Annual performance report for:

SRCL Ltd, Ipswich Waste to Energy Facility

Permit Number: EP3530XY

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	SRCL Ltd Woodbridge Road East Ipswich IP4 5PG
Description of waste input	The Ipswich plant incinerates healthcare 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 where it is recognised that high temperature incineration represents the best disposal option.
Operator contact details if members of the public have any questions	Email: supportuk@stericycle.com Phone: 0333 240 4400

2. Plant description

The Incinerator is designed to process 1000 kilograms per hour. The incinerator is of stepped hearth design, with three main combustion hearths and an ash box. Healthcare wastes are loaded mechanically direct from the wheeled bins used to deliver the waste. The waste is charged onto the first hearth where the combustion process commences. Hydraulic rams operate at intervals to push the waste along the first hearth, until it falls off the end onto the second hearth where it burns vigorously at a temperature of between 850 °C and 1000 °C, where it burns out to produce an ash. This bottom ash and any remaining part-combusted waste is then pushed along the hearths, where the fixed carbon in the ash is further burned out. The residues are then dropped into an ash pit the end of the process.

The flue gases from the incineration process are passed 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.

The flue gases are then cooled by directing them through a waste-heat boiler before they pass into the abatement section of the process. Powdered lime 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 discharged from the stack are continuously monitored.

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

3. Summary of Plant Operation

3.1 Summary of plant operation

Hazardous waste received	6858.82	tonnes
Non Hazardous waste received	1196.42	tonnes
Cytotoxic & cytostatic wastes incinerated	251.60	tonnes
Total waste received	8301.17	tonnes
Total plant operational hours	8134.50	hours
Total hours of "abnormal operation" (see permit for definition)	See Section 5.2	
Total quantity of incinerator bottom ash (IBA) produced	744.84	tonnes
Disposal or recovery route for IBA	D1 Landfill	
Did any batches of IBA test as hazardous? If yes, state quantity	No	
Total quantity of air pollution control (APC) residues produced	698.82	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 heat produced for export (e.g. to hospital or district heating scheme)	20051	MWh

3.2 Annual performance parameters

Waste Disposal and Recovery

Waste	Disposal Route	Tonnes	Recovery Tonnes
1) Hazardous Wastes	APC	698.82	0
2) Non-Hazardous Wastes	Ash	744.84	0

Trends in Waste Disposal and Recovery			
Year	Named Waste	Total Waste	Waste per unit output
2021	total Waste	1325.44	0.16
2022	total Waste	1443.66	0.17

Water usage

Water	Usage	Specific Usage
Mains water	5691	0.69

Trends in Water Usage			
	Named source	Total Water usage	water per unit output
2021	Water	5144	0.63
2022	Water	5691	0.69

Water usage associated with shutdowns and for the make up of refractory.

Energy usage

Energy Usage Energy Source	Quantity	Primary Energy (MWh)	CO_2
Electricity *	MWh	3,617	600.5
Natural Gas	MWh	3714	705.74

Trends in Energy Usage Year	Parameter Primary Energy usage	Total primary energy	energy per unit output
2021	total Energy	5,037	0.62
2022	total Energy	7332	0.88

The increase in gas usage is associated with increase shutdowns and refractory drying times.

Performance Indicators

Parameter		Units
Gas Used	145.4	kwh/tonnes Waste incinerated
Mass of bottom ash produced	0.09	kg \tonne Waste incinerated
Mass of APC residues produced	0.08	kg \tonne Waste incinerated
Mass of other solid residues	N/A	
Mass of carbon used	2.90	kg \tonne Waste incinerated
Mass of lime used	50	kg \tonne Waste incinerated
Potable Water Use	0.69	m3/tonne Waste incinerated
Waste Hazard Score	4	
`Waste Disposal Score	70	

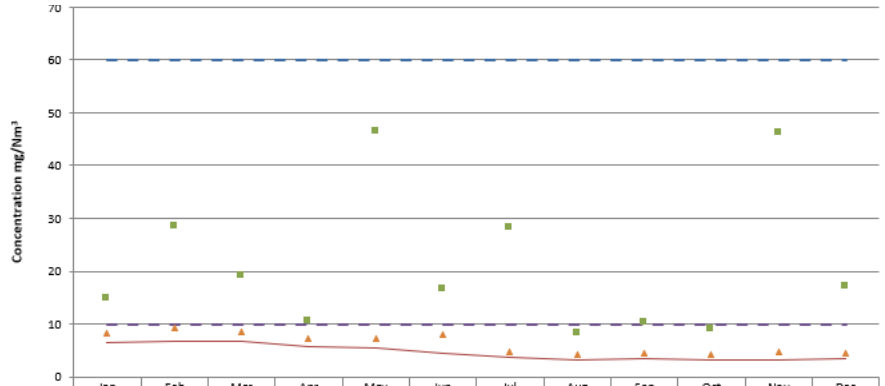
4. Summary of Plant Emissions

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.

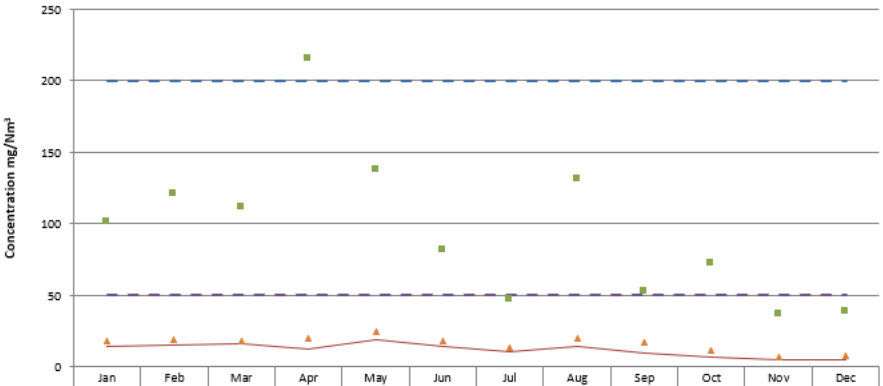
Monthly emissions summary incl half-hou

Hydrogen Chloride



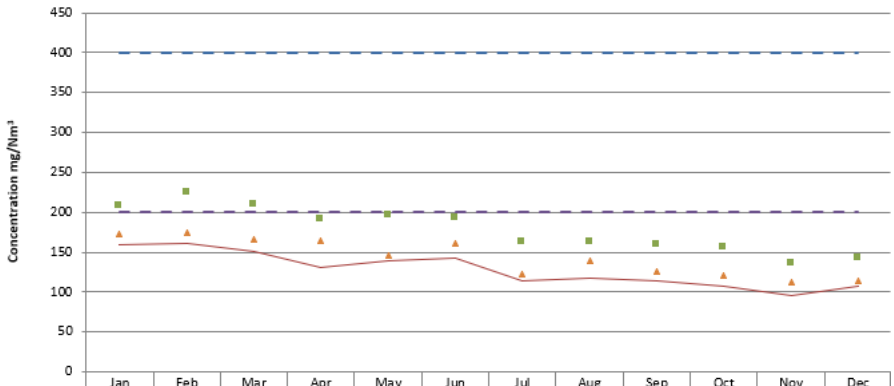
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly HCl ELV	60	60	60	60	60	60	60	60	60	60	60	60
Monthly 1/2 hourly mean	6.574	6.837	6.74	5.617	5.466	4.522	3.574	3.232	3.363	3.267	3.292	3.38
Monthly 1/2 hourly maximum	14.82	28.42	19.12	10.52	46.55	16.49	28.32	8.361	10.29	8.939	46.08	17.21
Daily HCl ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean												
Monthly daily maximum	8.285	9.197	8.518	7.128	7.21	7.881	4.707	4.253	4.487	4.119	4.57	4.36

Sulphur dioxide



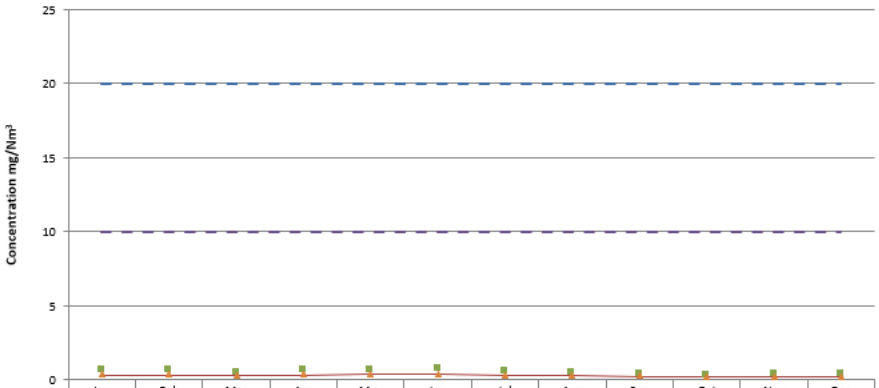
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly SO2 ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly 1/2 hourly mean	14.33	15.16	15.76	12.26	18.74	13.84	10.84	14.13	9.869	6.693	5.064	4.839
Monthly 1/2 hourly maximum	101	120.7	111.8	215.2	137.8	81.18	47.34	131	52.94	71.97	36.45	38.46
Daily SO2 ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean												
Monthly daily maximum	17.89	19.2	18.44	20.2	24.3	17.67	13.63	20.07	17.28	11.58	7.185	7.5

Oxides of Nitrogen



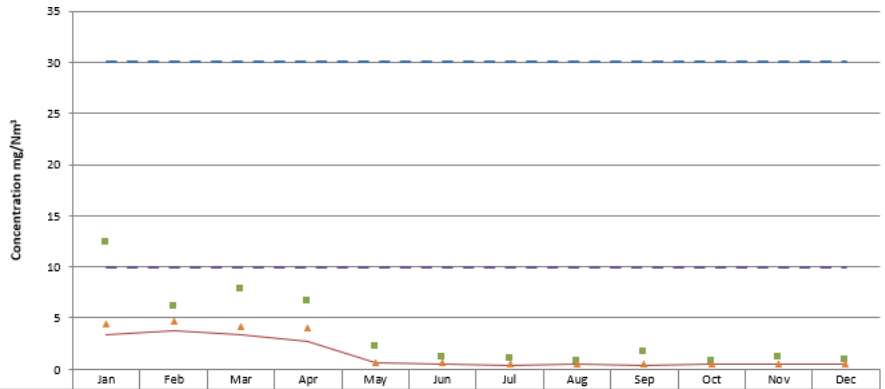
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly NOx ELV	400	400	400	400	400	400	400	400	400	400	400	400
Monthly 1/2 hourly mean	159	161.9	151.2	131.6	139.2	143.3	114	117.4	114.5	107.2	95.34	106.7
Monthly 1/2 hourly maximum	208.7	224.6	209.5	192.1	195.5	193.1	163.2	163	158.8	156.9	135.7	142
Daily NOx ELV	200	200	200	200	200	200	200	200	200	200	200	200
Monthly daily mean												
Monthly daily maximum	173	174.7	165.9	163.9	146.4	160.5	122.5	139.7	126.6	120.6	112.3	114

Total organic carbon



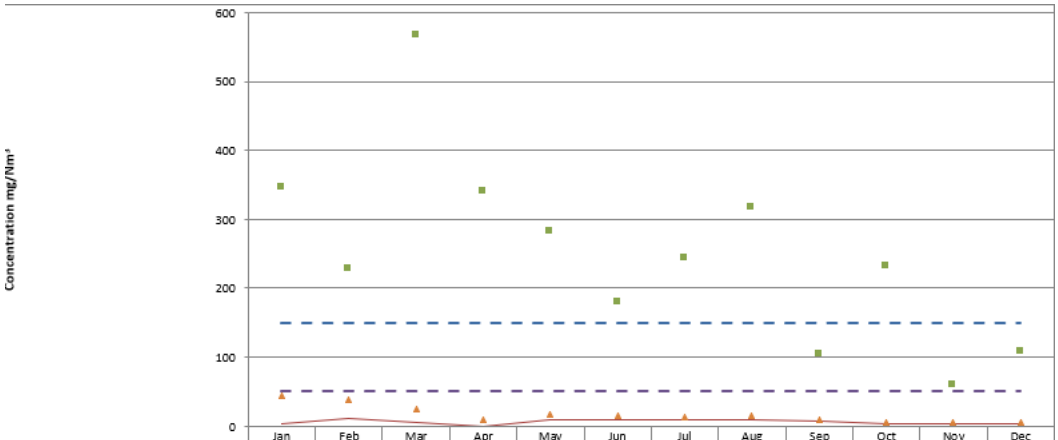
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly TOC ELV	20	20	20	20	20	20	20	20	20	20	20	20
Monthly 1/2 hourly mean	0.332	0.334	0.325	0.273	0.359	0.348	0.272	0.263	0.231	0.212	0.211	0.21
Monthly 1/2 hourly maximum	0.614	0.636	0.505	0.622	0.685	0.713	0.538	0.459	0.36	0.338	0.373	0.36
Daily TOC ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean												
Monthly daily maximum	0.381	0.355	0.335	0.361	0.379	0.402	0.287	0.291	0.264	0.225	0.228	0.23

Particulates



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1/2 hourly PM ELV	30	30	30	30	30	30	30	30	30	30	30	30
Monthly 1/2 hourly mean	3.427	3.714	3.4	2.757	0.567	0.539	0.421	0.434	0.426	0.446	0.475	0.49
Monthly 1/2 hourly maximum	12.4	6.11	7.745	6.646	2.241	1.117	1.003	0.712	1.633	0.736	1.113	0.952
Daily PM ELV	10	10	10	10	10	10	10	10	10	10	10	10
Monthly daily mean												
Monthly daily maximum	4.351	4.651	4.137	4.038	0.622	0.624	0.455	0.488	0.469	0.509	0.534	0.56

Carbon Monoxide



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 minute CO ELV (95%)	150	150	150	150	150	150	150	150	150	150	150	150
Monthly 95% 10 minute maximum												
Monthly 10 minute mean	3.7	11.74	5	0	10	10	10	9	6.7	3.8	3.2	3.6
Monthly 10 minute maximum	346.1	228	568	340	282	180	244	318	104.6	232.8	58.6	107.7
Daily CO ELV	50	50	50	50	50	50	50	50	50	50	50	50
Monthly daily mean												
Monthly daily maximum	43.32	38.11	25	10	16	15	13	14	8.6	5.8	4.9	5.7

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	
		1st Half	2nd Half
Mercury and its compounds	0.05 mg/m^3	0.0014	0.008
Cadmium & thallium and their compounds (total)	0.05 mg/m^3	0.0019	0.003
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds	0.5 mg/m^3	0.032	0.133
Dioxins and furans (I-TEQ)	0.1 ng/m^3	0.0026	0.0036
Hydrogen Fluoride	2 mg/m^3	0.041	0.11

4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process. As condition 2.2.2 of Permit.

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	**Daily limit**
Particulates	100 %	100 %
Oxides of nitrogen	100 %	100 %
Sulphur dioxide	99.98 %	100 %
Carbon monoxide	100 % 95% of 10-min averages	100 %
Total organic carbon	100 %	100 %
Hydrogen chloride	100 %	100 %
Hydrogen fluoride	100 %	100 %

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
15th January 2022	Daily 95%ile	Gas Burner air modulation valve stuck.	Gas Burner air modulation valve secured in position

29th April 2022	SO2 1/2" Hourly average	Two SO2 spikes in the same 30 minute from hearth ram movements, which caused a sudden aggitation of the waste	
21st May 2022	ERV Notification	Boiler Low Water Level	Due to the bottom automated blowdown valve not seating properly. Valve swapped out.
6th August 2022	ERV Notification	Fault on Boiler low water Module, faulty relay replaced	faulty relay replaced
8th August 2022	ERV Notification	Intermittent water level fault	The boiler alarm fault was traced to the Boiler low water Module
4th October 2022	SO2 1/2" Hourly average	Top Hearth zone ram missing position one switch	Zone Switch Rail replaced
8th October 2022	SO2 1/2" Hourly average	A loud bag was heard from inside the incinerator causing a spike in the SO2 exceedance half hourly.	Letter to customers
15th October 2022	ERV Notification	Boiler water low level occurred due to the bottom automated blowdown valve not seating properly	No fault was found with the bottom blowdown valve, and it has operated correctly since but is continually being monitored.

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

Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.
None
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.
None
Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.
None