

APPENDIX G
ANNUAL GAS FLARE REPORTS

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Derrinnumera Landfill Site

Mayo Co. Co
Castlebar, Co. Mayo.

Flare Gas Analysis

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21 January 2003

EURO environmental services

Southbank House, Southbank Ind Est, Drogheda, Co Louth

Report No 1530/M01

1.0 Overview

Mark Mc Garry and Sean Mallon of Euro environmental services carried out monitoring and analysis of the landfill gas flare at the Derrinnumera Landfill site, Castlebar, Co Mayo on 20th November 2002.

The landfill flare was operating under normal conditions and Eileen Kavanagh provided assistance during the monitoring.

EURO environmental services were requested to carry out air emissions monitoring for flue gas analysis, flow and particulate concentrations.

2.0 Equipment Used on Site

The following equipment was used to carry out the monitoring

- IMR 2000 Flue Gas Analyser, with flue gas / temperature probe.
- TCR Tecora isokinetic sampler, with pitot tube, temperature probe and sampling nozzles.
- Impinger filled with ice and water
- SKC sampling pumps, impinger and sorbent tubes.

3.0 Methods

- Flow was measured isokinetically at 4 points in the stack as per ISO 9096. Velocities, temperatures and differential pressures were measured at each point and recorded
- Flue gas analysis was carried out using an IMR 2000 flue gas analyser
- Results for particulates and flow rates are reported in normal cubic metres, calculated to standard temperature and pressure as per ISO9096
- Hydrocarbons, TA Luft I, II, and III organics were sampled as per EN 13649 – Stationary source emissions – Determination of the mass concentration of individual gaseous organic components – Activated carbon and solvent desorption method
- Hydrogen Chloride and Hydrogen Fluoride were sampled as per NIOSH 7903. A known volume of air was sampled through an impinger filled with washed silica gel and analysis by IC



4.0 Emissions to Atmosphere

Customer Derrinnumera Landfill
Address Castlebar
Co. Mayo

Source Identification: Organics Landfill Flare

Fuel Type: Biogas

Date of sampling – 20th November 2002.
Time of sampling – 16:35 – 17:55

Temperature, Deg C	851
Velocity, m/sec at STP	6.95
Flow Rate, Nm ³ /hr	3084.94

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5.0 Results

Parameter	Method	Concentration mg/Nm ³	Mass Emission Rate Kg/Hr
CO	Flue Gas Analyser	N/D	N/A
SO ₂	Flue Gas Analyser	2.5	0.008
NO ₂	Flue Gas Analyser	N/D	N/A
NO as NOx	Flue Gas Analyser	24.12	0.074
TA Luft Organics Class I	Adsorbition/GC-MS	<0.1	N/A
TA Luft Organics Class II	Adsorbition/GC-MS	<0.1	N/A
TA Luft Organics Class III	Adsorbition/GC-MS	<0.1	N/A
Hydrogen Chloride	Adsorbition/IC	52.05	0.160
Hydrogen Fluoride	Adsorbition/IC	<0.63	N/A
Hydrocarbons	Adsorbition/IC	<0.1	N/A
Particulates	ISO9096	<5	<0.015

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N/D indicates the parameter of interest was not detected

6.0 Sampling conditions

The sampling ports were positioned in a length of straight duct, with approximately 7 duct diameters downstream and 3 upstream, in compliance with EPA guidance note to industry on sampling facilities provided for effective monitoring of emissions to atmosphere, 1996.

High temperatures may have interfered with the performance of the electrochemical cells for CO and NO₂. Intermittent flow rates were experienced during the analysis.

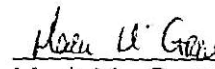
Results were expressed in normal metres cubed and mass emissions in kg of pollutant emitted per hour. Temperature correction can be very significant when hot gases are being sampled. For this reason and to allow direct comparison of different samples, results are expressed relative to standard conditions i.e. 273^oC and 1 atmosphere.

Hydrogen Chloride was the only parameter that was present in excess of licence limits. All other parameters were within the licence requirements set out in the waste licence.

No adjustment has been made for moisture content.

The Flare was labelled as Organics Landfill Flare.


Geoff N Fitzpatrick
Director


Mark Mc Garry
Environmental Scientist

19 December 2002

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Derrinnumera Landfill Site

Mayo Co. Co, Castlebar, Co. Mayo

Landfill Flare Flue Gas Analysis

Report Date:

12th February 2004

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EURO environmental services

Unit 35A, Boyne Business Park, Drogheda, Co. Louth

Report No 1530/M03

1.0 Overview

Eileen Cavanagh of Mayo County Council requested EURO environmental services to carry out bi annual flue gas analysis from the licensed landfill gas flare at Derrinnumera Landfill, Castlebar, Co Mayo. Emissions monitoring was carried out on 21st November 2003 between 12:00 and 13:30 in accordance with the requirements of the waste licence 20-1. Monitoring was carried out by Mark Mc Garry, BSc and Hinglin Yau, MSc of EURO environmental services

2.0 Methodology Employed During The Survey

The following methods were employed to carry out the monitoring:

- Total Organic Compounds were determined as per EN 13649 – Stationary source emissions – Determination of the mass concentration of individual gaseous organic components – Activated carbon and solvent desorption method.
- Flue Gas concentrations were determined using an IMR 2000 flue gas analyser, referenced to 3% O₂.
- Particulates, velocity and flow rates, emission volumes were measured as per BS:ISO 13284-1:2002. Velocities, temperatures and differential pressures were measured at each point and recorded using a TCR Tecora isokinetic sampling pump with S-type pitot tube and K-type thermocouple.
- Hydrogen Chloride and Hydrogen Fluoride were sampled as per NIOSH 7903. A known volume of air was sampled through an impinger filled with washed silica gel and analysed by IC.

3.0 Equipment Used

- Total Organic Compound samples were sampled using SKC sampling pumps and activated charcoal tubes in the sampling trains. Tubes were desorbed and analysed by Gas Chromatography-coupled-Mass Spectrophotometer (GCMS). SKC sampling pumps (Reference No. EM 015) were calibrated prior to the site visit. Inorganic acids were adsorbed on washed silica gel and analysed by IC.
- Flue Gas Analysis was carried out using an IMR 2000 flue gas analyser (Reference No. EM001, EM002)
- Particulates, velocities, temperatures and differential pressures were measured at each point and recorded using a TCR Tecora isokinetic sampling pump with S-type pitot tube and K-type thermocouple (Reference Nos. EM 003, EM 006).

4.0 Deviations from the Standard Method

All sampling and analysis was carried out in strict accordance with the aforementioned methods.

5.0 Plant Operating Conditions

The flare was operating as normal during the monitoring period. Sampling for particulates was carried out on a standard 4 inch diameter port, whilst flue gases, organic compounds and inorganic acids were sampled through a 2inch diameter port.



6.0 Emissions to Atmosphere

Source Identification: Organics Landfill Flare

Date of sampling: 21st November 2003.
 Time of sampling – 12.00

Measured Emissions

Temperature	975	Degree Celsius
Velocity	6.16	m/sec at STP
Flow Rate	4,384	Nm ³ /hr

Parameter	Method	Concentration	Units	Mass Emission Rate Kg/Hr
CO	Flue Gas Analyser	N/D	mg/Nm ³	N/A
NO as NO ₂	Flue Gas Analyser	148	mg/Nm ³	0.65
NO ₂ as NO ₂	Flue Gas Analyser	N/D	mg/Nm ³	N/A
Total Organics	EN 13649	<1.0	mg/Nm ³	N/A
Hydrocarbons	EN 13649	<1.0	mg/Nm ³	
Hydrochloric acid	Impinger/ IC	<1.0	mg/Nm ³	N/A
Hydrogen Fluoride	Impinger/ IC	<1.0	mg/Nm ³	N/A
Particulates	BS:EN 9096 - 2002	<1.0	mg/Nm ³	N/A

1. N/D indicates the parameter of interest was not detected in the gas stream.
2. N/A indicates that the mass emission was not applicable as the parameter was not detected in the emission
3. All results have been reported at the standard reference conditions of 273 K, 101.3 kPa, on a dry gas basis and corrected to an oxygen content of 3% by volume.

7.0 Sampling Conditions

The sampling ports were positioned in a length of straight duct, with approximately 7 duct diameters downstream and 3 upstream, in compliance with EPA guidance note to industry on sampling facilities provided for effective monitoring of emissions to atmosphere, 1996.

High temperatures may have interfered with the performance of the electrochemical cells for CO and NO. Intermittent flow rates were experienced during the analysis.

8.0 Conclusion

Results were expressed in normal metres cubed and mass emissions in kg of pollutant emitted per hour. Temperature correction can be very significant when hot gases are being sampled. For this reason and to allow direct comparison of different samples, results are expressed relative to standard conditions i.e. 273°C and 1 atmosphere – standard temperature and pressure.

No adjustment has been made for moisture content.

The Flare was labelled as Organics Landfill Flare.


Mark Mc Garry
Field Services Manager

12th February 2004

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Geoff Fitzpatrick
Director

Mayo County Council

Derrinnumera Landfill, Ballina, Co. Mayo

Emissions to Atmosphere

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Report Date:

15th September 2005

EURO environmental services

Unit 35A, Boyne Bus. Park, Drogheda, Co. Louth

Report Number: 1530/M07

Report for the Periodic Monitoring of Emissions to Air

Part 1: Executive Summary

Permit Number: 21 1

Operator: Mayo County Council

Installation: Derrinnumera Landfill

Monitoring dates: 02/09/2005

Contract Number: AAAO2532

Client Organisation: Mayo County Council

Address: Derrinnumera Landfill
Ballina
Co. Mayo

Monitoring Organisation: EURO environmental services

Address: Unit 35
Boyne Business Park
Drogheda
Co Louth

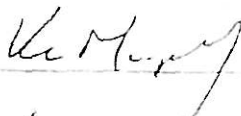
Date of Report: 15th September 2005

Report Approved By: Ken Murphy

MCERTS Registration Number: MM05 590

Function: Environmental Technician

Signed:



Checked:



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Part 1: Executive Summary

- * Monitoring Objectives
- * Monitoring Results
- * Operating Information
- * Monitoring Deviations

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Objectives of Monitoring

The monitoring at this installation was carried out as part of a check monitoring requirement. The substances requested for monitoring at each emission point are listed below.

Substances to be monitored	Flare
Particulates	*
Moisture	*
Flow rate	*
Hydrochloric acid	*
Hydrogen chloride	*
VOC	*

Special requirements

Flare Stack. There were no special requirements determined for this sampling point.

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Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Units	Flow Rates @ STP corrected for moisture	Date of Sampling	Start and End Times	Monitoring Method Reference	Accreditation for use of Method	Operating Status
Flare Stack	Particulates	N/A	116.5	mg/Nm3	982	01-Sep-05	12.41 - 14:03	BS EN 13284-1	No	Standard
Flare Stack	NOx	N/A	122.75	mg/Nm3	982	01-Sep-05	12.41 - 14:03	IMR 2000	No	Standard
Flare Stack	HCL	N/A	4.12	mg/Nm3	982	01-Sep-05	12.41 - 14:03	BS EN 1911-213	No	Standard
Flare Stack	CO	N/A	50.67	mg/Nm3	982	01-Sep-05	12.41 - 14:03	IMR 2000	No	Standard
Flare Stack	VOC	N/A	0	mg/Nm3	982	01-Sep-05	12.41 - 14:03	BS EN 13649	No	Standard

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Form Number: 24-1
Operating Information

Mayo Co., Co
EURO environmental services

Process Name	Date	Process Type	Process Duration	Fuel	Feedstock	Abatement	Load	Comparison of Operator CEMS and Periodic Monitoring Results			
								Substance	CEMS Results	Periodic Monitoring Results	Units
Compost	01-Sep-05	Continuous		Biogas	N/A	No	N/a	Particulate	N/A	116.5	mg/Nm ³
Compost	01-Sep-05	Continuous		Biogas	N/A	No	N/a	CO	N/A	50.67	mg/Nm ³
Compost	01-Sep-05	Continuous		Biogas	N/A	No	N/a	NOx	N/A	122.75	mg/Nm ³
Compost	01-Sep-05	Continuous		Biogas	N/A	No	N/a	HCL	N/A	4.12	mg/Nm ³
Compost	01-Sep-05	Continuous		Biogas	N/A	No	N/a	VOC	N/A	0	mg/Nm ³

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Report for the Periodic Monitoring of Emissions to Air

Part 2: Supporting Information

Permit Number: 22 1

Operator: Mayo County Council

Installation: Derrinnumera Landfill

Monitoring dates: 01/09/2005

Appendix 1

Organisation and Monitoring Team Details

EURO environmental services
Unit 35
Boyne Business Park
Drogheda
Co Louth

041 9845440 Phone
041 9846171 Fax
info@euroenv.ie email

Team Leader

Hinglin Yau

Level 2 Training

Technician

Ken Murphy

Level 1 Technician

Method Details

Substance	Method	SOP No
Particulates	BS EN 13284-1	EM 101
VOC	BS EN 13649	EM 107

Equipment Checklist References

- 1 TCR Tecora Isostack Basic
- 2 1.5 m Stainless Steel Probe
- 3 S type pitot
- 4 Condensor System
- 5 SKC Pumps
- 6 Quartz Fibre Filter Papers
- 7 110V Converter
- 8 Safety Equipment

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Appendix 3
 Flare Stack
 Summarised Flow Criteria Measurements

Number of Ports Sampled	Number of Points Sampled	Average Velocity v'a (m/s)	Average Differential Pressure Pa (kPa)	Average Temperature ta (Deg C)
1	6	1.52	100.56	875

Determinant	Result	Units
Stack Diameter	1	m
Actual Moist Flow Rate	4295.52	m ³ /Hr
Temperature	1148	Deg K
T Reference	273	Deg K
P Reference	101.3	kPa
P Measured	100.56	kPa
Moisture Content	3.17	%

Flow Rate Adjusted		
1014	At STP	Corrected for Temp and Pressure
982	At Dry STP	Corrected for Moisture

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Mayo County Council

Derrinnumera Landfill, Ballina, Co. Mayo

Emissions to Atmosphere

Report No:

1530/M09

IPPC No. W0021-01

Report Date
6th September 2006



EURO environmental services
Unit 35, Boyne Business Park, Drogheda, Co. Louth

As per Copy
21/9/06

Report for the Periodic Monitoring of Emissions to Air

Part 1: Executive Summary

IPC Licence No: W0021-01

Operator: Mayo County Council

Installation: Derinumera Landfill
Co. Mayo

Contact Name: Killian Farrell

Contact No: 098 41632

Contract Technician: Claire Deasy/Eoin Buttle

Monitoring Dates: 23rd August 2006

Monitoring Organisation: EURO environmental services

Address: 35A Boyne Business Park
Drogheda
Co Louth

Date of Report: 06th September 2006

Report Approved By: Ken Murphy

MCERTS Reg. No. MM05 590

Function: Environmental Scientist

Signed: 
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Reviewed By: 
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 - 1.2 Special Monitoring Requirements
 - 1.3 Summary of Methods
 - 1.4 Results
 - 1.5 Operating Information
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2. Part 2 – Supporting Information
 - Appendix 1: General Information
 - Appendix 2: Monitoring information

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1 Part 1: Executive Summary

1.1 Monitoring Objectives

The monitoring was carried out at this installation as part of compliance monitoring of a Waste Licence requirement. All monitoring procedures were carried out to the MCERTS requirements. The substances monitored at the emission points are listed below.

Substances to be monitored	Flare
Particulates	31.8 mg/Nm ³
HCL	7.11 mg/Nm ³
NO _x	67.8 mg/Nm ³
CO	55.3 mg/Nm ³
SO _x	180 mg/Nm ³
VOC	3.98 mg/Nm ³

1.2 Special Monitoring Requirements

There were no special requirements for this monitoring campaign.

1.3 Summary of Methods

Substance	Standard Method	EURO SOP
Particulates	BS EN 13284-1	EM101
VOC (speciated)	BS EN 13649	EM107
Hydrogen Chloride	BS EN 1911 parts 1-3	EM 146
Flue Gas analysis	-	EM100

1.4 Monitoring Results

The table presents the atmospheric emissions from the tests undertaken on behalf of Mayo County Council Derinumera Landfill. The results were measured from the sample positions downstream of the flare.

Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Uncertainty	Units Reference Conditions 273 K, 101.3 kPa	Date of Sampling	Start/End Times	Method Reference	Operating Status	Accreditation Status
Flare	particulates	n/a	31.8	n/a	mg/Nm ³	23/08/06	15:55-16:25	BS EN 13284-1	As Normal	pending
Flare	HCL	n/a	7.11	n/a	mg/Nm ³	23/08/06	15:55-16:55	BS EN 1911	As Normal	pending
Flare	NO _x	n/a	67.8	n/a	mg/Nm ³	23/08/06	17:10-17:25	EM100	As Normal	pending
Flare	CO	n/a	55.3	n/a	mg/Nm ³	23/08/06	17:10-17:25	EM100	As Normal	pending
Flare	SO _x	n/a	180	n/a	mg/Nm ³	23/08/06	17:10-17:25	EM100	As Normal	pending
Flare	VOC	n/a	3.98	n/a	mg/Nm ³	23/08/06	16:00-16:30	BS EN 13649	As Normal	pending

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%.

1.5 Monitoring Deviations

Emission Point Reference	Substance Deviations	Monitoring Deviations	Other Relevant Information
Flare	None	None	None

Comments on monitoring procedures

- All monitoring procedures performed correctly.
- The particulate monitoring was outside the required 95 to 115 % isokinetic rate as stated in BS EN 13284-1: 2001, this situation is unlikely to adversely effect the emission test results and derived data.
- The velocity and temperature profile at the sampling location did not met the requirements of BS EN 13284-1: 2001 as the average flow rate in the flare was below 3 m/s

Comment	If No, WHY?
Did the sampling location meet the standard	Flare flow rates were below required minimum of 3m/s as specified in BS EN 13284-1
Were all the sampling points obtainable	Yes
Were all parameters sampled?	Yes

Report for the Periodic Monitoring of Emissions to Air

Part 2: Supporting Information

IPPC Number: W0021-01

Operator: Mayo County Council

Installation: Derrinnumera Landfill

Monitoring Dates: 23/08/06

Organisation and Monitoring Team Details

EURO environmental services
Unit 35
Boyne Business Park
Drogheda
Co. Louth

041 9845440 Phone
041 9846171 Fax
air@euroenv.ie email

Date of Report: 06th September 2006

Report Approved By: Ken Murphy

MCERTS Reg. No. MM05 590

Function: Environmental Scientist

Signed: _____

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Appendix 1

Sampling Personnel

Team Leader	Claire Deasy	MCERTS	Level 2	MM 05 609
Technician	Eoin Buttle	MCERTS	Level 1 training	MM 06 705

Substances Monitored

Substance	Standard Method	EURO SOP
Particulates	BS EN 13284-1	EM101
VOC (speciated)	BS EN 13649	EM107
Hydrogen Chloride	BS EN 1911 parts 1-3	EM 146
Flue Gas analysis	-	EM100

Equipment Checklist References

Equipment	Reference Number
Isokinetic Sampler	EM003
Impinger System	EM007
Pitot tube	EM005
Flue Gas Analyser	EM001
Glass Fiber Filters	-

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Appendix 2

Monitoring Information - Particulates

Number of Ports Sampled	Number of Points Sampled	Average Velocity v'a (m/s)	Average Pressure (kPa)	Average Temperature ta (Deg C)
2	8	2.83	100.26	267

Determinant	Result	Units
Stack Diameter	0.85	m
Actual Moist Flow Rate	5778.25	m ³ /Hr
Flow Rate at STP	2891.95	m ³ /Hr
T Reference	273	Deg K
P Reference	101.3	kPa

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Mayo County Council

Derrinnumera Landfill, Ballina, Co. Mayo

Emissions to Atmosphere Report No: 1530/M14

IPPC No. W0021-01

Report Date
29th June 2007

EURO environmental services
Unit 35, Boyne Business Park, Drogheda, Co. Louth

Report for the Periodic Monitoring of Emissions to Air

Part 1: Executive Summary

IPC Licence No: W0021-01

Operator: Mayo County Council

Installation: Derinumera Landfill
Co. Mayo

Contact Name: Killian Farrell

Contact No. 098 41632

Contract Technician: Stephen Crampton/Ewa Piatek

Monitoring Dates: 14th June 2007

Monitoring Organisation: EURO environmental services

Address: 35A Boyne Business Park
Drogheda
Co Louth

Date of Report: 29th June 2007

Report Approved By: Stephen Crampton

MCERTS Reg. No. MM06 754

Function: Team Leader

Signed: 

Reviewed By: 

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1 Part 1: Executive Summary

1.1 Monitoring Objectives

The monitoring was carried out at this installation as part of compliance monitoring of a Waste Licence requirement. The substances monitored at the emission points are listed below.

Substances to be monitored	Flare
Particulates	2.09 mg/Nm ³
HCL	0.91 mg/Nm ³
Hydrochloric Acid	<LOD
NO _x	89.52 mg/Nm ³
CO	4.97 mg/Nm ³
SO _x	<1 mg/Nm ³
TA Luft Organics Class I	<LOD
TA Luft Organics Class II	<LOD
TA Luft Organics Class III	<LOD

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1.2 Special Monitoring Requirements

There were no special requirements for this monitoring campaign.

1.3 Summary of Methods

Substance	Standard Method	EURO SOP
Particulates	BS EN 13284-1	EM101
VOC (speciated)	BS EN 13649	EM107
Hydrogen Chloride	BS EN 1911 parts 1-3	EM 146
Flue Gas analysis	-	EM100

1.4 Monitoring Results

The table presents the atmospheric emissions from the tests undertaken on behalf of Mayo County Council Derrinmera Landfill. The results were measured from the sample positions downstream of the flare.

Emission Point Reference	Substance to be Monitored	Emission Limit Value	Periodic Monitoring Result	Uncertainty	Units Reference Conditions 273 K, 101.3 kPa	Date of Sampling	Start/End Times	Method Reference	Operating Status
Flare	Particulates	*	2.09	+/-1.12	mg/Nm ³	14/06/2007	12:00-12:30	BS EN 13284-1	As Normal
Flare	HCL	*	0.91	n/a	mg/Nm ³	14/06/2007	10:30-11:30	BS EN 1911	As Normal
Flare	Hydrochloric Acid	*	<LOD	n/a	mg/Nm ³	14/06/2007	10:30-11:30	BS EN 1911	As Normal
Flare	NO _x	*	89.52	n/a	mg/Nm ³	14/06/2007	12:00-12:30	EM100	As Normal
Flare	CO	*	4.97	n/a	mg/Nm ³	14/06/2007	12:00-12:30	EM100	As Normal
Flare	SO _x	*	<1	n/a	mg/Nm ³	14/06/2007	12:00-12:30	EM100	As Normal
Flare	TA Luft Organics Class I	*	<LOD	n/a	mg/Nm ³	14/06/2007	12:30-13:00	BS EN 13649	As Normal
Flare	TA Luft Organics Class II	*	<LOD	n/a	mg/Nm ³	14/06/2007	12:30-13:00	BS EN 13649	As Normal
Flare	TA Luft Organics Class III	*	<LOD	n/a	mg/Nm ³	14/06/2007	12:30-13:00	BS EN 13649	As Normal

* Not listed.
Reference oxygen is 3%.

1.5 Monitoring Deviations

Emission Point Reference	Substance Deviations	Monitoring Deviations	Other Relevant Information
Flare	None	Flow in flare was to low around 1.25m/sec. Particulates sampling was done ambient as isokinetically sampling was unable (DI) was outside of required -5 to 15% rate)	None

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Comments on monitoring procedures

Comment	If No, WHY?
Did the sampling location meet the standard?	No, Flow in flare was to low around 1.25 m/sec.
Were all the sampling points obtainable?	Yes
Was monitoring carried out in full accordance to the specified standard and SOP?	Yes
Were all parameters sampled?	Yes

Report for the Periodic Monitoring of Emissions to Air

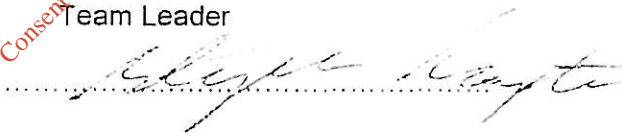
Part 2: Supporting Information

IPPC Number: W0067-01
Operator: Mayo County Council
Installation: Derrinnumera Landfill
Monitoring Dates: 14th June 2007

Organisation and Monitoring Team Details

EURO environmental services
Unit 35
Boyne Business Park
Drogheda
Co. Louth

041 9845440 Phone
041 9846171 Fax
air@euroenv.ie email

Date of Report: 29th June 2007
Report Approved By: Stephen Crampton
MCERTS Reg. No. MM06 754
Function: Team Leader
Signed: 

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Appendix 1

Sampling Personnel

Technician	Stephen Crampton	MCERTS	Level 1	MM06 754
Technician	Ewa Piatek	MCERTS	Trainee	MM07 799

Substances Monitored

Substance	Standard Method	EURO SOP
Particulates	BS EN 13284-1	EM101
VOC (speciated)	BS EN 13649	EM107
Hydrogen Chloride	BS EN 1911 parts 1-3	EM 146
Flue Gas analysis	-	EM100

Equipment Checklist References

Equipment	Reference Number
Isokinetic Sampler	EM003
Impinger System	EM154
Pitot tube	EM005
Testo-Flue Gas Analyser	EM094
Glass Fiber Filters	-
SKC Air Pump	EM042, EM043

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Appendix 2

Monitoring Information – Particulates (Ambient sampling)

Number of Ports Sampled	Number of Points Sampled	Average Velocity v'a (m/s)	Average Pressure (kPa)	Average Temperature ta (Deg C)
1	1	1.35	99.45	845

Determinant	Result	Units
Stack Diameter	0.8	m
Actual Moist Flow Rate	-	m ³ /Hr
Flow Rate at STP	-	m ³ /Hr
T Reference	273	Deg K
P Reference	101.3	kPa

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