

Environmental, Health, Safety & Quality Policy

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1.0 INTRODUCTION

1.1. General Description & Reporting Period

Safety Kleen Ireland's facility is located in it 5 Airton Road, Tallaght, Dublin 24. This site is licensed since 1999. The site acts as a hazardous waste transfer station and is the hub of the company's specialised waste services to the automotive, industrial and Medical sectors.

This document comprises the Annual Environmental report as required by Condition 2.8 and schedule C of the company's waste Licence (W0099-01).

Reporting Period:

This Report covers the period 1st January 2016 to 31st December 2016

1.2. Waste Management Activities carried out at the Facility

Licensed waste disposal activities in accordance with the Third Schedule of the Waste Management Act 1996

Class 13: Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.

Specific wastes applicable are aqueous waste, card/ board / dry wastes

Licensed waste recovery activities, in accordance with the Fourth Schedule of the Waste Management Act 1996

Class 13: Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced.

Specific wastes applicable include:

- a) Kerosene
- b) Paint Related Material
- c) Xylene
- d) Oil Filters
- e) Flammable Solid material
- f) Aqueous Degreasers
- g) Misc

2.0 Quantity and Composition of waste received, disposed of and recovered during the reporting period and previous years.

See Appendix 1

Appendix 1 provides a complete inventory of all waste movements into the transfer station in 2016. Table 1 below summarizes the annual waste inward to the transfer station over the last 5 years (2012-2016). The total annual waste received for 2015 was 212,162kgs or 212.162 tonnes.

Table 2.1 Inward and subsequent outward waste movements 2012-2016.

Waste Stream	Destination	2012	2013	2014	2015	2016
Kerosene	Tradebe Ltd	91,8142	79,651	74,104	72,078	92,840
Xylene	Veolia	30,282	24,931	26,230	29,287	48,875

Paint Waste	Veolia	17,389	18,364	22,717	18,830	16,7365
Solid Waste	Veolia	17,665	12,876	20,706	20,902	36,465
Aqueous Cleaner	Enva	37,662	34,471	16,525	50,086	55,567
Oil Filters	Enva	21,141	11,640	10,440	20,400	30,415
Aerosols	ATM	714	0	0	0	0
Printing Ink	ATM/Veolia	693	348	0	579	
Misc.	ATM	0	3,450	0	0	0
Petroleum Distillers	ATM	870	400	0	0	0
Adhesives	ATM	0	0	0	0	0
Corrosive Liquid	ATM	0	0	0	0	0
Acetone	ATM	0	220	0	0	0
Toxic Liquids	ATM	0	100	0	0	0
Total		218,258	186,451	170,722	212,162	280,898

Table 2.2 Total amount of waste currently being held at the facility

WASTE TYPE	DRUM NUMBERS & VOLUME	TOTAL QUANTITY (KG)
Kerosene	BULK	27416
Paint / Thinners		2475
Xylene		1725
Oil Filters		4080
Aquakleen		150
Flammable Solid		14965
Misc		1640

3.0 Summary Report on Emissions

No environmentally significant emissions were made during the reporting period. All waste storage areas are within the roofed and bunded site building and therefore storm water contamination is not likely to occur and any surface contamination through leaks or spillage's may be promptly cleaned up using absorbent materials stocked on site. Details of the most recent environmental monitoring for Air, and Ground water are provided below and in Appendices 2 and 3

3.1 Air Emission Monitoring

The results of air monitoring carried out at the facility on the 06 January 2016 by Fitz Scientific are provided in Appendix 2. The survey protocol is also provided here.

Sampling and Analysis Methods

Interpretation:

Results show the concentrations of Class A and Class B compounds and Total Organics to be very comfortably within the licence levels. The Class A value was <0.03/Nm³ which was comfortably the 2 mg/m³ level set by the licence. The Class B value was also <0.05mg/Nm³ which was well under the 20 mg/m³ level set by the licence.

The table below summarises the air emission trends for the last 5 years.

Table 3.1 Air Emission Trends

VOC Class A	2	<3.5	<0.166	<0.83	<0.83	<0.4
VOC Class B	20	1.7	<0.166	<0.83	<0.83	<0.3
Organics as C	50	<3.5	<1	<0.83	<0.83	<0.5
Volumetric Flow	n/a m ³ /h					422.8
Particulates –blank						<0.4

3.2 Groundwater Monitoring

Fitz Scientific, carried out a ground water quality-monitoring programme on behalf of Safety Kleen. Appendix 3 comprises the results of the water sampling carried on

Interpretation:

Due to the nature of wastes stored at the facility analysis focused on the potential presence of Volatile Organic Compounds (VOC's). In the main, results show that VOC's were detected in the range of 1 to 10µg/L. The licence set no limits however the reporting requirement is to quote groundwater results in mg/l. In this format our results are between one thousandth and one hundredth mg/l.

Trends:

No discernible trends have become apparent since monitoring began at the site

4.0 Environmental Management Programme

The Environmental Management Programme for the reporting period has been previously submitted to the agency. The Transfer Station achieved ISO14001 – 2004 standard. Safety Kleen Dublin had its most recent internal audit in August 2011. A copy of the Environmental Management Manual is available upon request.

5.0 Resource and Energy Consumption

Energy utilised is solely electricity, for heating and lighting, and wringing of office, canteen and plant equipment such as the air compressor. The total usage in 2016 was 24,511. water consumption is restricted to 'domestic' use from the kitchen and toilet facilities on site, and for the formulation of an aqueous product. Currently both uses are not metered separately.

6.0 Development Works carried out during the reporting period and scheduled work

Development works completed in of the external fire and water retention bunds as requested by the EPA.

7.0 Progress in implementing existing Environmental Objectives and Targets

Table 7.1 Progress in implementing Objectives &Targets for 2016

7.0 Progress in implementing existing Environmental Objectives and Targets

Table 7.1 Progress in implementing Objectives & Targets for 2016

<p>PARTS W ASHING & CHEMICAL APPLICATION SERVICES</p> <p>HEALTH, SAFETY, ENVIRONMENTAL & QUALITY OBJECTIVES AND TARGETS 2016</p> <ol style="list-style-type: none">1. Focus on Zero harm with a 25% reduction in accident rates in line with Safetykleen Europe.2. Ensure all EHS data is received by the HSEQ team by the Wednesday following the end of the period. Entered on to the European Dashboard and submitted to the Group EHS Director on a monthly basis.3. Implement improved manual handling equipment across SK UK by the end of 2016.4. Reduce the number of Branch based consignment note NON CONFORMITIES by 20% year on year by end 2016.5. Log all spill information and target areas of concern campaign to begin Q1 2016.6. Perform annual training with all Company Facility Administrators to increase competency in legislative awareness and branch contingency planning.7. Review all branch procedural work instructions, risk assessments and method statements by end of 2016.
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8.0 Environmental Objectives and Targets for 2015

Our HSEQ department have advised that new objective & targets for 2016 a number of those listed for last year are part of longer 3 year rolling projects so they will continue to be worked on.

9.0 Procedures developed within the reporting period

The following procedure was developed during the reporting period: (Appendix 3 the full procedure).

10.0 Tank, drum, pipeline and bd testing

The tank, drum, pipeline and bd testing inspection reports are included as annex 5.

11.0 Reported Incidents and Complaints

There have been no other incidents or complaints within the reporting period.

12.0 Staffing Structure/Management

The management structure of the company has not changed during the reporting period. Gavin Scully (Facility Administrator) reports to Ceri Davies & David Birtwistle.

13.0 Financial Provision

The Financial provision as per the *Closure, Restoration, Aftercare Management Plan* was Submitted to the agency in 2012.

APPENDIX 1 : WASTE QUANTITIES AND LOCAL AREA COUNTY 2016

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
11 01 13*	1.83	TP33345F	Cavan County
11 01 13*	2.305	TP33345F	Clare County
11 01 13*	0.84	TP33345F	Carlow County
11 01 13*	2.52	TP33345F	Cork City
11 01 13*	10.63	TP33345F	Cork County
11 01 13*	0.95	TP33345F	Donegal County
11 01 13*	11.495	TP33345F	Dublin City
11 01 13*	0.42	TP33345F	Dun Laoghaire-Rathdown
11 01 13*	0.745	TP33345F	Fingal
11 01 13*	3.57	TP33345F	Galway City
11 01 13*	0.45	TP33345F	Galway County
11 01 13*	3.27	TP33345F	Kerry County
11 01 13*	1.66	TP33345F	Kildare County
11 01 13*	0.99	TP33345F	Kilkenny County
11 01 13*	0.3	TP33345F	Laois County
11 01 13*	1.665	TP33345F	Leitrim County
11 01 13*	5.37	TP33345F	Limerick City and County
11 01 13*	1.08	TP33345F	Longford County
11 01 13*	4.2	TP33345F	Louth County
11 01 13*	3.18	TP33345F	Mayo County
11 01 13*	4.97	TP33345F	Meath County
11 01 13*	0.57	TP33345F	Monaghan County
11 01 13*	2.07	TP33345F	Offaly County
11 01 13*	1.92	TP33345F	Roscommon County
11 01 13*	0.72	TP33345F	Sligo County
11 01 13*	12.67	TP33345F	South Dublin
11 01 13*	3.12	TP33345F	Tipperary County
11 01 13*	3.28	TP33345F	Waterford City and County
11 01 13*	1.32	TP33345F	Wexford County
11 01 13*	3.74	TP33345F	Westmeath County
11 01 13*	0.99	TP33345F	Wicklow County

Kerosene 2016 total = 92.84

08 01 11*	2.65	W0050-02	Cork County
08 01 11*	0.33	W0050-02	Donegal County
08 01 11*	2.48	W0050-02	Dublin City
08 01 11*	0.125	W0050-02	Fingal
08 01 11*	0.025	W0050-02	Galway City
08 01 11*	0.405	W0050-02	Kerry County
08 01 11*	0.1865	W0050-02	Kildare County
08 01 11*	1.145	W0050-02	Limerick City and County
08 01 11*	0.905	W0050-02	Louth County
08 01 11*	0.2	W0050-02	Mayo County
08 01 11*	0.485	W0050-02	Meath County
08 01 11*	0.125	W0050-02	Monaghan County
08 01 11*	5.57	W0050-02	South Dublin
08 01 11*	0.405	W0050-02	Tipperary County
08 01 11*	0.15	W0050-02	Waterford City and County
08 01 11*	0.535	W0050-02	Wexford County
08 01 11*	0.71	W0050-02	Wicklow County

Thinners/Paint Waste 2016 = 16.7365

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
08 01 17*	0.325	W0050-02	Dublin City
08 01 17*	0.125	W0050-02	Fingal
08 01 17*	0.025	W0050-02	Galway County
08 01 17*	0.225	W0050-02	Kildare County
08 01 17*	0.35	W0050-02	South Dublin
08 01 17*	0.025	W0050-02	Cork County
08 01 17*	0.205	W0050-02	Clare County
08 01 17*	0.075	W0050-02	Limerick City and County

Aquakleen waste 2016 = 1.355

Waste	Quantity (in	Going to Facility	Collected in LA Area
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Code	tonnes)		
08 03 12*	0.205	W0050-02	Dun Laoghaire-Rathdown
08 03 12*	0.41	W0050-02	Louth County

Ink Waste 2016 = 0.615

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
13 02 05*	0.41	W0050-02	Dublin City
13 02 05*	0.405	W0050-02	Cork County
13 02 05*	0.205	W0050-02	South Dublin

Engine Oil

2016 = 1.02

13 07 03*	0.405	W0050-02	Cork City
13 07 03*	0.205	W0050-02	Cork County

Mixed Fuel 2016= 0.610

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
15 02 02*	2.255	W0050-02	Sligo County
15 02 02*	5.72	W0050-02	Cork County
15 02 02*	3.075	W0050-02	Kerry County
15 02 02*	5.74	W0050-02	South Dublin
15 02 02*	3.28	W0050-02	Dublin City
15 02 02*	0.82	W0050-02	Meath County
15 02 02*	0.82	W0050-02	Fingal
15 02 02*	1.025	W0050-02	Cork City
15 02 02*	9.63	W0050-02	Leitrim County
15 02 02*	2.255	W0050-02	Limerick City and County
15 02 02*	0.41	W0050-02	Clare County
15 02 02*	1.435	W0050-02	Louth County

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
11 01 14	0.5	W0184-01	Carlow County
11 01 14	9.755	W0184-01	Clare County
11 01 14	0.625	W0184-01	Cork City
11 01 14	5.985	W0184-01	Cork County
11 01 14	1.675	W0184-01	Galway City
11 01 14	0.21	W0184-01	Galway County
11 01 14	0.41	W0184-01	Kerry County
11 01 14	1.43	W0184-01	Kildare County
11 01 14	1.54	W0184-01	Kilkenny County
11 01 14	1.1	W0184-01	Laois County
11 01 14	0.2	W0184-01	Leitrim County
11 01 14	0.4	W0184-01	Limerick City and County
11 01 14	1.19	W0184-01	Longford County
11 01 14	0.645	W0184-01	Louth County
11 01 14	0.35	W0184-01	Mayo County
11 01 14	0.34	W0184-01	Meath County
11 01 14	0.05	W0184-01	Monaghan County
11 01 14	0.6	W0184-01	Offaly County
11 01 14	0.375	W0184-01	Roscommon County
11 01 14	1.255	W0184-01	Sligo County
11 01 14	12.4	W0184-01	South Dublin
11 01 14	0.18	W0184-01	Tipperary County
11 01 14	6.99	W0184-01	Waterford City and County
11 01 14	2.14	W0184-01	Wexford County
11 01 14	5.325	W0184-01	Wicklow County

Aqueous waste 2016 = 55.67

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
15 02 02*	2.255	W0050-02	Sligo County
15 02 02*	5.72	W0050-02	Cork County
15 02 02*	3.075	W0050-02	Kerry County
15 02 02*	5.74	W0050-02	South Dublin
15 02 02*	3.28	W0050-02	Dublin City
15 02 02*	0.82	W0050-02	Meath County
15 02 02*	0.82	W0050-02	Fingal
15 02 02*	1.025	W0050-02	Cork City
15 02 02*	9.63	W0050-02	Leitrim County
15 02 02*	2.255	W0050-02	Limerick City and County
15 02 02*	0.41	W0050-02	Clare County
15 02 02*	1.435	W0050-02	Louth County

Flammable Solid waste 2016 : 36.465

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
16 01 07*	0.24	W0050-02	Sligo County
16 01 07*	0.72	W0050-02	Cork City
16 01 07*	6.08	W0050-02	Cork County
16 01 07*	0.925	W0050-02	Kerry County
16 01 07*	0.96	W0050-02	Monaghan County
16 01 07*	10.69	W0050-02	Dublin City
16 01 07*	1.68	W0050-02	Galway City
16 01 07*	0.24	W0050-02	Longford County
16 01 07*	0.24	W0050-02	Wicklow County
16 01 07*	4.08	W0050-02	South Dublin
16 01 07*	0.24	W0050-02	Westmeath County
16 01 07*	0.96	W0050-02	Limerick City and County
16 01 07*	0.96	W0050-02	Meath County
16 01 07*	0.24	W0050-02	Louth County
16 01 07*	0.48	W0050-02	Fingal
16 01 07*	0.12	W0050-02	Tipperary County
16 01 07*	1.2	W0050-02	Mayo County

16 01 07* 0.36 W0050-02 Clare County

Oil Filters 2016 waste = 30.415

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
16 01 13*	0.205	W0050-02	Cork County

Brake Fluid 2016 waste = 205

16 01 15	0.525	W0050-02	Cork County
16 01 15	0.205	W0050-02	Dublin City
16 01 15	0.41	W0050-02	Cork City

Antifreeze 2016 waste = 1.14

Waste Code	Quantity (in tonnes)	Going to Facility	Collected in LA Area
18 01 06*	14.975	W0050-02	Galway City
18 01 06*	1.25	W0050-02	Cavan County
18 01 06*	1.875	W0050-02	Mayo County
18 01 06*	15.33	W0050-02	Dublin City
18 01 06*	14.525	W0050-02	Cork City
18 01 06*	0.92	W0050-02	South Dublin

Misc 2016 waste = 48.875

18 01 07	1.05	W0050-02	Dublin City
18 01 07	0.125	W0050-02	South Dublin

APPENDIX 2 : Air Emission & Ground Water Monitoring Report 2016

Safety Kleen Ireland Ltd

Unit 5, Airton Road, Tallaght, Dublin 24.

Emissions to Atmosphere

Report No:

1504/M02

Industrial Emissions Licence: W0099-01

Report Date:

17/02/2017



Monitoring and Testing Services

Fitz Scientific

Unit 35, Boyne Business Park, Drogheda, Co Louth

Phone: +353 41 98 45440

Report for the Periodic Monitoring of Emissions to Air

Executive Summary

Licence / Permit Number:	W0099-01
Job Quote Number:	Y16Q17747
Operator Name:	Safety Kleen Ireland Ltd
Installation:	Unit 5, Airton Road, Tallaght, Dublin 24.
Contact Name:	Gavin Scully
Phone:	01 4518800

Monitoring Dates: 30/01/2017

Monitoring Organisation: Fitz Scientific
Unit 35, Boyne Business Park, Drogheda, Co. Louth, Ireland
Phone: +353 41 98 45440 / Fax: +353 41 98 46171
email: air@fitzsci.ie


UKAS Registration number 2802

Report Date: 17/02/2017

Report created using QRSys version 3.6 Jan 2017

Written By: Aadil Khan
MCERTS Reg: MM11 1120
Competency: Level 2
Function: Field Services Manager
Endorsements: TE1, TE2, TE3, TE4

Approved By: Geoff Fitzpatrick
MCERTS Reg: MM07 801
Competency: Level 2
Function: Manager
Endorsements: TE1, TE2, TE3, TE4

Signed: 

Signed: 



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- 1.2.- Special Monitoring Requirements**
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- 1.5.- Monitoring Deviations**
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2.- Part 2

- Appendix 1: General Information**
- Appendix 2: Monitoring Information**

1.- Part 1

1.1.- Monitoring Objectives

The monitoring was carried out as requested by the management of the company above mentioned. The customer has chosen not to sample to the requirements of BS EN 15259:2007 for the substances monitored at the emission points listed below as stated in the Confirmation Form received from the customer.

S3	
Parameter	Result
Particulates	<0.2 mg/m3
VOC Class A	<0.008 mg/m3
VOC Class B	<0.015 mg/m3
Volumetric flow	498.7 m3/h

1.2.- Special Monitoring Remarks

Opinions and interpretations expressed in this report are outside the scope of any claimed UKAS accreditation. EPA requirements AG1 (Safety) and AG2 (Monitoring Guidance Note) were applied during the monitoring.

All the sampling points were obtainable Yes

All parameters were sampled Yes

Additional information

1.3.- Monitoring Results

Emission Point Reference	Substance to be Monitored	ELV	Result	Uncert (+/-)	LOD	Units	velocity (m/s)	Date of sampling	Start - End Times	Reference Method	Accr.
S3	Particulates	50 mg/m3	<0.2	0.05	0.2	mg/m3	7.22	30/01/2017	10:53-11:23	BS EN 13284-1:2002	MCERTS
S3	VOC Class A	2 mg/m3	<0.008	n/a	0.008	mg/m3	7.22	30/01/2017	10:41-11:11	PD CEN/TS 13649:2014	MCERTS
S3	VOC Class B	20 mg/m3	<0.015	n/a	0.015	mg/m3	7.22	30/01/2017	10:41-11:11	PD CEN/TS 13649:2014	MCERTS
S3	Volumetric flow	n/a	498.7	14.8	n/a	m3/h	7.22	30/01/2017	10:35-10:37	BS EN 16911-1:2013	MCERTS
S3	Particulates-blank		<0.2	0.05	0.2	mg/m3		30/01/2017	11:41-11:44	BS EN 13284-1:2002	MCERTS
S3	VOC Class A-blank		<0.008	n/a	0.008	mg/m3		30/01/2017		PD CEN/TS 13649:2014	MCERTS
S3	VOC Class B-blank		<0.015	n/a	0.015	mg/m3		30/01/2017		PD CEN/TS 13649:2014	MCERTS

No*: Sampling stage carried out as per MCERTS requirements

Analysis information

Particulates	Fitz Scientific
VOC Class A	SAL - Manchester
VOC Class B	SAL - Manchester
Volumetric flow	Fitz Scientific

Additional information

* The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%

** Results reported at following Reference Conditions

Reference Conditions

Emission Point Reference	Monitoring Result Reference Conditions			
	Temperature (K)	Pressure (KPa)	Moisture (%)	Oxygen (%)
S3	273	101.3	no correction	no correction

Abatement system and process load

Location	Abatement system	In Operation	Fuel type and Load	
S3	None	n/a	None	As normal

1.4.- Operating Information

Emission Point Reference	Date	Process Type	Process Duration	Substance	CEMS	PR	Units
S3	30/01/2017	Air Extraction	Continuous	Particulates	n/a	<0.2	mg/m3
S3	30/01/2017	Air Extraction	Continuous	VOC Class A	n/a	<0.008	mg/m3
S3	30/01/2017	Air Extraction	Continuous	VOC Class B	n/a	<0.015	mg/m3
S3	30/01/2017	Air Extraction	Continuous	Volumetric flow	n/a	498.7	m3/h

* CEMS: Continuous Emission Monitoring System Results
* PR: Periodic Monitoring Results

1.5.- Monitoring Deviations

Emission Point	S3	Parameter	Particulates
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- Emission monitoring point does not have required number of ports as per AG1 section 2.1/2.2 (per M1 Figure A2.5).
- Sampling port size is too small for velocity, temperature and pressure measurements to be carried out as per AG1 section 2.1/2.2 (M1 Annex 1).
- Emission point does not meet the requirements of BS EN 15259:2007 Section 6.2.1 NOTE 4 and AG1 section 2.1/2.2 (per M1 Annex 1) - The measurement plane is not in a section of duct that is at least 5 hydraulic diameters of straight duct upstream of the sampling plane and 2 hydraulic diameters downstream (5 hydraulic diameters from the top of the stack)
- Negative flow was found (BS EN 13284-1 section 5.2 b).
- The stack flow direction doesn't meet the minimum requirement of 15 degrees with regard the axis of the stack. (BS EN 13284-1 section 5.2 a).
- The ratio of highest to lowest local gas velocity is outside (higher than 3:1) of BS EN 13284-1 section 5.2 d) requirements.
- Differential pressure lower than 5Pa measured with pitot tube (BS EN 13284-1 section 5.2 c).
- Isokinetic conditions were outside the requirements of BS EN 13282-1 section 10.4.
- Due to the high velocity in the duct a smaller nozzle size was used than required by BS EN 13282-1 section 5.2.4 (6mm) to carry out isokinetic sampling.
- The blank reading does not meet the required target of <10% of the daily limit value (for ELV >10 mg/m3) (BS EN 13284-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >10% ELV to be achieved (for ELV >5 mg/m3) (MID 13248-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >20% ELV to be achieved (for ELV <5 mg/m3) (MID 13248-1 section 10.6)
- NOx overall uncertainty calculated is outside requirement of <10% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.1 BS EN 14789:2005
- CO overall uncertainty calculated is outside requirement of <6% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.3 BS EN 15058:2006.
- O2 overall uncertainty calculated is outside requirement of <6% of the value expressed on dry basis as per 7.3 BS EN 14789:2005
- NOx calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- CO calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- O2 calibration drift is higher than 2% of the span value. Results are corrected to drift. (EN 14789:2005 Section 8.4.2.3)
- TVOC calibration drift is higher than 2% of the span value. Results are corrected to drift. (BS EN 12619:2013 Section 6.2.3)
- SO2 Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 14791:2005 section 6.6.1)
- HCl Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 1911:2010 section 5.2.1.2.2)
- HF Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS ISO 15713:2006 section 6.4).
- Homogeneity test is required for this stack as per BS EN 15259:2007 but customer did not require it in the Confirmation Form
- The measurement values are invalid as the corresponding blank result is greater than the requirement identified in CEN/TS 13649:2014 section 10 (c) (must be <10% of the limit values)

Emission Point **S3** Parameter **VOC Class A**

- Emission monitoring point does not have required number of ports as per AG1 section 2.1/2.2 (per M1 Figure A2.5).
- Sampling port size is too small for velocity, temperature and pressure measurements to be carried out as per AG1 section 2.1/2.2 (M1 Annex 1).
- Emission point does not meet the requirements of BS EN 15259:2007 Section 6.2.1 NOTE 4 and AG1 section 2.1/2.2 (per M1 Annex 1) - The measurement plane is not in a section of duct that is at least 5 hydraulic diameters of straight duct upstream of the sampling plane and 2 hydraulic diameters downstream (5 hydraulic diameters from the top of the stack)
- Negative flow was found (BS EN 13284-1 section 5.2 b).
- The stack flow direction doesn't meet the minimum requirement of 15 degrees with regard the axis of the stack. (BS EN 13284-1 section 5.2 a).
- The ratio of highest to lowest local gas velocity is outside (higher than 3:1) of BS EN 13284-1 section 5.2 d) requirements.
- Differential pressure lower than 5Pa measured with pitot tube (BS EN 13284-1 section 5.2 c).
- Isokinetic conditions were outside the requirements of BS EN 13282-1 section 10.4.
- Due to the high velocity in the duct a smaller nozzle size was used than required by BS EN 13282-1 section 5.2.4 (6mm) to carry out isokinetic sampling.
- The blank reading does not meet the required target of <10% of the daily limit value (for ELV >10 mg/m3) (BS EN 12384-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >10% ELV to be achieved (for ELV >5 mg/m3) (MID 13248-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >20% ELV to be achieved (for ELV <5 mg/m3) (MID 13248-1 section 10.6)
- NOx overall uncertainty calculated is outside requirement of <10% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.1 BS EN 14789:2005
- CO overall uncertainty calculated is outside requirement of <6% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.3 BS EN 15058:2006.
- O2 overall uncertainty calculated is outside requirement of <6% of the value expressed on dry basis as per 7.3 BS EN 14789:2005
- NOx calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- CO calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- O2 calibration drift is higher than 2% of the span value. Results are corrected to drift. (EN 14789:2005 Section 8.4.2.3)
- TVOC calibration drift is higher than 2% of the span value. Results are corrected to drift. (BS EN 12619:2013 Section 6.2.3)
- SO2 Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 14791:2005 section 6.6.1)
- HCl Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 1911:2010 section 5.2.1.2.2)
- HF Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS ISO 15713:2006 section 6.4).
- Homogeneity test is required for this stack as per BS EN 15259:2007 but customer did not require it in the Confirmation Form
- The measurement values are invalid as the corresponding blank result is greater than the requirement identified in CEN/TS 13649:2014 section 10 (c) (must be <10% of the limit values)

Emission Point **S3** Parameter **VOC Class B**

- Emission monitoring point does not have required number of ports as per AG1 section 2.1/2.2 (per M1 Figure A2.5).
- Sampling port size is too small for velocity, temperature and pressure measurements to be carried out as per AG1 section 2.1/2.2 (M1 Annex 1).
- Emission point does not meet the requirements of BS EN 15259:2007 Section 6.2.1 NOTE 4 and AG1 section 2.1/2.2 (per M1 Annex 1) - The measurement plane is not in a section of duct that is at least 5 hydraulic diameters of straight duct upstream of the sampling plane and 2 hydraulic diameters downstream (5 hydraulic diameters from the top of the stack)
- Negative flow was found (BS EN 13284-1 section 5.2 b).
- The stack flow direction doesn't meet the minimum requirement of 15 degrees with regard the axis of the stack. (BS EN 13284-1 section 5.2 a).
- The ratio of highest to lowest local gas velocity is outside (higher than 3:1) of BS EN 13284-1 section 5.2 d) requirements.
- Differential pressure lower than 5Pa measured with pitot tube (BS EN 13284-1 section 5.2 c).
- Isokinetic conditions were outside the requirements of BS EN 13282-1 section 10.4.
- Due to the high velocity in the duct a smaller nozzle size was used than required by BS EN 13282-1 section 5.2.4 (6mm) to carry out isokinetic sampling.
- The blank reading does not meet the required target of <10% of the daily limit value (for ELV >10 mg/m3) (BS EN 12384-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >10% ELV to be achieved (for ELV >5 mg/m3) (MID 13248-1 section 10.6)
- The ELV is such that the LOD for the analysis does not allow for the requirement of >20% ELV to be achieved (for ELV <5 mg/m3) (MID 13248-1 section 10.6)
- NOx overall uncertainty calculated is outside requirement of <10% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.1 BS EN 14789:2005
- CO overall uncertainty calculated is outside requirement of <6% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.3 BS EN 15058:2006.
- O2 overall uncertainty calculated is outside requirement of <6% of the value expressed on dry basis as per 7.3 BS EN 14789:2005
- NOx calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- CO calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)
- O2 calibration drift is higher than 2% of the span value. Results are corrected to drift. (EN 14789:2005 Section 8.4.2.3)
- TVOC calibration drift is higher than 2% of the span value. Results are corrected to drift. (BS EN 12619:2013 Section 6.2.3)
- SO2 Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 14791:2005 section 6.6.1)
- HCl Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 1911:2010 section 5.2.1.2.2)
- HF Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS ISO 15713:2006 section 6.4).
- Homogeneity test is required for this stack as per BS EN 15259:2007 but customer did not require it in the Confirmation Form
- The measurement values are invalid as the corresponding blank result is greater than the requirement identified in CEN/TS 13649:2014 section 10 (c) (must be <10% of the limit values)

Emission Point	Parameter	Volumetric flow
<input type="checkbox"/>	Emission monitoring point does not have required number of ports as per AG1 section 2.1/2.2 (per M1 Figure A2.5).	
<input type="checkbox"/>	Sampling port size is too small for velocity, temperature and pressure measurements to be carried out as per AG1 section 2.1/2.2 (M1 Annex 1).	
<input type="checkbox"/>	Emission point does not meet the requirements of BS EN 15259:2007 Section 6.2.1 NOTE 4 and AG1 section 2.1/2.2 (per M1 Annex 1) - The measurement plane is not in a section of duct that is at least 5 hydraulic diameters of straight duct upstream of the sampling plane and 2 hydraulic diameters downstream (5 hydraulic diameters from the top of the stack)	
<input type="checkbox"/>	Negative flow was found (BS EN 13284-1 section 5.2 b).	
<input type="checkbox"/>	The stack flow direction doesn't meet the minimum requirement of 15 degrees with regard the axis of the stack. (BS EN 13284-1 section 5.2 a).	
<input type="checkbox"/>	The ratio of highest to lowest local gas velocity is outside (higher than 3:1) of BS EN 13284-1 section 5.2 d) requirements.	
<input type="checkbox"/>	Differential pressure lower than 5Pa measured with pitot tube (BS EN 13284-1 section 5.2 c).	
<input type="checkbox"/>	Isokinetic conditions were outside the requirements of BS EN 13282-1 section 10.4.	
<input type="checkbox"/>	Due to the high velocity in the duct a smaller nozzle size was used than required by BS EN 13282-1 section 5.2.4 (6mm) to carry out isokinetic sampling.	
<input type="checkbox"/>	The blank reading does not meet the required target of <10% of the daily limit value (for ELV >10 mg/m ³) (BS EN 12384-1 section 10.6)	
<input type="checkbox"/>	The ELV is such that the LOD for the analysis does not allow for the requirement of >10% ELV to be achieved (for ELV >5 mg/m ³) (MID 13248-1 section 10.6)	
<input type="checkbox"/>	The ELV is such that the LOD for the analysis does not allow for the requirement of >20% ELV to be achieved (for ELV <5 mg/m ³) (MID 13248-1 section 10.6)	
<input type="checkbox"/>	NOx overall uncertainty calculated is outside requirement of <10% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.1 BS EN 14789:2005	
<input type="checkbox"/>	CO overall uncertainty calculated is outside requirement of <6% at the daily ELV expressed on dry basis before correction to O2 reference concentration as per 7.3 BS EN 15058:2006.	
<input type="checkbox"/>	O2 overall uncertainty calculated is outside requirement of <6% of the value expressed on dry basis as per 7.3 BS EN 14789:2005	
<input type="checkbox"/>	NOx calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)	
<input type="checkbox"/>	CO calibration drift is higher than 2% of the span value. Results are corrected to drift. (TGN M22 Section 6)	
<input type="checkbox"/>	O2 calibration drift is higher than 2% of the span value. Results are corrected to drift. (EN 14789:2005 Section 8.4.2.3)	
<input type="checkbox"/>	TVOC calibration drift is higher than 2% of the span value. Results are corrected to drift. (BS EN 12619:2013 Section 6.2.3)	
<input type="checkbox"/>	SO2 Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 14791:2005 section 6.6.1)	
<input type="checkbox"/>	HCl Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS EN 1911:2010 section 5.2.1.2.2)	
<input type="checkbox"/>	HF Impinger efficiency is lower than the requirements of 95% total of concentration in the first impinger (BS ISO 15713:2006 section 6.4).	
<input type="checkbox"/>	Homogeneity test is required for this stack as per BS EN 15259:2007 but customer did not require it in the Confirmation Form	
<input type="checkbox"/>	The measurement values are invalid as the corresponding blank result is greater than the requirement identified in CEN/TS 13649:2014 section 10 (c) (must be <10% of the limit values)	

2.- Part 2

Supporting information

Licence / Permit Number:	W0099-01
Job Quote Number:	Y16Q17747
Operator Name:	Safety Kleen Ireland Ltd
Installation:	Unit 5, Airton Road, Tallaght, Dublin 24.
Contact Name:	Gavin Scully
Phone:	01 4518800

Monitoring Dates: 30/01/2017

Monitoring Organisation: Fitz Scientific
Unit 35, Boyne Business Park, Drogheda, Co. Louth, Ireland
Phone: +353 41 98 45440 / Fax: +353 41 98 46171
email: air@fitzsci.ie

Laboratory details

Particulates

	Address	Contact	email	Phone	Acc. Number
Fitz Scientific	Unit 35, Boyne Business Park, Drogheda, Co. Louth, Ireland	Geoff Fitzpatrick	info@fitzsci.ie	+353 41 98 45440 - ext 2	UKAS 2802

VOC Class A

	Address	Contact	email	Phone	Acc. Number
SAL - Manchester	Hadfield House, Hadfield Street, Old Trafford, Manchester, M16 9FE	Duncan Campbell	salsales@salldt.co.uk	+44 (0)161 874 2400	UKAS 1549

VOC Class B

	Address	Contact	email	Phone	Acc. Number
SAL - Manchester	Hadfield House, Hadfield Street, Old Trafford, Manchester, M16 9FE	Duncan Campbell	salsales@salldt.co.uk	+44 (0)161 874 2400	UKAS 1549

Volumetric flow

	Address	Contact	email	Phone	Acc. Number
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Fitz Scientific	Unit 35, Boyne Business Park, Drogheda, Co. Louth, Ireland	Geoff Fitzpatrick	info@fitzsci.ie	+353 41 98 45440 - ext 2	UKAS 2802
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Appendix 1:

Sampling personnel used

30/01/2017	Technician Name	Position	Qualification	TEs	MCERTS no
	Aadil Khan	Team Leader	Level 2	TE1, TE2, TE3, TE4	MM11 1120
	Adrian Gauqhan	Team Leader	Level 2	TE1, TE2, TE3, TE4	MM14 1287

Substances Monitored

Substance	Method used for Monitoring	Fitz SOP
Particulates	BS EN 13284-1:2002	101
Volumetric flow	BS EN 16911-1:2013	122

As an accredited organisation Fitz scientific have implemented procedures to ensure that the requirements of TPS 63 (UKAS Policy on Deviating Samples) are met with regard to samples taken and tested for chemical analysis. As such all samples, when applicable, have been transported in containers, and in an environment, that meet the relevant standard requirements where applicable

Equipment Checklist References

Stack:	S3				
Parameter:	Volumetric flow				
TCR	EM207	Weights	n/a	FTIR	n/a
Nozzles	n/a	Caliper	n/a	Filters	n/a
Impingers	n/a	Testo	n/a	Gases	n/a
Probe	Probe1	Horiba	n/a	Handheld pumps	n/a
Pitot tube	EM077	FID	n/a	Tubes	n/a
Parameter:	VOC Class B				
TCR	EM207	Weights	n/a	FTIR	n/a
Nozzles	n/a	Caliper	n/a	Filters	n/a
Impingers	n/a	Testo	n/a	Gases	n/a
Probe	Probe1	Horiba	n/a	Handheld pumps	EM054
Pitot tube	EM077	FID	n/a	Tubes	6516813314/6516813313
Parameter:	VOC Class A				
TCR	EM207	Weights	n/a	FTIR	n/a
Nozzles	n/a	Caliper	n/a	Filters	n/a
Impingers	n/a	Testo	n/a	Gases	n/a
Probe	Probe1	Horiba	n/a	Handheld pumps	EM054
Pitot tube	EM077	FID	n/a	Tubes	6516813314/6516813313
Parameter:	Particulates				
TCR	EM207	Weights	n/a	FTIR	n/a
Nozzles	Set2	Caliper	EM157	Filters	EM3151/EM3205
Impingers	Set D	Testo	n/a	Gases	n/a
Probe	Probe1	Horiba	n/a	Handheld pumps	n/a
Pitot tube	EM077	FID	n/a	Tubes	n/a

Appendix 2:

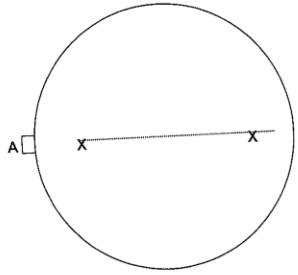
Monitoring Information

Stack	S3	Parameter: Volumetric Flow, Particulates, VOC Class A, VOC Class B	
Number of Ports	1	Dry Flow rate at STP, Ref O2 (m3/h)	498.7
Number of Points	2	Max Flow Rate in Licence (m3/h):	n/a
Average Velocity v'a (m/s)	7.22	T reference (Deg K)	273
Average Pressure (KPa)	100.023	P reference (KPa)	101.3
Average Temperature (°C)	9.48	Isokinetic condition (%)	0.7
Stack Diameter (m)	0.16	Oxygen measured (%)	n/a
Actual Moisture Flow rate (m3/h)	522.6	Water vapor (%)	n/a
Moisture Flow rate at STP (m3/h)	498.7	Wet Stack (yes/no)	No
Size of Nozzle	7	Probe Temperature (°C)	n/a
		Impinger efficiency (%)	n/a

Diagram of Sampling Location (not to scale)

S3

- Circular
- 1 ports
- 2 points



Traverse Length 0.16 m

Line	Point	% of Diameter	Location (cm)	Velocity (m/s)	Temperature (°C)
1	1	18.80	3	7.59	9.48
1	2	85.60	13.7	6.76	9.48

Monitoring result calculations and uncertainty calculations

BS EN 18511:2013
S001/2017

Volumetric Flowrate Correction Template

Company: Safety Klean Ireland
Reference No: M02
Site: Unit 5, Alton Road, SS
Operator ID: MM11 1120
TE1, TE2, TE3, TE4



Measuring and Testing Services

Plant Identification: Aadi Khan
Test carried out by: 1504/M02

Stack dimensions	Stack Area m ²	Suitable ports (Y/N)?	Comply with 5 Up / 7 Down? (Y/N)	Pressure kPa	Temperature K	Moisture %	Oxygen %
0.16	0.020106193	Yes	Yes	101.3	273	0	20.9
Circular Stack		1		100.0	282.5	0.0	20.90
Rectangular stack	0.00	1					

Point	Velocity m/s (V _a)	Temp degC (t _a)	Temp K	Pressure kPa (P _a)	Flow Rate m ³ /sec:	Actual Flow rate m ³ /hr	Moisture Flow at STP m ³ /hr	Moisture %	Flow rate at STP, Dry m ³ /hr	Flow Rate at STP, Dry, Wet O2 m ³ /hr
1	7.22	9.48	282.48	100.023	0.1	522.6	488.7	0.0	488.7	488.7
Volumetric flow	7.22	9.48	282.48	100.023	0.1	522.6	488.7	0.0	488.7	488.7
Uncertainty						15.5	14.8	0.0	14.8	14.8

Maximum volumetric flow as per Licence: m³/h

Uncertainty calculation for Velocity and Volume Flow Rate Measurement by Pitot tube EN ISO 16911-1

Site: St. James W. Croydon
Data File: K114_2017.mdi

PROB

Sampling probe	010111
Probe coefficient, K	0.9987
Repeatability (95%, k=2)	0.0105

Characteristics of pressure sensor used for static P

Manufacturer	TEDEA HUNTLEIGH
Resolution of static P transducer	0.01 Pa
Repeatability of static P transducer	0.01 Pa
Linearity of static P transducer	0.01 Pa
Linearity of measurement system	0.01 Pa

UNCERTAINTY IN STATIC P MEASUREMENT

Static P	1000.00	%
Repeatability	0.01	%
Linearity	0.01	%
Resolution	0.01	%

PROB DIMENSIONS

Velocity	0.0000
Diameter	0.16 m
Area	0.0201 m ²
Uncertainty (%)	0.0028

CONCENTRATOR

Manufacturer	TEDEA HUNTLEIGH
Resolution	0.01 Pa
Linearity	0.01 Pa

As Required, shown in columns in Cases 1, Pa

Measurement Point	Atmospheric Pressure, Pa	Static Pressure, Pa	Mean P, Pa	Mean P, Pa	Mean P, Pa	Mean P, Pa	Mean P, Pa	Static P, Pa	Static Temperature, C	Wind Velocity, m/s	Dry Air Basis							
											O ₂ , ppm	O ₂ , %	N ₂ , %	dry molecular wt. g/mol	static molecular wt. g/mol	dry molecular wt. g/mol	static molecular wt. g/mol	dry molecular wt. g/mol

Velocity = $V = \sqrt{\frac{2 \Delta P}{\rho}}$

Mean velocity: 7.23 m/s
Standard uncertainty: 0.10 m/s (1.4 % of value)
Expanded uncertainty: 0.20 m/s (2.7 % of value)

Flow rate (stack conditions): 1.53 m³/s
Std. flow rate expanded uncertainty: 0.02 m³/s (1.3 % of value)

Model ID: 1.123.98/03
Developed for the STA by David Butterfield & Chris Compagnone, NPL

Velocity associated uncertainties

Pitot Tube Coefficient		0.02
Expanded uncertainty (95%, k=2)		0.03
Standard uncertainty (Dimensionless)		0.01
Delta P	Standard uncertainty	See Table 1
Delta P		0.00
Resolution uncertainty		0.11
Calibration uncertainty		0.23
Lack of fit		0.28
Molar Mass		0
u(MH2O)		20.9
u(CO2)wet		0.00
u(CO)wet		0.00
u(CO2)dry		0.00
u(CO)dry		0.00
u(CO)wet		0.00
u(CO2)wet		0.00
u(CO)wet		4.00E-05
u(CO2)wet		1.00E-04
u(CO)dry		3.00E-04
u(CO2)dry		4.00E-04
Standard uncertainty	0.000000 kg/mol	0.00 % of value
Temperature		
Standard uncertainty	0.31 K	0.31 % of value
Stack static pressure		
Standard uncertainty	0.0 Pa	NDIV/01 % of value
Stack pressure		
Standard uncertainty	998.6 Pa	3.00 % of value
Stack gas density		
Standard uncertainty	0.0123 kg/m3	3.00 % of value
Standard uncertainty of velocity	0.10 m/sec	1.4 % of value
Expanded uncertainty in velocity	0.20 m/sec	2.7 % of value

Table 1

Measurement Point	No. of the stack of the measurements	Standard uncertainty Delta P (Pa)	u(Delta P) Velocity (m/s)	Standard uncertainty velocity (m/s)
1	1	0.00	0.00	0.22
2	1	0.00	0.00	0.22
3	1	0.00	0.00	0.22
4	1	0.00	0.00	0.22
5	1	0.00	0.00	0.22
6	1	0.00	0.00	0.22
7	1	0.00	0.00	0.22
8	1	0.00	0.00	0.22
9	1	0.00	0.00	0.22
10	1	0.00	0.00	0.22
11	1	0.00	0.00	0.22
12	1	0.00	0.00	0.22
13	1	0.00	0.00	0.22
14	1	0.00	0.00	0.22
15	1	0.00	0.00	0.22
16	1	0.00	0.00	0.22
17	1	0.00	0.00	0.22
18	1	0.00	0.00	0.22
19	1	0.00	0.00	0.22
20	1	0.00	0.00	0.22
Average	20	0.02	3.58918278 E-04	7.23
				0.220175885

Volume flow rate associated uncertainties

	Circular duct	Rectangular duct
Area uncertainty	0.01 m ²	#DIV/0! m ²
Flow rate standard uncertainty	8 m ³ /h	#DIV/0! m ³ /h
Volume flow rate expanded uncertainty	15 m ³ /h	#DIV/0! m ³ /h
Volume flow rate expanded uncertainty	3.0 % of value	#DIV/0! % of value

Factor Loading Function

Number of measurements	dn
2	0.885
3	0.591
4	0.486
5	0.43
6	0.395
7	0.37
8	0.351
9	0.337
10	0.325
11	0.315
12	0.307
15	0.288
20	0.268
25	0.254
30	0.245
40	0.227
50	0.222
60	0.216
80	0.206
100	0.199

Particulates
 Company: Safety Netron Ireland Ltd
 Address: Unit 5, Ardon Road, Tallaght
 Plant Identification: S3
 Test Carried out by: Asif Khan
 Report Number: 1504/M02
 Date of Test: 30/07/2017
 Test Start Time: AM11:15Z
 TE's: TE1, TE2, TE3, TE4

BS EN 13241-12:02
 30/07/2017
 AM11:15Z
 TE1, TE2, TE3, TE4

Particulate Concentrations

Filter #1	0.80005	477000401	Fitz Scientific	MCERTS	7
Filter Blank	0.00005	477000403	Fitz Scientific	MCERTS	0.7
Filter Blank	0.00005	477000402	Fitz Scientific	MCERTS	Yes
LOD Filter	0.00005	477000404	Fitz Scientific	MCERTS	1
LOD Nozzle Wash	0.00005	n/a			
LOD Particulate	0.00011	n/a			
Run	0.00011	0.11			
Blank	0.00011	0.11			

Dry at Gas Meter (Vg) = 0.48360 m³
 Wet at Gas Meter (Vw) = 0.29200 m³
 Ambient Pressure Measured (Pa) = 101.325 kPa
 Gas Volume STP (Vgp) = 0.44124022 m³
 Gas Volume Factor Correction = 0.858562
 Corrected Volume STP = 0.441232423 m³

Nozzle: 7
 Isokinetic Ratio: 0.7
 8 up / 2 down (VW): Yes
 Requirements: 1
 Blank < 10% ELV: FALSE
 ELV-Single: FALSE
 ELV-Single -> LOD: 0.00011: FALSE

Results	mg/m ³ @ STP	mg/m ³ @ STP Dry	Uncertainty mg/m ³	mg	Uncertainty Kg
LOD	0.2	0.2	0.000	0.000	n/a
Blank	0.2	0.2	0.000	0.000	n/a

CO meter = 20.3 %
 CO Reference = 20.3 %

Flow Rate as reference conditions = 498.80 m³/hr

Leak Test Results:	Before Blank	After Blank	Before Sample	After Sample	Leak
	-50	-50	-50	0	0

0.00011

Run Calculations
Uncertainty calculation for EN 13284 Determination of low range mass concentration of dust, Manual Gravimetric Method

Limit value (ELV)	50 mg.m ⁻³	Reference oxygen	20.9% by volume	Measurement Equation	$c = \frac{m}{V} f_c$
Measured concentration	0.3 mg.m ⁻³ (at reference conditions)				

Measured Quantities	Symbol	Value	Standard uncertainty	Units	Uncertainty as percentage	Uncertainty	Requirement of std
Sampled Volume	Vm	0.447836443	0.001	m ³	0.22		<=2%
Sampled gas Temperature	Tm	292.40	2	K	0.71		<=1%
Sampled gas Pressure	pm	100.023	1	kPa	1.00		<=1%
Sampled gas Humidity	Hm	0	1	% by volume	1.00		<=1%
Oxygen content	O2,m	20.9	0.15	% by volume	0.48		<=5%
Mass particulate	m	0.11	0.00	mg	0.00	0.00	<=5% of limit value
Note - Sampled gas humidity, temperature and pressure are values at the gas meter							
Uncollected Mass	L	0.335168236		mg	0.34		<=2%
Leak	UCM	0		mg	0		<=10%

Intermediate calculations

Factor for std cond	Symbol	Sensitivity coeff	u (in units of fs)		
Factor for std cond	fs	0.95			
uncertainty components	pm	0.010	0.010		
	Hm	0.010	0.010		
	Tm	0.003	0.007		
	U%		0.015		
Corrected volume	V	0.43	0.007 m ³	$V = V_m f_c$	1.68
Factor for O2 correction	fc	1.00			
uncertainty components	O2,m	1.00	0.100	$f_c = \frac{21 - O_{2,m}}{21 - O_{2,r}}$	10.00
Factor for O2 Correction	U%	1.00	0.100		

Parameter	Value	Units	Sensitivity coeff	Uncertainty contribution	Uncertainty as %
Corrected Volume (standard)	V	0.43 m ³	0.58	0.00 mg.m ⁻³	1.68 %
Mass	m	0.11 mg	2.23	0.00 mg.m ⁻³	0.00 %
Factor for O2 Correction	fc	1.00	0.25	0.00 mg.m ⁻³	10.00 %
Leak	L	0.00 mg.m ⁻³	1.00	0.00 mg.m ⁻³	0.19 %
Uncollected mass	UCM	0.00 mg	2.23	0.00 mg.m ⁻³	0.00 %
Combined measurement uncertainty				0.02 mg.m ⁻³	

Expanded uncertainty as percentage of measured value 20.26 % measured of value expressed with a level of confidence of 95%
(Using a coverage factor k=2)

Expanded uncertainty in units of measurement 0.06 mg.m⁻³

Expanded uncertainty as percentage of limit value 0.3 % ELV

Requirement in standard is for uncertainty to be < 30% at ELV at standard conditions

Blank Calculations
Uncertainty calculation for EN 13284 Determination of low range mass concentration of dust, Manual Gravimetric Method
v14

Limit value (ELV)	Measured concentration	Reference oxygen	20.9% by volume	Measurement Equation
	g/mg.m-3	g/mg.m-3 (at reference conditions)		$c = \frac{m}{V} f_c$
Measured Quantities	Symbol	Value	Standard uncertainty	Units
Sampled Volume	Vm	0.447936443	0.001	m3
Sampled gas Temperature	Tm	282.48		uTm
Sampled gas Pressure	pm	100.923		uPm
Sampled gas Humidity	Hm	0		uHm
Oxygen content	O2,m	20.9		uO2,m
Mass particulate	m	0.11		um
Note - Sampled gas humidity, temperature and pressure are values at the gas meter				
Leak	L	-0.67936472		%
Uncollected Mass (Instack filter - no rinse)	UCM	0		mg
Intermediate calculations				
Factor for std conds	fB	0.95		
uncertainty components	symbol	sensitivity coeff	u (in units of fe)	
	pm	0.010	0.010	
	Hm	0.010	0.010	
	Tm	0.003	0.007	
	uB		0.015	
Corrected volume	V	0.43	uV	0.007 m3
Factor for O2 correction	fc	1.00		
uncertainty components	symbol	sensitivity coeff	u	
	O2,m	1.00	0.100	
Factor for O2 Correction	ufc	1.00	0.100	10.00

$$f_c = \frac{(100 - H_m) 273}{100 T_m - 101.3}$$

$$V = V_m f_c$$

$$f_c = \frac{21 - O_{2,m}}{21 - O_{2,r}}$$

Parameter	Value	Units	Sensitivity coeff	Uncertainty contribution	Uncertainty as %
Corrected Volume (standard)	V	0.43 m3	0.58	0.00 mg.m-3	1.60 %
Mass	m	0.11 mg	2.23	0.00 mg.m-3	0.00 %
Factor for O2 Correction	fc	1.00	0.26	0.02 mg.m-3	10.00 %
Leak	L	0.00 mg.m-3	1.00	0.00 mg.m-3	-0.39 %
Uncollected mass	UCM	0.00 mg	2.23	0.00 mg.m-3	0.00 %
Combined measurement uncertainty				0.02 mg.m-3	

Expanded uncertainty as percentage of measured value: **20.27** % measured of value expressed with a level of confidence of 95% (Using a coverage factor k=2)

Expanded uncertainty in units of measurement: **0.05** mg.m-3

Expanded uncertainty as percentage of limit value: **1.0** % ELV

Note:

P-3 Schedule
1/28/2018
Vial 0011 | Page 11

Safety Item Number: 44
Material Reference Number: 0000000

T1 Lot Organic Calibration Impacts			
Company	State	Sample Number	Sample Total
Shir	MD	00000001	00000001
Parent Identification	Reference No	Operator ID	Unit ID
S1	00000001	00000001	00000001
Lot created on by	Lot Number	Lot ID	Lot Description
	00000001	00000001	00000001

Lot Details:			
Parent Number:	00000001	Sample Number:	00000001
Child Lot Number:	00000002	Sample Number:	00000002
Parent Volume:	1000	Sample Volume:	1000
Parent Volume:	1000	Sample Volume:	1000
Parent Volume:	1000	Sample Volume:	1000

Parent Lot Number:	00000001	Sample Lot Number:	00000001
Parent Volume:	1000	Sample Volume:	1000
Parent Volume:	1000	Sample Volume:	1000

Net wt (sample) (kg)	1.280165	Net wt (total)	13.1420
Standard deviation	20.4816	Standard deviation	21.8
Standard error	1.622294	Standard error	1.7666
Net wt (total)	13.1420	Net wt (total)	13.1420
Net wt (total)	13.1420	Net wt (total)	13.1420

Class	Lot ID	Start of	End of	Final Count (kg)	Parent (kg)
Chlorine	5	5	5	10	10
Thiodiethylene	10	10	10	10	10
Thiome	5	5	5	10	10
Thiodiethylene	10	10	10	10	10
Air Vials	1	1	1	1	1
Heater	10	10	10	10	10
Exhaust	1	1	1	1	1
Chlorine	10	10	10	10	10
Chlorine	10	10	10	10	10
Barium	1	1	1	1	1
Air	10	10	10	10	10
1,1-Dichloroethane	20	20	20	20	20
Azoxo	10	10	10	10	10
PA	10	10	10	10	10
MEX	5	5	5	5	5
MEX	5	5	5	5	5
Hydrazo	10	10	10	10	10
Chloroform	20	20	20	20	20
Oxodioxane	10	10	10	10	10
BW (kg)	10	10	10	10	10

Final count (kg)	48.89	Final count (kg)	48.89
Final count (kg)	48.89	Final count (kg)	48.89
Final count (kg)	48.89	Final count (kg)	48.89



SCIENTIFIC ANALYSIS
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HERIQUA STREET

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Certificate of Analysis

Scientific Analysis Laboratories is
an ISO 9001:2015 registered business and
ISO 17025:2017 metrology accredited
under the NZS 8966:2017 scheme as a
notified body under the Trade Measurement Act 1975

Report Number: 630497-1

Date of Report: 13-Feb-2017

Customer: Fire Scientific
Unit 33
Boyne Business Park
Dunfield
Co Louth

Customer Contact: Reports

Customer Job Reference:
Customer Purchase Order: FSS4
Date Job Received at SAL: 01-Feb-2017
Date Analysis Started: 02-Feb-2017
Date Analysis Completed: 13-Feb-2017

The results reported relate to samples received in the laboratory and may not be representative of a whole batch.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

This report should not be reproduced except in full without the written approval of the laboratory
Tests covered by this certificate were conducted in accordance with SAL SOPs

All results have been reviewed in accordance with Section 7.6 of the SAL Quality Manual



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Report checked
and authorised by:
Michael Goodman
Project Manager

Issued by:
Michael Goodman
Project Manager

Z1 of 25

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Page 1 of 2

630497-1

APPENDIX 3 : Procedures Developed/amended during the reporting

(No new procedures development or amendments made to current procedure)

**Appendix 4 : Facility Maintenance report : TANK, DRUM , PIPELINE & BD
TESTING 2014 & SAFETY KLEEN IRELAND MAINTENANCE REPORT 2016**

Safety Kleen (Ireland) Ltd.
Unit 5, Airton Road, Tallaght, D24

Bund Integrity Test Report

Report Date

24th May 2014



KD Environmental

1 Swiftbrook Glen, Virginia, Co. Cavan

Report No 2014/29/01

1.0 Introduction

KD Environmental were commissioned by Philomena Freegrove of Safety Kleen (Ireland) Ltd. to conduct an inspection and integrity test of the main solvent storage bund at their waste facility site in Tallaght, Dublin 24. A Hydrostatic water test and visual inspection of the bund was performed on 14th and 15th May 2014.

A previous hydrostatic test performed in January 2014 had failed. Safety Kleen undertook repairs to the bund, namely relining areas of the bund floor with an epoxy resin.

The Safety Kleen facility is situated in a small industrial/business park off Airton Road, Tallaght, Dublin 24. Surrounding land use is light industry/commercial and residential. The exact site location is N 53°17.576', W 006°21.283'.

Safety Kleen is required to perform integrity test on bund structures at least every 5 years under condition 4.8 of EPA waste license W0099-01 However, schedule D.1 requires for 3 yearly reporting on bund integrity.

2.0 Bund Details

The bund integrity tested was the main chemical storage bund used for the containment of clean and waste solvents/chemicals stored in 2 x 36m³ metal tanks. It is a local bund and is made of poured concrete on three sides and concrete blocks on one side. The floor of the bund is poured concrete. The wall and floor of the bund is coated with an epoxy resin based paint. The total bund volume was measured to be 36m³.

3.0 Integrity Test Procedures

Bund integrity/water tightness test was performed following the procedure defined in the Environmental Agency (of England and Wales) R&D Technical Report P16. Testing also adhered to the EPA Guidance Note on Storage and Transfer of Material for Scheduled Activities, 2004.

A 24 hour hydrostatic test period was used for the bund tested.

A work plan was drawn up which detailed necessary preparatory work to be carried out by the company before testing could proceed. This included clearing the bund of any rubbish, debris etc. and raising of electrical equipment where necessary.

Bunds were filled using water services on site to required test fill depth at a fill rate not exceeding 2m/24Hrs. A hydrostatic stabilisation period of 24 hours was allowed as the bund is not newly constructed.

Water fill levels were measured using a meter stick and tape measure. A number of water depth measurements were made for the bund. The measurement locations were marked which allowed for the exact same location to be measured after the 24 hour test period.

A reference vessel containing a premeasured level of water was placed on the bund wall. After the test duration had elapsed, the water fill levels were then re-measured to determine if any water loss had occurred. The level in the reference vessels were also measured to gauge for rainfall or evaporation changes.

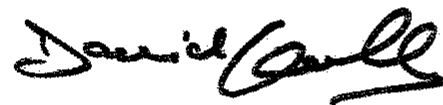
4.0 Results & Compliance

An EPA bund test sheet is completed for the bund test performed and included as appendix 1 of this report. No water loss was recorded at the 3 measurement locations on the bund. No water loss was recorded in the control vessel – no evaporation of water occurred. Therefore, the bund is water tight and has passed a hydrostatic test. The repairs to the bund that Safety Kleen were successful in rendering the bund water tight and the bund is compliant with condition 4.8 of EPA waste license W0099-01.

5.0 Conclusion

The bund tested passed a 24 hour hydrostatic test based on the EPA Guidance Note on Storage and Transfer of Material for Scheduled Activities, 2004.

A visual inspection of showed no seepage around the bunds outer walls and the bund is in good condition with no breaks or cracks noted.




David Kelly BSc. PgDip

Technical Manager
KD Environmental

24th May 2014

Appendix 1
Bund Integrity Record Sheet

Site: Safety Kleen		Licence Reg. No.: W099-01	
Bund Ref: Main Chemical Storage Bund		Bund Type (Local/Remote/Combined/Portable): Local	
Bund Dimensions: 8m x 6.7m x 0.67m		Primary Vessel(s) – Materials of Construction: Metal	
Bund Construction Material: Poured concrete & Concrete blocks		Primary Vessel(s) – Total Storage Volume: 72m ³	
Tank Lining Material: Epoxy Resin		Primary Vessel(s) – 110% Volume of Largest Vessel: 36.9m ³	
Bund Retention Volume: 36m ³		Primary Vessel(s) – 25% of Total Storage Volume: 18m ³	
Deemed Practicable / Safe to Conduct Hydrostatic Test? Yes			
If no give reasons: The bund test volume is 36m ³ . Increasing the bund test volume to greater than 36m ³ will mean using a neighboring block wall as one side of the bund and it may not be safe to do so due to potential structural pressures this may cause.			
HYDROSTATIC TEST DETAILS:			
BS 8007:1987 (Yes/No)?		No. Not a new bund.	
Fill Rate		<2m/24Hrs	
Stabilisation Period		24 Hours	
Duration of the Test		24 Hours	
Acceptance Criteria (Total permissible drop in water level)		0mm	
Water Level Change in Reference Vessel		0mm	
Position	Date and Time	Water Level in Bund	Water Level in Reference Vessel
1	14/05/14 10:00	592mm	29mm
2	14/05/14 10:00	599mm	29mm
3	14/05/14 10:00	591mm	29mm
1	15/05/14 10:00	592mm	29mm
2	15/05/14 10:00	599mm	29mm
3	15/05/14 10:00	561mm	29mm
Description / Comments of Hydrostatic Test:			
Test duration 24 Hours.			
VISUAL TEST DETAILS: INSPECTION DESCRIPTION & RESULTS:			
No cracks, breaks or holes noted in walls of the bund. Bund in good condition.			
Result (Pass/Fail)		PASS	
Recommendation(s): None			
Signed: 		Qualification: BSc. PgDip. Environmental Protection	Date: 15/05/14



Facility Visit Report 2016 - Mechanical

Branch / Branches: BR 110

Job Type: Breakdown Maintenance / Project Date: 02/08/16 08/16

No of men: Engineers names: Schmitt, Priestley

Completed work	Time	Initials
General maintenance		
Painted new lines on warehouse floor		
Fixed bracket for air hose		
re-fitted functioning over wires		

Permit Type Issued: General / Hot / Electrical / Confined Space

Permit Closed out: Yes / No Permit Number: 03561, 03562

Housekeeping: Site cleared of all tools and debris - Yes / No

Further work required/Parts used:

Engs work time Start: 07:30-11:00 Finish:

Engs Signature Eng 1: Eng 2:

Work completed to my satisfaction: Signed: Name: Date: 3/8/16

FA / Branch Managers Comments:



Facility Visit Report 2016 - Electrical



Branch / Branches: BR 110

Job Type: Breakdown / Maintenance / Project

Date: 2, 3-8-16

No of men: 1

Engineers names: C CHALMERS

Completed work	Time	Initials
PAT TESTING COMPLETED		
REDUNDANT CABLE REMOVED		
MAINTENANCE COMPLETED		

Permit Type Issued: General / Hot / Electrical

Permit Closed out: Yes / No

Permit Number: 3561 / 3562

Housekeeping: Site cleared of all tools and debris -

Yes / No

Further work required/Parts used:

Engs work time

Start:

Finish:

Engs Signature

Eng 1:

[Signature]

Eng 2:

Work completed to my satisfaction: Signed:

Name: Garvin

Date:

[Signature] 3-8-16

FA / Branch Managers Comments:

APPENDIX 5: PRTR

Please enter all quantities on this sheet in Tonnes		Quantity (Tonnes per Year)	Hazardous	European Waste Code	Description of Waste	Waste Treatment Operation	Method Used		Location of Treatment	Licence/Permit No of Next Destination Facility Licence/Permit No of Recoverer/Disposer	Haz. Waste : Address of Next Destination Facility Non-Haz. Waste: Address of Recoverer/Disposer	Name and License / Permit No. and Address of Final Recoverer / Disposer (HAZARDOUS WASTE ONLY)	Actual Address of Final Destination i.e. Final Recovery/Disposal Site (HAZARDOUS WASTE ONLY)
Waste	Method Used												
the Country	08 01 11	16.736	Yes	08 01 11	waste paint and varnish containing organic solvents or other dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO-09-04689-02	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	08 01 17	1.355	Yes	08 01 17	wastes from paint or varnish removal containing organic solvents or other dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO-09-04689-02	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	08 01 17		Yes	08 01 17	wastes from paint or varnish removal containing organic solvents or other dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO-09-04689-02	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	08 03 12	0.615	Yes	08 03 12	waste ink containing dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO-09-04689-02	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	09 01 05		Yes	09 01 05	bleach solutions and bleach fixer solutions aqueous rinsing liquids other than those mentioned in 11 01 11	R13	C	Volume Calculation	Onsite of generalit ..	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	11 01 12		No	11 01 12		R13	C	Volume Calculation	Offsite in Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	11 01 13	92.84	Yes	11 01 13	degreasing wastes containing dangerous substances	R13	C	Volume Calculation	Abroad	Tradebe Solvent Recycling ,EPR/TP3334SF	Tradebe Solvent Recycling,EPR/TP3334SF, Weeland Road,Knottingley,West Yorkshire,WF11 8DZ,United Kingdom	Tradebe Solvent Recycling,EPR/TP3334SF, Weeland Road,Knottingley,West Yorkshire,WF11 8DZ,United Kingdom	
the Country	11 01 14	55.67	No	11 01 14	degreasing wastes other than those mentioned in 11 01 13	R13	C	Volume Calculation	Offsite in Ireland	Erva Ltd,W0184/01	Erva Ltd,W0184/01	Erva Ltd,W0184/01,Clonminam Industrial Estate,Portlaoise,,Co Laois,Ireland	
the Country	13 07 01		Yes	13 07 01		R13	C	Volume Calculation	Offsite in Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	13 07 03	0.61	Yes	13 07 03	other fuels (including mixtures) mineral-based non-chlorinated engine, gear	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02,Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	13 02 05	1.02	Yes	13 02 05	and lubricating oils absorbents, filter materials (including oil fillers not otherwise specified), wiping cloths, protective clothing contaminated by	R13	C	Volume Calculation	Offsite in Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	15 02 02	38.465	Yes	15 02 02	dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02,Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	16 01 07	30.415	Yes	16 01 07	oil filters	R13	C	Volume Calculation	Offsite in Ireland	Erva Ltd,W0184/01	Erva Ltd,W0184/01,Clonminam Industrial Estate,Portlaoise,,Co Laois,Ireland	Clonminam Industrial Estate,Portlaoise,,Co Laois,Ireland	
the Country	18 01 06	48.875	Yes	18 01 06	chemicals consisting of or containing dangerous substances	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02,Corrin ,Fermoy,Co.Cork ,,Ireland	
the Country	18 01 07	1.175	No	18 01 07	chemicals other than those mentioned in 18 01 06	R13	C	Volume Calculation	Offsite in Ireland	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02	Veolia Environmental Ltd ,NWCFPO 09-04689-02,Corrin ,Fermoy,Co.Cork ,,Ireland	

Within the Country	18 01 09	No	medicines other than those mentioned in 18 01 08	R13	C	Within the Country	18 01 09	No	medicines other than those mentioned in 18 01 08	R13	Within the Country	18 01 09	No	medicines other than those mentioned in 18 01 08	R13	Within the Country	18 01 09	No	medicines other than those mentioned in 18 01 08	R13	Within the Country
* Select a row by double-clicking the Description of Waste then click the delete button					* Select a row by double-clicking the Description of Waste then click the delete button					* Select a row by double-clicking the Description of Waste then click the delete button					* Select a row by double-clicking the Description of Waste then click the delete button						

[Link to previous years waste data](#)
[Link to previous years waste summary data & percentage change](#)
[Link to Waste Guidance](#)

[Link to previous years waste data](#)
[Link to previous years waste summary data & percentage change](#)
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