

Annual performance report for: PackCare Limited

Permit Number: **EPR/KP3937DU**

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	PackCare Limited Avonmouth Treatment Centre Avonmouth Way West Avonmouth Bristol BS11 9EX
Description of waste input	Empty steel drums containing a residue of organic and/or inorganic contaminants
Operator contact details if members of the public have any questions	Helen Kellett 07795 400071 QHSE Director

2. Plant description

The purpose of the Avonmouth Drum Incineration facility is to facilitate the decontamination of nominally empty steel drums containing a residue of organic and/or inorganic contaminants which cannot easily be removed via other physical means [chipping, scraping, pouring, using solvents etc.].

The installation processes around 9000 tonnes of metal drums per annum

3. Summary of Plant Operation

Empty steel drums processed	3391.668 tonnes
Total plant operational hours	1105.5 hours
Total hours of “abnormal operation” (see permit for definition)	0 hours
Total quantity of incinerator bottom ash (IBA) produced	98 tonnes
Disposal or recovery route for IBA	Sent for disposal by Red Industries
Did any batches of IBA test as hazardous? If yes, state quantity	
Total quantity of air pollution control (APC) residues produced	16.72 tonnes
Disposal or recovery route for APC Residues	Sent for disposal by Augean

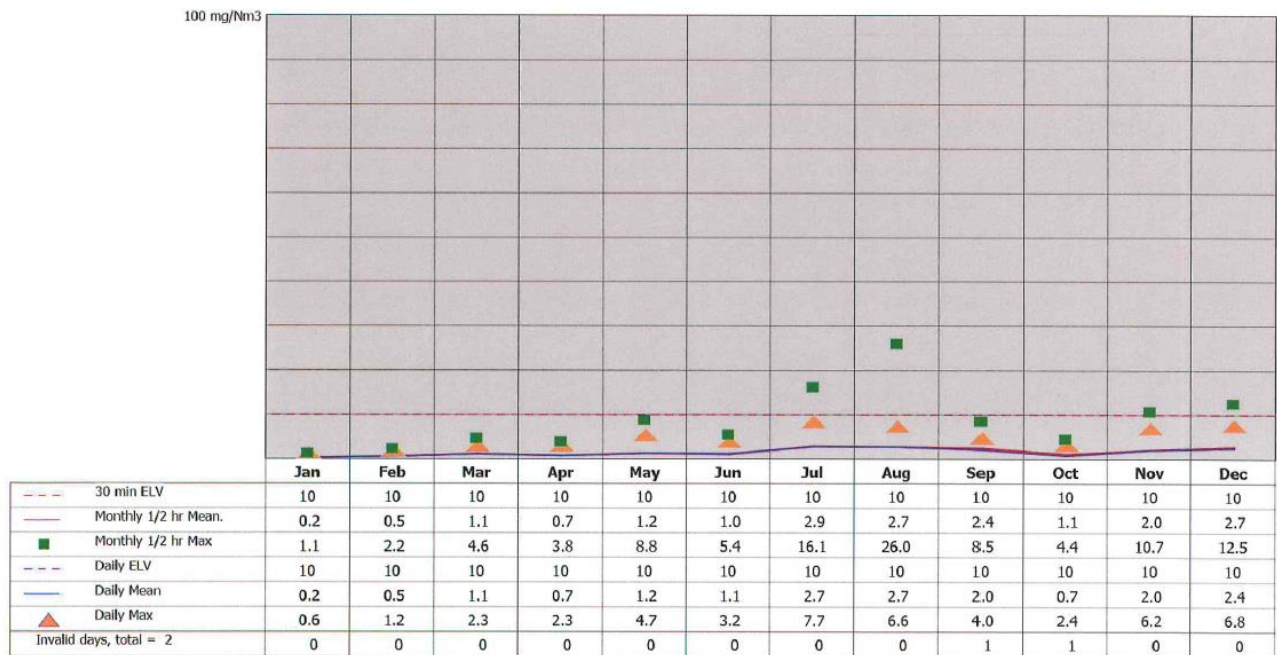
4. Summary of Plant Emissions

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.

Line 1 - Hydrogen chloride

Annual Reporting of Continuously Monitored Emissions to Air for HCl, Emission Point Incinerator for 2022



Annual average = 1.49 (all valid 30m data)
97th percentile value over the year = 5.83, (67 / 2211)

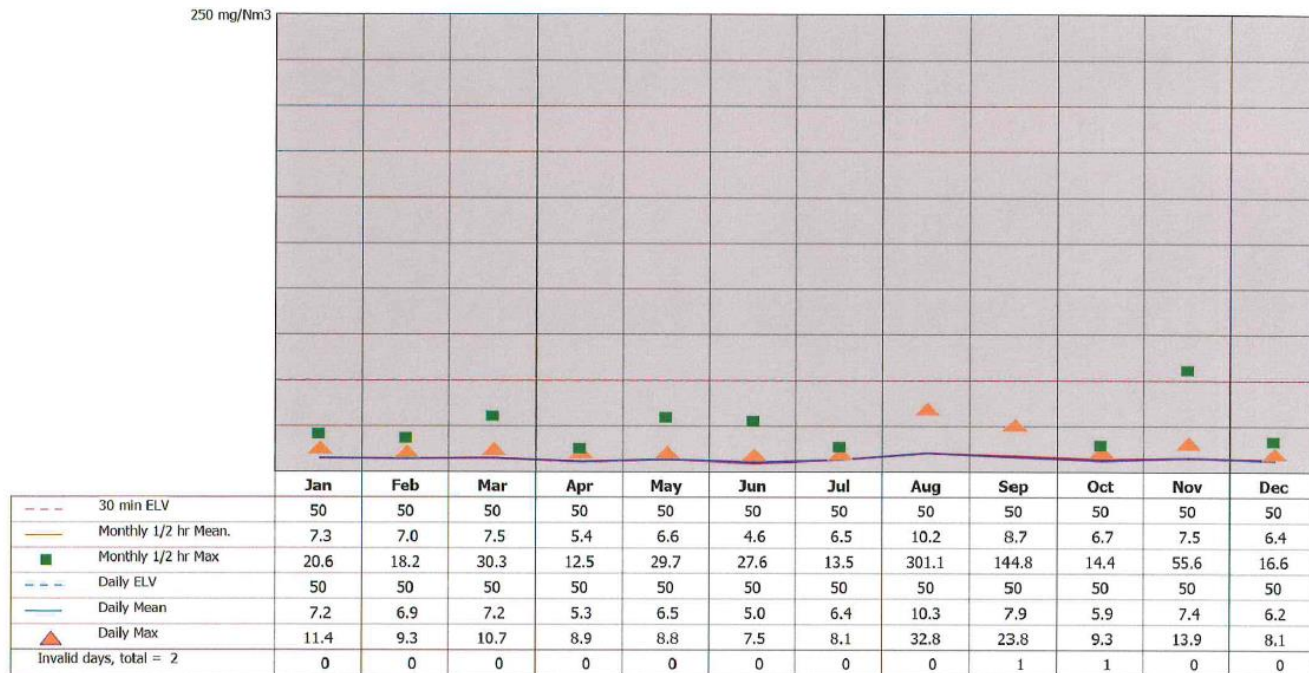
Signature *John Miller*
(authorised to sign as representative of Operator)

Date 20/1/23

Line 1 – Sulphur dioxide

Annual Reporting of Continuously Monitored Emissions to Air for SO₂, Emission Point Incinerator for 2022

250 mg/Nm³



Annual average = 7.04 (all valid 30m data)

97th percentile value over the year = 12.53, (67 / 2211)

Signature

Allen Kellon
(authorised to sign as representative of Operator)

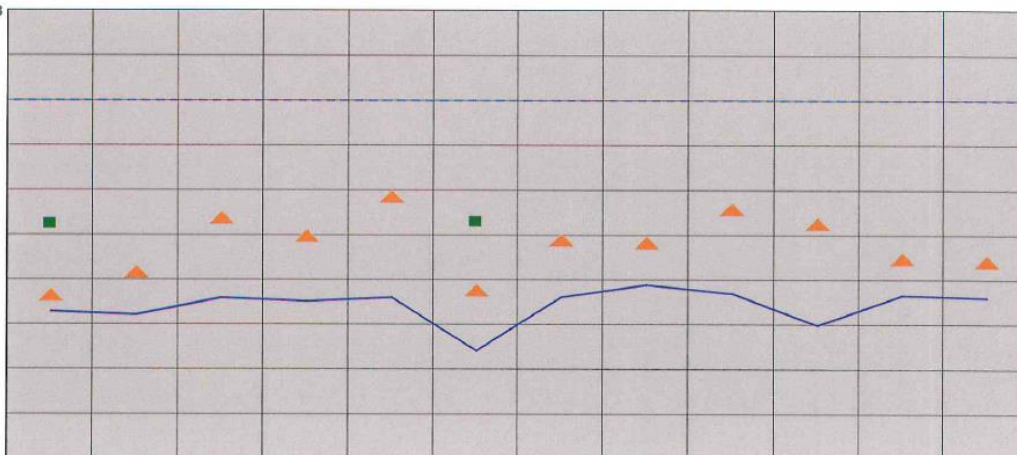
Date

20/1/23

Line 1 – Oxides of nitrogen

Annual Reporting of Continuously Monitored Emissions to Air for NO_x, Emission Point Incinerator for 2022

500 mg/Nm³



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
--- 30 min ELV	-	-	-	-	-	-	-	-	-	-	-	-
Monthly 1/2 hr Mean.	164.7	161.4	181.5	175.7	179.9	104.3	182.4	192.4	199.9	167.3	186.3	180.4
Monthly 1/2 hr Max	262.3	293.7	404.5	477.8	471.4	264.9	312.7	315.0	327.1	313.2	322.9	315.4
--- Daily ELV	400	400	400	400	400	400	400	400	400	400	400	400
--- Daily Mean	163.9	160.4	179.1	175.5	179.7	120.4	180.2	194.1	184.5	149.1	182.3	179.7
▲ Daily Max	179.1	204.8	265.6	245.5	289.2	184.7	241.0	237.7	275.3	259.1	220.0	216.7
Invalid days, total = 2	0	0	0	0	0	0	0	0	1	1	0	0



Annual average = 170.59 (all valid 30m data)

97th percentile value over the year = 287.61, (67 / 2211)

Signature

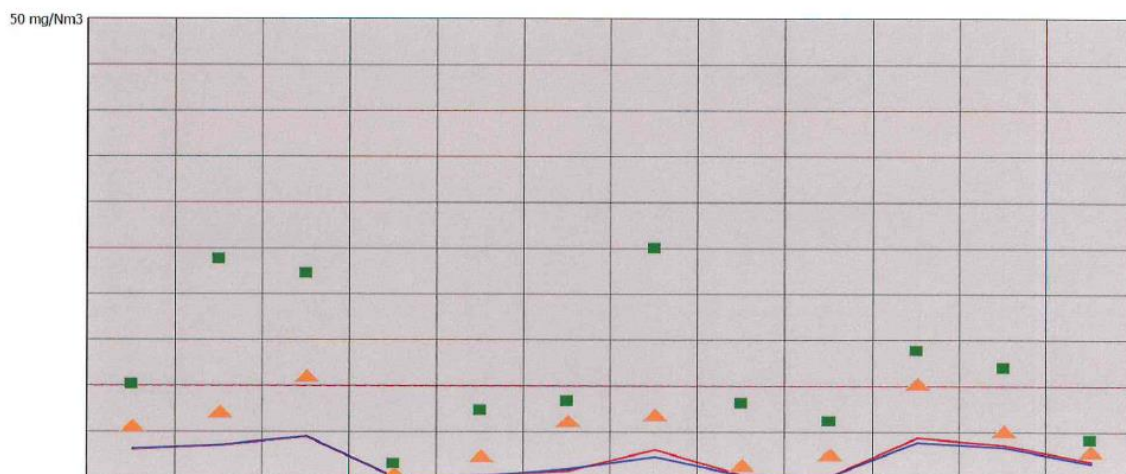
Allen Willer
(authorised to sign as representative of Operator)

Date

20/1/23

Line 1 – Total organic carbon

Annual Reporting of Continuously Monitored Emissions to Air for TOC, Emission Point Incinerator for 2022



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
--- 30 min ELV	10	10	10	10	10	10	10	10	10	10	10	10
— Monthly 1/2 hr Mean.	3.1	3.5	4.5	0.0	0.2	0.7	3.0	0.3	0.1	4.4	3.6	1.7
■ Monthly 1/2 hr Max	10.2	23.9	22.3	1.5	7.4	8.4	25.0	8.1	6.2	13.9	12.0	4.2
--- Daily ELV	10	10	10	10	10	10	10	10	10	10	10	10
— Daily Mean	3.1	3.5	4.5	-0.1	0.2	0.9	2.3	0.2	0.1	3.9	3.3	1.5
▲ Daily Max	5.3	6.8	10.7	0.1	2.0	5.8	6.5	1.0	2.2	9.9	4.8	2.5
Invalid days, total = 2	0	0	0	0	0	0	0	0	1	1	0	0



Annual average = 2.07 (all valid 30m data)

97th percentile value over the year = 8.56, (67 / 2211)

Signature

Helen Willet
(authorised to sign as representative of Operator)

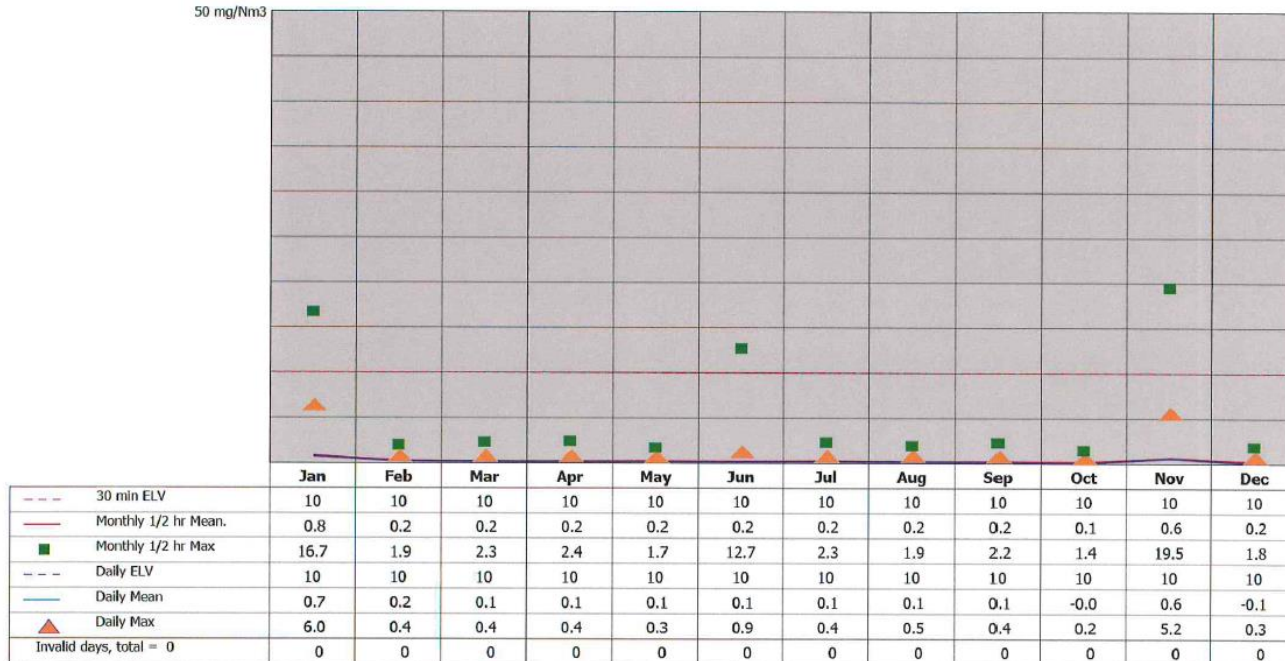
Date

20/1/23

Line 1 – Particulates

Annual Reporting of Continuously Monitored Emissions to Air for Dust, Emission Point Incinerator for 2022

50 mg/Nm³



Annual average = 0.27 (all valid 30m data)
97th percentile value over the year = 1.21, (70 / 2295)

Signature

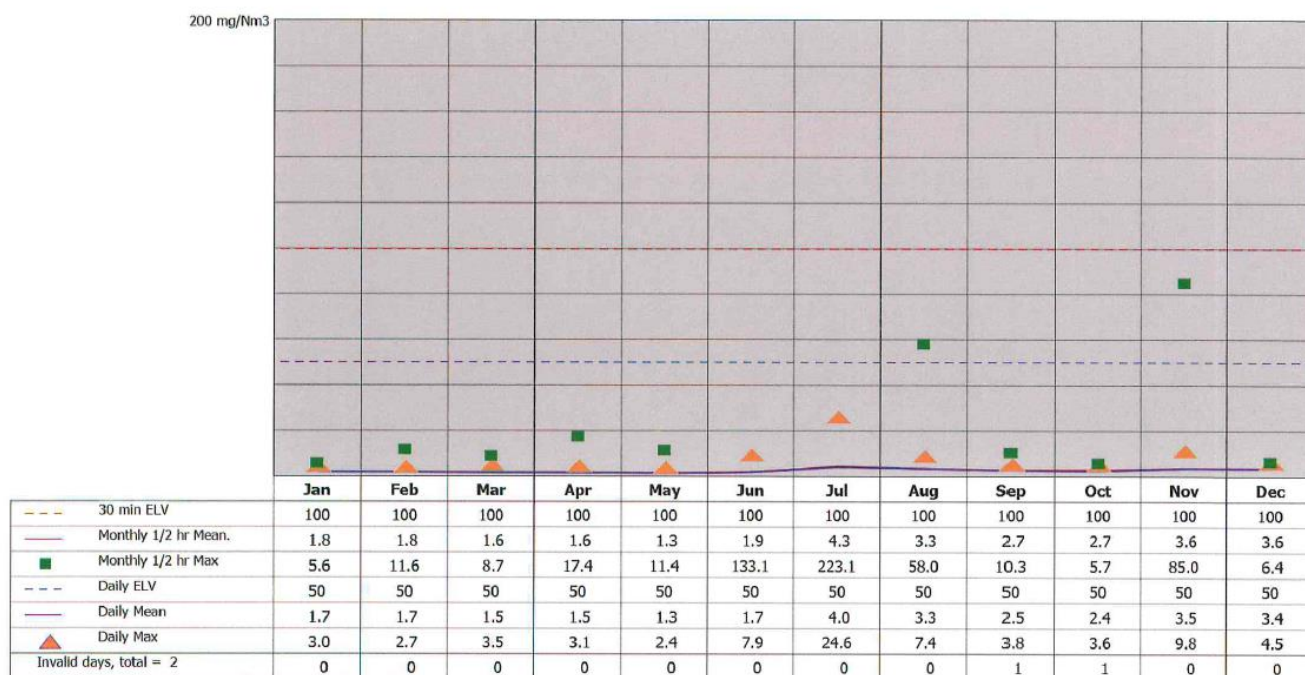
Helin Hecker
(authorised to sign as representative of Operator)

Date

20/1/23

Line 1 – Carbon monoxide

Annual Reporting of Continuously Monitored Emissions to Air for CO, Emission Point Incinerator for 2022



Annual average = 2.42 (all valid 30m data)
 97th percentile value over the year = 5.63, (67 / 2211)

Signature Hella Wilke
 (authorised to sign as representative of Operator)

Date 20/1/23

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	
		26/05/2022	01/12/2022
Mercury and its compounds	0.05 mg/m ³	0.001 mg/m ³	0.002 mg/m ³
Cadmium & thallium and their compounds (total)	0.05 mg/m ³	0.02 mg/m ³	0.007 mg/m ³
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m ³	0.45 mg/m ³	0.27 mg/m ³
Dioxins and furans (I- TEQ)	0.1 ng/m ³	0.051 ng/m ³	0.051 ng/m ³
Hydrogen Fluoride	2 mg/m ³	<0.10 mg/m ³	<0.07 mg/m ³

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 Summary of any notifications or non-compliances under the permit

Date	Summary of notification or non-compliance	Reason	Measures taken to prevent reoccurrence
17/03/2022	10.72 mg/Nm ³ -C over 13 x 30-minute periods (30% uncertainty subtracted respectively)	<p>The TOC spike had occurred whilst processing a batch of empty small paint tins. It appears likely that within the paint tins there was something in the tins that caused the TOC spike. The batch contained tins from our normal customers, no tins from any new customers were being processed.</p> <p>The remaining tins due for processing that day were checked and no new customer material was found. Processing continued with no further issues.</p>	<p>A procedure is to be written to ensure that operators finding tins into the drums on the line now record the job number of the tins being processed, this will ensure that if there are any future spikes can be traced back to the exact batch and customer which can then be escalated to the customer / waste producer.</p> <p>Evidence of operator training will be recorded in the site training files.</p>

5.2 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.

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.

Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.

During 2022 we took the decision to delay the planned works to the bag house, ductwork and abatement system in order to develop a scope of works to better capture waste heat from the process. In September 2022, we applied to the Industrial Energy Transformation Fund to support this project and if successful this will be implemented during 2023. Initial feedback from our submission is expected in February 2023.

During 2022 we invested in the emissions abatement system including:

- Replacement of induced draft fan casing
- Ductwork lining and structural improvements
- Replacement of steelwork and refractory lining after the secondary combustion chamber

During the year we also commissioned two rounds of environmental monitoring to better understand the emissions profile from the plant in order to develop the scope of works for the new abatement system. We monitored the emissions between the primary combustion chamber and the secondary combustion chamber and then after the secondary combustion chamber but before the bag house. This work was undertaken by Envirocare and was supported by a specialist abatement consultant.

Currently, our thermal treatment process is equipped with an afterburner whereby the flow from the afterburner is quenched using a shell and tube boiler. The boiler has a relatively high thermal efficiency and so the quench cooling of the gas is rapid. Our testing programme showed an intermediate gas temperature of 159°C and a flow of around 13,200 Am³/hr. This equates to around 9400 kg/hr of air. Thus, the heating energy requirement for this air load is around 3.24 MW.

At present, none of this energy is usefully recovered. The heat is dissipated via an air blast cooler which effectively recondenses the steam from the boiler on a continuous loop. This equates to approximately 6,400 MWh of waste heat which will be subject to recovery and re-use as a new source of fuel which at heat exchange efficiency of 75% would equate to 4,770 MWh of recovered heat. As per HMT Green Book, this equates to a total carbon emission of approximately 1,400 tCO₂e. According to our calculations the process is known to have approximately 3MW of waste heat (equating to approximate 1,270 tCO₂e per year) associated with that can be subject to the recovery process, resulting in reduction of at least 970 tonnes of CO₂ using our proposed solution.