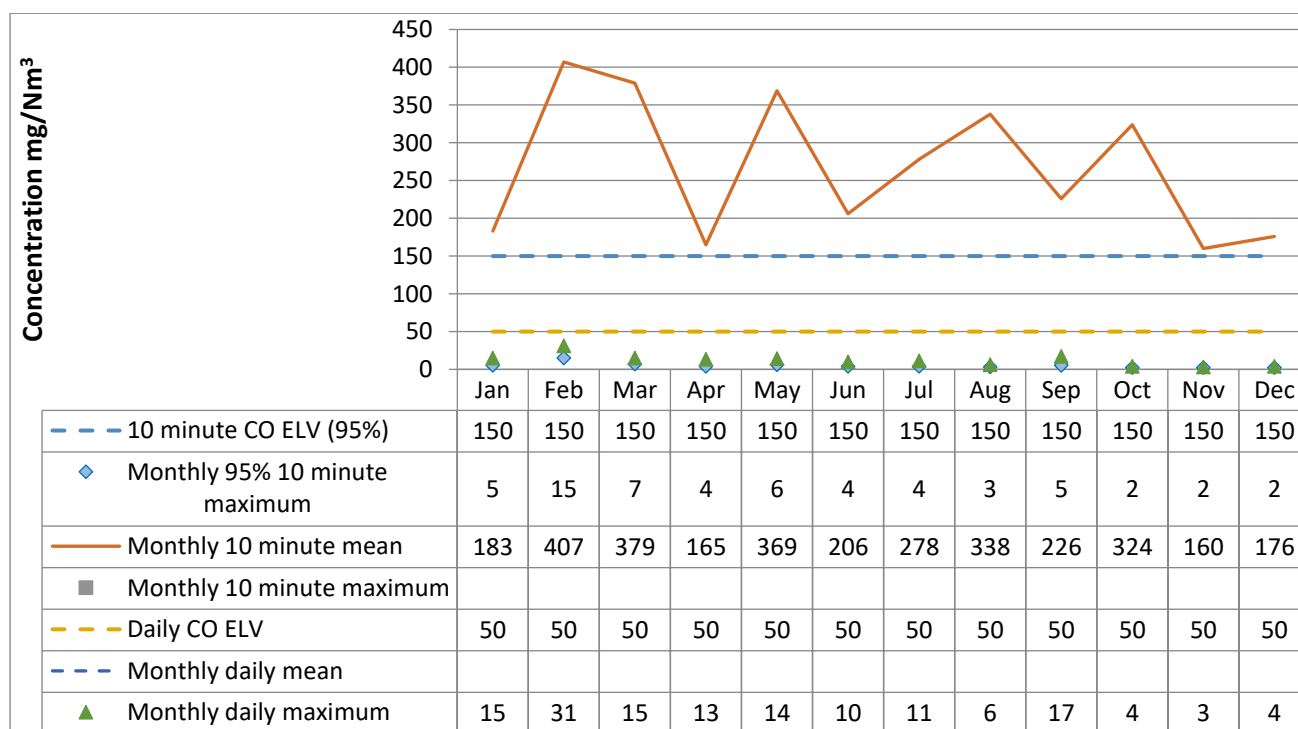
## Total organic carbon



## Particulates



## Carbon monoxide



## 4.2 Summary of periodic monitoring results for emissions to air

The table below shows the results of periodically monitored substances.

Substance	Emission limit value	Results	
		1 <sup>st</sup> Half	2 <sup>nd</sup> Half
Mercury and its compounds	0.05 mg/m <sup>3</sup>	0.0068	0.0015
Cadmium & thallium and their compounds (total)	0.05 mg/m <sup>3</sup>	0.0007	0.0007
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m <sup>3</sup>	0.0538	0.14
Dioxins and furans (I-TEQ)	0.1 ng/m <sup>3</sup>	0.005	0.0029
Hydrogen Fluoride	2 mg/m <sup>3</sup>	0.11	0.04

## 4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process

## 5. Summary of Permit Compliance

### 5.1 Compliance with permit limits for continuously monitored pollutants

The plant met its emission limits as shown in the table below.

Substance	Percentage time compliant during operation	
	Half-hourly limit * unless otherwise stated	Daily limit
Particulates	>99.99 %	>99.99 %
Oxides of nitrogen	>99.99 %	>99.99 %
Sulphur dioxide	>99.99 %	>99.99 %
Carbon monoxide	>99.99 % of 10 minute averages	>99.99 %
Total organic carbon	>99.99 %	>99.99 %
Hydrogen chloride	>99.99 %	>99.99 %

### 5.2 Summary of any notifications or non-compliances under the permit

Date	Summary of notification or non-compliance	Reason	Measures taken to prevent reoccurrence
19/03/2022	Dust exceedance	Holes in 4 filter bags allowing dust to pass through.	Plant taken off-line and filter bags replaced.

May 2022	TOC exceedance	Likely incomplete combustion, from configuration of pipes.	Under fire airholes drilled and redesign planned for March/April 2023

### 5.3 Summary of any complaints received and actions to taken to resolve them.

Date of complaint	Summary of complaint	Reason for complaint including whether substantiated by the operator or the EA	If substantiated, measures to prevent reoccurrence
	None		

## 6. Summary of plant improvements

<b>Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.</b>
N/A
<b>Summary of any changes to the plant or operating techniques which required a variation to the permit and a summary of the resulting environmental impact.</b>
N/A
<b>Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.</b>
None