Delegation to Works Committee
October 2nd, 2024

W. Bracken

Durham Report #2024-INFO-55

DYEC 2024 Spring Compliance Source Test Report

Pay Careful Attention to Statements Made in Reports and Qualifiers in them such as "***during the stack test period***"

https://pub-durhamregion.escribemeetings.com/filestream.ashx?DocumentId=5007

- Durham INFO-55 does not identify any issues with the Spring Source Testing event

- ORTECH summary (Attachment 1 to INFO-55, see page 9/42 of compiled pdf) states :

  "*The facility was maintained within the operational parameters defined by the amended ECA* ***that constitutes normal operation during the stack test periods***" (emphasis added)

"***stack test period***" =(start to stop sampling) + (sampling resumption to end)

Dioxin emissions during "pause" period discharged BUT NOT INCLUDED

Durham Report INFO-55 Makes No Mention of any problems BUT…

STACK TESTING ISSUES are identified in STANTEC Oversight Report dated August 15, 2024 for the DIOXIN/FURAN Test

Excerpt below from STANTEC, *Oversight of Air Emissions Source Testing at DYEC (Spring 2024)*, p. 2, (see Attachment 2 to INFO-55 which in turn is on page 16/42 of CIP document, page 29 of Works Agenda)

"A second issue developed during the repeat test as ***steam production on Boiler 2 started to decline…, the sampling was halted at 11:52 AM. Feedstock with a high moisture content was suspected to be the cause of the declining steam production****. Sampling resumed at 12:08 PM…"*

Critical to Understand:

- **Dioxin/Furan emissions during that problematic approximately 20-minute period were exhausted to our air, but were <u>not collected and reported out for the Source Test</u>.**
- Dioxin/Furan emissions can be as much as 1000 times higher during other-than-normal operating conditions (OTNOC)

DYEC Emits Thousands of Pollutants BUT Just a Handful (below) are Monitored At Stack Continuously[1]

DYEC Continuous Emissions Monitors (CEMS) ***continuously*** monitor at stack:

- nitrogen oxides (NOx)
- sulphur dioxide (SO2),
- hydrochloric acid (HCl)
- hydrogen fluoride (HF)
- ammonia (NH3)

At economizer (before pollution control) DYEC continuously measures oxygen (O2), carbon monoxide (CO), organic matter (THC)

Opacity, temperature and moisture parameters also continuously monitored.

MOST Pollutants (including the most toxic) are Stack Tested Less Than ½% of Annual Operating Time through Pre-Arranged Stack Tests conducted under Optimal Operating Conditions OR are Not Monitored AT ALL[2,3]

STACK (SOURCE) TESTED:

LESS THAN 0.5% of OPERATING TIME

- **Chlorinated Dioxins/Furans** (2 tests/yr x 12 h/test = 24 hours/year)
- **Metals (lead, mercury, cadmium, etc.)** (2 tests/year x 9h/test = 18 hours/year)
- **Volatile Organic Compounds (VOCs)** (2 tests/year x2h/test = 4 hours/year)
- **Polyaromatic Hydrocarbons (PAHs)** (2 tests/year x12h/test = 24 hours/year)
- **Particulate Matter (PM, PM_{10}, $PM_{2.5}$)** (2 tests/year x 9h/test = 18 hours/year)

TOXICS NOT MONITORED AT ALL

- **PFAs**
- **Brominated Dioxins/Furans**
- **Nanoparticles (Ultrafine Particles)**
- **Mixed Halogenated Dioxins/Furans (PXDD/F)**
- **And Many OTHERS ...**

STANTEC Oversight Report (Attachment 2) states Auditing Process involved "…***eliminating data that may have been influenced by calibration or purging events that took place during this time.***"

STANTEC, *Oversight of Air Emissions Source Testing at DYEC (Spring 2024)*, August 15, 2024, p. 2 (found on page 29 of Works Agenda)

The auditing process involved monitoring the real-time display of trending data, taking note of anomalies and discussing the deviations, and any corrective measures taken, with facility staff. After the monitoring periods, the recorded data in Excel files was further reviewed. Various monitoring parameters in the Excel files were more closely examined, eliminating data that may have been influenced by calibration or purging events that took place during this time. These parameters are summarized in **Table 1.** The parameters included oxygen (O_2) one-minute average, carbon monoxide (CO) 4-hour rolling average,

Boiler 1 Temp below ECA Performance Requirement 6.(2)
Boiler 2 Steam Production below Criteria

Was Temperature, Other CEMs Data During Problematic Period Even Included?

Excerpt below from STANTEC, *Oversight of Air Emissions Source Testing at DYEC (Spring 2024)*, Table 1, p. 2 (see page 29 of Works Agenda)

Table 1: Summary of System Monitoring Parameters (March 20 – 21, 8:00 AM to 6:00 PM)

	Oxygen (%)	CO (mg/m^3)	NO_x (mg/m^3)	SO_2 (mg/m^3)	Moisture (%)	Combustion Temp (°C)	Steam Production (10^3 kg/hr)
	1 min average	4-hr average	1 min range (24-hr average)	1 min range (24-hr average)	1 min range (average)	1 min range	1 min range (average)
Boiler 1 March 20 (Test 1 & 2)	6.3 – 9.7	6 – 10	40.3 – 153.5 (102.1)	0 – 2.7 (0.0)	-5.0 – 26.0 (17.7)	989 – 1,154	30.1 – 35.5 (33.3)
Boiler 1 March 21 (Test 3)	6.9 – 10.4	5 – 7	28.9 – 158.4 (102.2)	0 – 251 (3.9)	0.7 – 26.0 (16.4)	996 – 1,176	28.4 – 35.0 (32.8)
Boiler 2 March 20 (Test 1 & 2)	6.3 – 10.1	6 – 11	55.7 – 161.9 (99.0)	0 – 0 (0.0)	-4.8 – 26.5 (17.7)	1,039 – 1,222	27.4 – 34.6 (34.6)
Boiler 2 March 21 (Test 3)	6.6 – 12.0	7 – 21	66.3 – 153.8 (103.3)	0 – 8.0 (0.1)	-0.6 – 31.1 (21.1)	1,024 – 1,234	28.2 – 34.9 (32.5)
Criteria	>6.0	40 (4 hr)	121 (24 hr)	35 (24 hr)	-	1,000	33.6

ECA **Section 6 PERFORMANCE REQUIRMENTS**

Excerpt below found on page 23 of the ECA (June 2011) found at: https://www.durhamyorkwaste.ca/en/facility-approvals/resources/Documents/EnvironmentalComplianceApproval.pdf

- ECA (Section 6.(2)) requires that DYEC "***shall reach a minimum of 1000 degrees Celsius (***℃) ***for one second, prior to introduction of the Waste into the combustion chamber of the Boiler during the start-up, and thereafter maintained during the entire thermal treatment cycle and subsequent shutdown until all Waste combustion is completed***" and that the facility shall achieve the temperature and other requirements "***over the complete range of operating parameters, including feed rate, feed characteristics, combustion air, flue gas flow rate and heating losses***" (emphasis added)

More Revelations in CIP Reports add to Previous Evidence of Dioxin Issues/Problems

- 2023 Compliance Source Test indicates dioxin/furan source test for boilers could not be done concurrently due to Boiler 2 operational issues stating:

> Source tests for dioxin and furans for both Units 1 and 2 are typically run concurrently. However, it was necessary to take Unit 2 offline due to plugging of the feed chute for Boiler 2. The timing of this incident prevented Unit 2 from being tested concurrently with Unit 1. Unit 1 was tested on September 21st and 22nd, while Unit 2 was tested on October 3rd and 4th, 2023.

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

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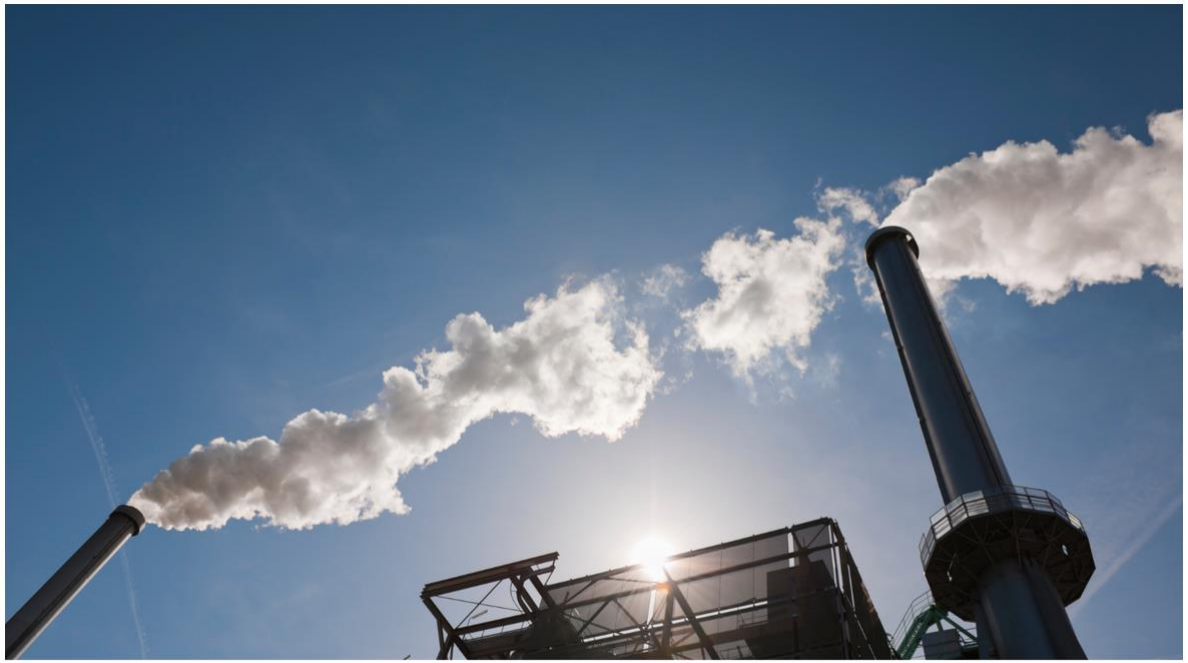

https://zerowasteeurope.eu/press-release/long-awaited-revamp-of-industrial-emissions-directive-improves-dioxin-monitoring-in-incinerators/

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."

Serious Concerns With Durham's Reporting

INFO-55 NOT Transparent For Public, Politicians, Committees

- CIP STANTEC and HDR Oversight reports NOT posted, only ORTECH which does not include the critical information about dioxin testing issues

INFO-55 gives public, politicians – who don't have the time to read technical attachments – the false impression the source test was without issues and that all emissions during the testing event were counted and reported. This matters because we are deprived of essential context and facts around the significant limitations of our monitoring which in turn informs OUR MONITORING RECOMMENDATIONS AND DECISIONS.

Conclusion:
MONITORING MUST BE IMPROVED

- **Dioxin/Furan source test** is three 4-hour tests totalling **12 hours**
- Represents less than 0.25% of total operating time
- **these stack testing problems occurred during a pre-arranged, prepared-for, at ideal conditions with teams of consultants present– and they still didn't meet all ECA and their own criteria - what happens all the rest of the time???**

Better monitoring/reporting is NECESSARY, including:

- **testing during OTNOC conditions as is now required by the EU**
- **Environmental monitoring (flora, fauna, agriculture)**

References

1. Golder & Associates, *Durham-York Energy Centre Air Emission Monitoring Plan (AEMP), February 2013, Report Number: 10-1151-0343 AEMP*, Section 4.2, Table 3, page 6 https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/Air_Emissions_Monitoring_Plan_AEMP.pdf

2. Ontario Ministry of the Environment, *Environment Certificate of Approval (ECA), Number 7306-8FDKNX* Issue Date: June 28, 2011, Section 7. (1), page 25, and Schedule "D", page 50 and Schedule "E", page 54, 55 https://www.durhamyorkwaste.ca/en/facility-approvals/resources/Documents/EnvironmentalComplianceApproval.pdf

3. ORTECH, Source Test Reports available at https://www.durhamyorkwaste.ca/en/environmental-monitoring/air-emissions.aspx#Reports

   For specifics on pollutants and durations, for representative example see:
   ORTECH, *Covanta Durham York Renewable Energy Limited Partnership Durham York Energy Centre 2022 Compliance Emission Testing in Accordance with Amended Environmental Compliance Approval (ECA) No. 7306-8FDKNX*, Date: March 1, 2023,
   https://www.durhamyorkwaste.ca/en/environmental-monitoring/resources/Documents/AirEmissions/2022/Fall%20Source%20Test/20230301_RPT_2022_DYEC_Compliance_Source_Test_RFS.pdf

- Dioxins, Furans and Other Semi-Volatile Organic Compounds (SVOCs) including PCBs, Chlorobenzenes, Chlorophenols and Polycyclic Aromatic Hydrocarbons (PAHs), Section 4.4, page 19, states each test lasts 240 minutes =4 hours; Section 4.1 states triplicate tests are done for SVOCs; 3 x 4 hours = 12 hours
- Particulate and Metals, Section 4.2, page 17 states each test lasts 180 minutes = 3 hours; Section 4.1 states tests done in triplicate; 3 x 3 hours = 9 hours
- Volatile Organic Compounds (VOCs), Section 4.6, page 20 states there are three (3) runs, each run is 40 minutes, 3x40 minutes =120 minutes= 2 hours
- Aldehydes, Section 4.7, page 21 states each run is 60 minutes =1 hour, Section 4.1 states tests are done in triplicate, 3 x 1 hour = 3 hours

One year = 365 days/year x 24 hours/day = 8760 hours/year

Durham, York, Covanta, *ECA 2022 Annual Report*, Section 11, page 44 lists outages that total 635 hours. See:

https://www.durhamyorkwaste.ca/en/operations-documents/resources/2022/20230621_RPT_DYEC_2022_Annual_ACC.pdf

Estimated annual operating hours based on the data available = 8760 hours – 635 hours = 8125 hours

For above pollutants, the longest test duration is 12 hours.

The DYEC has two source tests per year: spring test is voluntary, fall test is for compliance so longest duration for year = 2 tests/year x 12 hours/test = 24 hours/year

Sampling duration per year/Operating Time per year ≅ 24/8125 = 0.00295=0.3% which is less than 0.5%