Delegation to Works Committee
October 2, 2024

W. Bracken

Memorandum on AMESA Sampling Q1 2024:

Quarterly (Q1-2024) Long-term Sampling System Report

Durham York Energy Centre

Long-Term Sampling System

Quarterly (Q1) Report

January 2024-May 2024

Table 1: AMESA Cartridge Replacement Schedule

Unit #	Run #	Start Date	End Date	Duration (days)
1	92	Feb 5, 2024	Feb 28, 2024	17
2	92	Jan 23, 2024	Feb 26, 2024	27
1	93	Feb 28, 2024	Mar 25, 2024	26
2	93	Feb 26, 2024	Mar 25, 2024	28
1	94	Mar 25, 2024	May 10, 2024	30
2	94	Mar 26, 2024	May 10, 2024	*

***Note 1:The cartridge duration times may differ even though the start and end dates are the same for both boiler units.**

*** Note 2: There is no result for boiler unit #2 for Run #94 due to sample invalidation. Refer to Section 7.1.**

Unit #	Run #	Start Date	End Date	Calculated Result (pg TEQ/Rm^3)
2	93	Feb 26, 2024	Mar 25, 2024	1.127
1	94	Mar 25, 2024	May 10, 2024	2.984
2	94	Mar 26, 2024	May 10, 2024	*

***Note 1: There is no result for boiler unit #2 for Run #94 due to sample invalidation. Refer to Section 7.1.**

7.1 Investigation

During the first quarter (Q1) of 2024, the AMESA Investigation Checklist was not triggered, however, due to unforeseen operation matters at the facility, an investigation was undertaken. which resulted in the invalidation of data for boiler #2 Run #94, as non-isokinetic conditions occured.

More Issues at the DYEC With Dioxins/Furans:

Long-Term (monthly) sampling of Dioxins/Furans reporting is very incomplete, and it is neither traceable nor transparent.

The public advocated for this monitoring and pays for it yet,

- **Regions have withheld the monthly AMESA data for years 2015 to 2019**[12,13]
- **For 2020 onward** some data provided, however, **many months of data have been invalidated or unavailable** and underlying lab reports, documents have not been provided[14,15,16,17,18,19]
- **Monthly results that have exceeded 64 pg TEQ/RM^3** (the stack test ECA limit is 60) **have been invalidated**[14,16,17,19] **according to protocol established by Covanta and the Regions**[20,21]
- Reasons cited include operational issues known to have potential to produce high dioxin/furan emissions

Many Hours and Months of Dioxin/Furan AMESA Data Have Already Been Invalidated/Omitted/Missing From 2020 to 2023

https://www.durhamyorkwaste.ca/en/environmental-monitoring/air-emissions.aspx#Reports

2020 Q4	October	B1: **INVALIDATED**	AMESA malfunctions
2021 Q1	Feb 10 – Feb 26	B1: **No result**	Repair of defective AMESA pump
2021 Q3	Aug 18- Sept 23	B1: **INVALIDATED**	Failed economizer tube
		(outage revealed accumulated ash reducing gas flow)	
2021 Q4	Oct 13 – Nov 10	B1: **INVALIDATED**	"Several incidents" identified including plugged economizer hopper with potential to lead to creation of dioxins/furans
2022 Q2	Apr 26 – May 25	B1: **Not Shown**	Sample compromised at lab
2022 Q3	June 24 – July 25	B2: **INVALIDATED**	"burner reliability issue"
2022 Q3	July 25 – Aug 26	B1: **INVALIDATED**	Plugged economizer
2023 Q4	Nov. 4 to end Q4	B1: **No results**	Malfunction of AMESA Unit 1

Posting notification of 2023 Q3, Q4: May 8, 2024

DYEC has had Major Dioxin and Furan Emissions Exceedances

Dioxin/Furan Stack Test Compliance Limit:

60 pg TEQ per cubic metre

- **Oct. 1-2, 2015: Acceptance Stack Tests Dioxins/Furans[4]:**

  Boiler 1 Tests average **229.3 pg TEQ per cubic metre**

  Boiler 2 Tests average **103.8 pg TEQ per cubic metre**

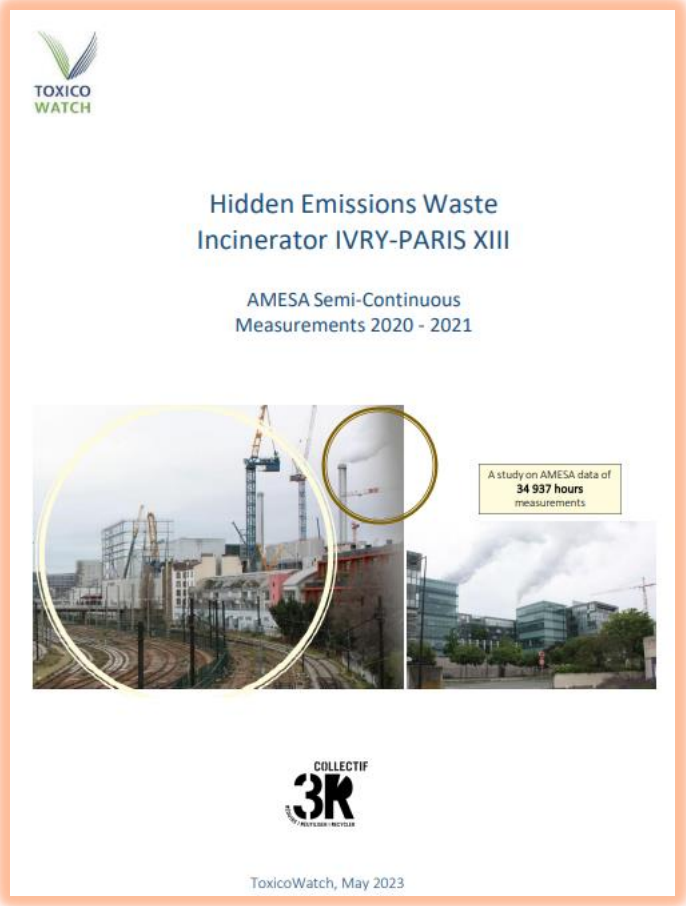
- **May 2 – May 11, 2016: Stack Test[5]**

  Boiler 1 Tests average **818 pg-TEQ per cubic metre**

The duration of the exceedances are unknown.

Continuous Emissions Monitors (CEMs) showed no indication there were problems proving that **the very limited continuous emissions monitoring does not protect us**.

ToxicoWatch Study of Paris Incinerator; French Government Warns Millions Not to Eat Backyard Chicken Eggs



> ***"The emissions data show that the waste incineration process is extremely vulnerable to disturbances****...the AMESA was found to be out of service for more than 3,000 hours per furnace, i.e. 125 days or 4 months over 2 years."* [10]

> ***"OTNOC is directly correlated with the possibility of high dioxin emissions, as research on OTNOC events has shown."*** [11]

Millions in France warned not to eat eggs from backyard chickens due to forever chemical pollution

https://www.euronews.com/green/2023/11/21/millions-in-france-warned-not-to-eat-eggs-from-backyard-chickens-due-to-forever-chemical-p#vuukle-comments-2419688

Long-awaited revamp of Industrial Emissions Directive improves dioxin monitoring in incinerators

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https://zerowasteeurope.eu/press-release/long-awaited-revamp-of-industrial-emissions-directive-improves-dioxin-monitoring-in-incinerators/

Brussels, 29 November – Zero Waste Europe welcomes the agreement reached on the Industrial Emissions Directive (IED) today, which mandates the compulsory monitoring of dioxin emissions from waste incinerators and co-incinerators during all operating times.

Previously, the IED required monitoring only during normal operating conditions. Following the conclusion of the trilogues, the directive now mandates monitoring during both normal operating conditions and Other Than Normal Operating Conditions (OTNOC), signifying a crucial step towards holding incineration operators accountable for emissions produced.

Janek Vahk, Zero Pollution Policy Manager at Zero Waste Europe states:

"The Industrial Emissions Directive has finally closed, at least partially, an important permitting and monitoring loophole that relates to dioxins monitoring to be applied at the start-up and shut-down phases, which is a critical phase for dioxin formation. There is now crystal clear wording which says monitoring of PCDD/F and PCBs is mandatory during start-ups."

Support for this development stems from insights carried out by the Joint Research Centre in 2019, which found that during a cold start-up, the surfaces of the furnace and boiler, conducive to PCDD/F formation through *de novo* synthesis, are substantially larger than during stable operating conditions. This disparity could potentially result in PCDD/F emission loads equivalent to several months of normal operation being linked to a single cold start.

Today's agreement addresses these concerns, emphasising a commitment to a more sustainable and responsible waste management approach.

https://zerowasteeurope.eu/press-release/long-awaited-revamp-of-industrial-emissions-directive-improves-dioxin-monitoring-in-incinerators/

More Concerns: DYEC 2023 Soil Testing Report shows

2023 Dioxin Concentrations More than Double 2013 Pre-DYEC Levels

That's a 114% Increase in Soil Concentration (Percent Loading).

	Background EA 2009[1]	Preconstruction Aug 2013[2]	Commissioning Aug 2015[2]	Operating* Aug 2016[2]	Operating Aug 2017[2]	Operating Aug 2020[2]	Operating Aug 2023[2]
Soil Concentration TEQ pg/g	1.2	1.12	0.7	0.626	1.22	1.23	2.4

1. Jacques Whitford, *Appendix B*, April 2009, *Site Specific Human Health and Ecological Risk Assessment (site specific HHERA)*, *Table 3.5 Baseline Concentrations for PCDD/PCDF in Soil*, page 41 of *Appendix B* (p. 91/196 pdf), Mean concentration (C_{mean}) of 13 samples taken from various locations was 1.2 TEQ ng/kg = 1.2 TEQ pg/g; Note baseline concentration used for input in HHERA was the 95% Upper Confidence Limit of the Mean (C_{UCLM}) =1.76 TEQ pg/g ~1.8 TEQ pg/g. https://www.durhamyorkwaste.ca/en/resources/Archived%20Documents/Appendix%20C-12%20Appendices/APPENDIX%20B%20-%20Baseline%20Chemical%20Concentrations_Dec09.pdf
2. RWDI, *Durham York Energy Centre 2023 Soil Testing Report*, November 15, 2023, *Table 4 Soil Analytical Results – Dioxins and Furans*, page 19/58 of pdf https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/Soil/2023/20231115_RPT_DYEC_2023_Soils_Testing_ACC.pdf

REFERENCES

4. HDR Consulting, *Acceptance Test Review Report Prepared for the Regional Municipalities of Durham and York*, April 20, 2016, Table 11 and Table 12, page 19
https://www.durhamyorkwaste.ca/en/operations-documents/resources/Documents/FacilityAcceptanceTesting/DYECAcceptanceTestReviewReportHDR.pdf

5. ORTECH, *Covanta Durham York Renewable Energy Limited Partnership May 2016 Emission Testing at the DYEC*, Report #21656, June 13, 2016, Executive Summary Page 8
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/May_2016_Source_Test_Report.pdf

10. Arkenbout, A., Bouman, K., ToxicoWatch Foundation, *Hidden Emissions Waste Incinerator IVRY-PARIS XIII AMESA Semi-Continuous Measurements 2020 – 2021*, May 2023, Executive Summary, page 5
https://www.toxicowatch.org/_files/ugd/8b2c54_90bb140118564292 97d14d6be5b50dc9.pdf

11. Ibid., Section 1.6, page 14

12. See DYEC website for Air Emissions/AMESA Reports at: https://www.durhamyorkwaste.ca/en/environmental-monitoring/air-emissions.aspx#Reports
There are no AMESA Reports posted for the years 2015, 2016, 2017, 2018, and 2019.
AMESA Reports are only posted for years 2021, 2022, 2023.

AMESA 2020 results are provided in 2020 ECA Annual Report found at: https://www.durhamyorkwaste.ca/en/operations-documents/resources/2020/20210330_RPT_2020_DYEC_ECA_Annual_ACC.pdf

13. Regional Municipality of Durham, *Durham Report #2021-WR-10: Durham York Energy Centre Operations – Long-Term Sampling System Reporting*, June 2, 2021, Section 1.2, page 1 details requests from the Municipality of Clarington for the AMESA data for years 2015 to 2019 as well as other AMESA information; Section 7.2, page 8 for Durham's response and rationale NOT to release the AMESA data.
https://calendar.durham.ca/meetings/Detail/2021-06-02-0930-Works-Committee-Meeting/101674d7-0ab4-4b26-b342-ad36009b7a41

14. 2020 AMESA data invalidated for October 2020: See 2020 ECA Annual Report, Section 5.6, pages 30, 31
https://www.durhamyorkwaste.ca/en/operations-documents/resources/2020/20210330_RPT_2020_DYEC_ECA_Annual_ACC.pdf

15. 2021 Q1, Feb 10 – Feb 26 no result reported: See *DYEC Long-Term Sampling System Quarterly (Q1) Report January 1, 2021 to March 31, 2021*, page 4 https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2021/20210820_RPT_DYEC_LTSS_Q1_ACC_FINAL.pdf

16. 2021 Q3, Aug 18- Sept 23 data invalidated: See *DYEC Long-Term Sampling System Quarterly (Q3) Report July 2021 to September 2021*, pages 4 to 7 https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2021/20220225_RPT_CIP_DYEC_LTSS_Q3_Report_ACC.pdf

17. 2021 Q4, Oct 13 – Nov 10 data invalidated: See *DYEC Long-Term Sampling System Quarterly (Q4) Report October 2021 to December 2021*, pages 6 to 8
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2021/20220414_RPT_DYEC_LTSS_2021_Q4_REV1_ACC.pdf

18. 2022 Q2, Mar 31 – June 15 data no result shown: See *DYEC Long-Term Sampling System Quarterly (Q2) Report April 2022 to June 2022*, pages 6, 7
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2022/20221104__RPT_DYEC_LTSS_2022_Q2_ACC.pdf

19. 2022 Q3, June 24 – July 25 data invalidated and July 25 – Aug 26 data invalidated: See *Long-Term Sampling System Quarterly (Q3) Report July 2022 to September 2022*, pages 6 to 8
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2022/20230127_RPT_DYEC_LTSS_2022_Q3_final_ACC.pdf
2023 Q4, Nov 4 – End of Q4 no results See *Long-Term Sampling System Quarterly (Q4) Report October 2023 to January 2024*, pages 6 to 9
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2023/20240426_RPT_DYEC_LTSS_2023_Q4_FNL_ACC.pdf

20. Covanta, Durham and York Regions, *Durham York Energy Centre AMESA Report*, February 3, 2021, pages 6-8
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2021/20210211_RPT_DYEC_AMESA_Report_20210203_ACC.pdf

21. Covanta, *DYEC AMESA – Investigation Checklist*, February 3, 2021
https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2021/AMESA_Investigation_Checklist_Rev.0_ACCpdf.pdf

22. See References 14 to 19 inclusive.