

Stericycle[®]

**2023 Q2
INCINERATION
REPORT**



Stericycle, ULC
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July 31, 2023

District Manager
Ministry of the Environment, Conservation and Parks
Halton-Peel District Office
300-4145 North Service Road
Burlington, ON
L7L 6A3

Dear District Manager,

**Re: Stericycle, ULC.
Certificate of Approval for a Waste Disposal Site No. A680324**

As required by Condition 52 of the above-mentioned Certificate of Approval, please find attached the incinerator quarterly report for the second quarter of 2023.

During April 2023 there were 20 occurrences of the 4-hour CO alarm & 1 occurrences of the 12-hour CO alarm. In May 2023 there were 16 occurrences of the 4-hour CO alarm and 1 occurrences of the 12-hour CO alarm. In June 2023 there were 15 occurrences of the 4-hour CO alarm and 0 occurrences of the 12-hour CO alarm. Stericycle will continue to work with the incinerator operators to further reduce the number of CO alarms.

There was 1 occurrence of the 24-hour NO_x alarm triggered in Q2 of 2023.

Details on the above noted alarms are available in the body of the attached report.

**SECOND QUARTER 2023
INCINERATOR QUARTERLY REPORT - SUPPLEMENTAL INFORMATION**

- The Emergency Bypass stack was used four (4) times during Q2 2023. A detailed description is provided in this report.
- Throughout the quarter, minor issues with either the waste feed or the proper operation of certain pieces of equipment caused alarm conditions. In all cases, the problems were fixed, and normal operations resumed. Corrective actions included adjustments to the waste feed mix and rate and corrective maintenance on affected systems.
- Throughout the second quarter of 2023, the incinerator was run by trained Stericycle operators Emilio Perez, Raminderpal Singh, Said M. Said & Lamek Abraha.
- There were no complaints received regarding the operation of the incinerator during the second quarter of 2023.
- Stericycle Inc. operated the incinerator on the following days during the second quarter:

Start-up	Shut Down
03/31/2023 @ 12:05	04/01/2023 @ 15:11
04/01/2023 @ 21:55	04/02/2023 @ 08:30
04/02/2023 @ 23:03	04/03/2023 @ 10:00
04/03/2023 @ 13:48	04/08/2023 @ 17:57
04/08/2023 @ 22:47	04/09/2023 @ 02:00
04/09/2023 @ 06:06	04/15/2023 @ 19:09
04/15/2023 @ 23:23	04/18/2023 @ 06:58
04/19/2023 @ 01:21	04/21/2023 @ 19:07
04/24/2023 @ 05:08	04/25/2023 @ 06:05
04/25/2023 @ 11:59	04/28/2023 @ 19:50
04/29/2023 @ 00:01	04/29/2023 @ 09:35
04/30/2023 @ 13:38	05/02/2023 @ 07:07
05/02/2023 @ 08:47	05/03/2023 @ 17:47
05/04/2023 @ 07:57	05/05/2023 @ 00:09
05/04/2023 @ 04:35	05/05/2023 @ 14:30
05/06/2023 @ 12:34	05/08/2023 @ 03:44
05/08/2023 @ 11:14	05/09/2023 @ 18:35
05/09/2023 @ 22:27	05/10/2023 @ 21:04
05/11/2023 @ 02:34	05/11/2023 @ 16:36
05/11/2023 @ 20:58	05/12/2023 @ 09:49
05/12/2023 @ 14:49	05/14/2023 @ 13:45
05/14/2023 @ 18:17	05/14/2023 @ 20:12
05/15/2023 @ 00:13	05/15/2023 @ 08:48
05/15/2023 @ 16:46	05/16/2023 @ 16:35

Start-up	Shut Down
05/16/2023 @ 21:57	05/17/2023 @ 18:08
05/17/2023 @ 22:38	05/18/2023 @ 14:51
05/18/2023 @ 19:27	05/19/2023 @ 17:34
05/19/2023 @ 22:14	05/20/2023 @ 16:22
05/20/2023 @ 20:29	05/21/2023 @ 11:09
05/21/2023 @ 11:24	05/21/2023 @ 22:28
05/21/2023 @ 03:07	05/22/2023 @ 08:05
05/25/2023 @ 11:06	05/25/2023 @ 12:43
05/26/2023 @ 13:43	05/25/2023 @ 15:48
05/27/2023 @ 09:55	05/28/2023 @ 00:01
05/28/2023 @ 10:44	05/29/2023 @ 04:38
05/29/2023 @ 10:00	06/01/2023 @ 13:54
06/01/2023 @ 14:47	06/02/2023 @ 08:43
06/02/2023 @ 15:19	06/03/2023 @ 19:29
06/03/2023 @ 23:35	06/05/2023 @ 17:57
06/06/2023 @ 11:05	06/07/2023 @ 16:25
06/07/2023 @ 22:08	06/08/2023 @ 19:26
06/08/2023 @ 19:43	06/09/2023 @ 17:29
06/09/2023 @ 21:34	06/10/2023 @ 18:49
06/10/2023 @ 23:10	06/11/2023 @ 19:00
06/11/2023 @ 23:17	06/12/2023 @ 19:33
06/13/2023 @ 00:05	06/13/2023 @ 14:00
06/13/2023 @ 18:00	06/14/2023 @ 17:43
06/14/2023 @ 22:07	06/15/2023 @ 07:26
06/15/2023 @ 13:34	06/16/2023 @ 17:55
06/16/2023 @ 22:15	06/17/2023 @ 17:43
06/17/2023 @ 22:00	06/18/2023 @ 16:12
06/18/2023 @ 20:38	06/21/2023 @ 18:09
06/21/2023 @ 22:26	06/22/2023 @ 07:49
06/22/2023 @ 15:08	06/23/2023 @ 16:30
06/23/2023 @ 22:03	06/24/2023 @ 17:43
06/24/2023 @ 22:01	06/25/2023 @ 20:18
06/26/2023 @ 06:48	06/26/2023 @ 21:44
06/27/2023 @ 06:43	06/28/2023 @ 16:54
06/28/2023 @ 21:00	06/30/2023 @ 10:01
06/30/2023 @ 16:30	

During Q2 of 2023 routine maintenance was performed on the incinerator during the scheduled shutdowns along with the following:

- Repair of the cooling tower fan
- Fire door repair

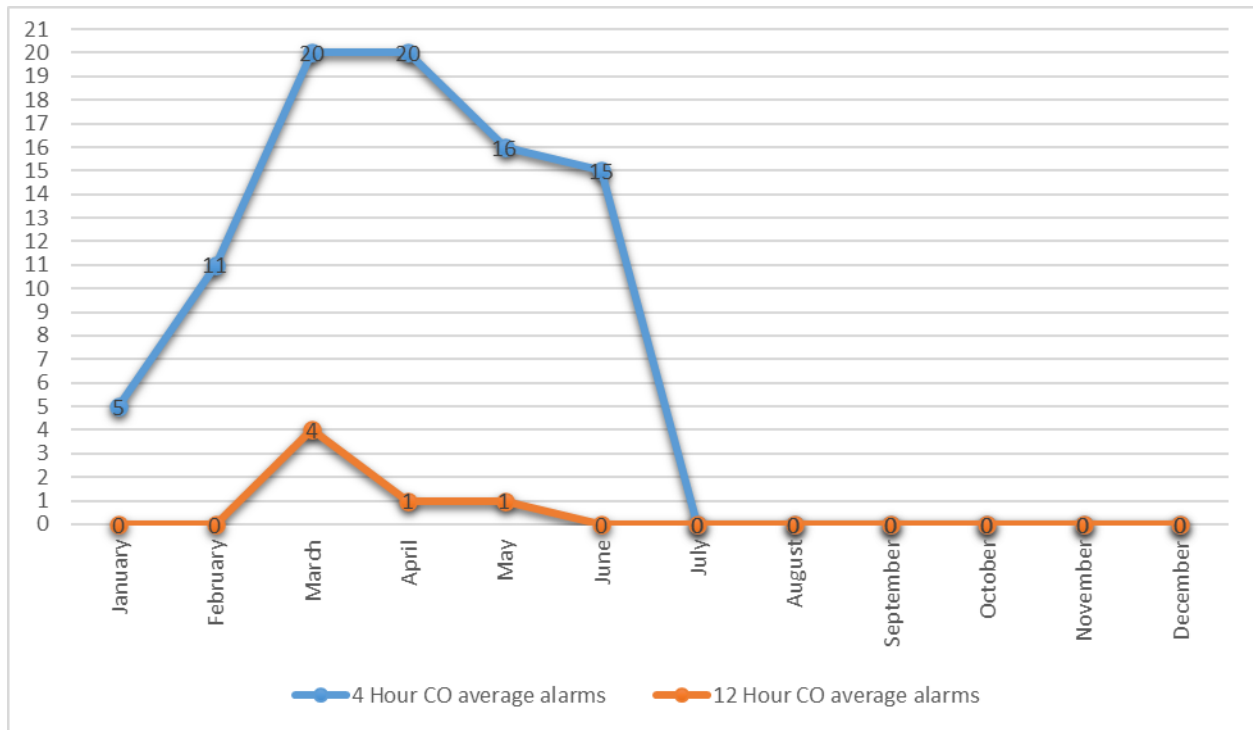
Emergency Bypass Summary

Date	Start Time	End Time	Duration	Emission Volume (m ³)	Reason	Corrective Action
4/17/2023	10:46	10:53	0:07	25.52	A test of the emergency generator transfer switch caused the APC system to shut-down and the emergency bypass stack cap to open.	Power was restored to the unit and the emergency bypass stack cap was closed. MECP reference number 1-3ETSMD.
5/5/2023	14:42	18:41	3:59	871.35	The APC system was shut-down causing the emergency bypass stack cap to open due to a breakdown of the cooling tower fan. The decision to shut down the APC was made to prevent equipment damage to the unit.	The incinerator was brought to a complete shut-down. A third party was brought in to repair the cooling tower fan. Once the cooling tower fan repair was completed, the incinerator and APC system were restarted and normal operations resumed.
5/10/2023	22:39	22:43	0:04	14.58	A power fluctuation at the facility caused the APC system to shut down which resulted in the opening of the emergency bypass stack .	Due to a power fluctuation at the facility, both rotary atomizers shut down triggering the emergency bypass stack cap to open. The rest of the ACP system remained fully functional. The operations and maintenance team started the APC system and the emergency bypass stack was closed.
6/22/2023	9:30	13:44	4:14	926.04	On June 22nd, 2023, at	The decision was

					<p>approximately 09:30 the emergency bypass stack cap opened due to the shutdown of the APC systems ID fan which was triggered by the quench tank pump shutting down due to a short in the quench tank pump motor.</p>	<p>made to bring the incinerator to a complete controlled shutdown. An electrician was called in from Spark Power, while Stericycle Maintenance continued troubleshooting the equipment. It was found that exposed wiring inside the quench tank motor box was contacting the housing which in turn shorted the motor out and caused the ID to stop and the emergency bypass to open. The wiring in the quench tank motor box was replaced. The APC system was then restarted and the emergency bypass stack cap was closed.</p>
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CO Alarm Chart Q1 2023

Month	4 Hour CO average alarms	12 Hour CO average alarms
January	5	0
February	11	0
March	20	4
April	20	1
May	16	1
June	15	0
July		
August		
September		
October		
November		
December		



2022 CO alarms vs. 2023 CO alarms

Month	2022		2023	
	4 Hr. Alarm	12 Hr. Alarm	4 Hr. Alarm	12 Hr. Alarm
January	17	3	5	0
February	13	4	11	0
March	7	1	20	4
April	15	3	20	1
May	10	5	16	1
June	18	7	15	0
July	19	4		
August	10	0		
September	11	1		
October	17	3		
November	14	1		
December	11	3		

Stericycle warrants that it has exercised best efforts to adhere to all the applicable Terms & Conditions of its Waste Disposal Site Certificate of Approval including all inspection and reporting requirements through Q2 of 2023.

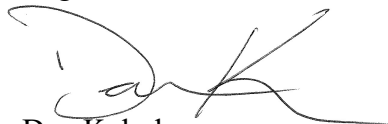
Stericycle is very committed to the full compliance with all conditions of its Provisional Certificate of Approval, throughout the year, whenever a situation of possible non-compliance was identified; immediate actions were taken to ensure full compliance. Stericycle has mechanisms in place to always ensure full compliance. Employees are aware of their responsibilities and are trained appropriately.

Stericycle believes that the current monitoring program is sufficient and enables both Stericycle and the MECP to have a good understanding of the Site operations and to assess its compliance with the Certificate of Approval and all the relevant regulations.

However, Stericycle is very committed to looking for ways to improve its operations through better procedures, training, inspections, and monitoring programs and will continue to do so.

I trust that this is the information required and that it meets with your approval. Should you have any questions or require additional information, please do not hesitate to contact me accordingly.

Regards,



Dan Kokol
Operational EHS Manager
Phone: 905-595-8532
Email: dkokol@stericycle.com



April 2023 Incineration Averages and Ranges

TheDate	OX6min	COmin	NOXmin	PrimTemp°C	SecTemp°C	SNCR	DemTemp°C	CarbTemp°C	DiffTemp°C	IDFanTemp°C	QuenchPH	CondPH	AtomPH	AtomA	AtomB	HEPADP	OpMode	
4/19/2023	Average	10.90	3.38	57.96	839.00	923.51	6.22	38.97	49.46	10.49	37.63	9.30	8.86	7.32	0.10	33.79	0.00	Off/Preheat/Normal(ON)
	Min	0.42	0.00	-3.08	255.84	43.89	5.63	20.56	26.43	-40.79	19.67	7.67	7.10	7.06	0.09	0.00	0.00	
	Max	14.24	592.23	459.12	1097.06	1090.17	7.20	68.70	55.56	35.00	44.84	10.74	9.61	7.45	0.10	41.20	0.00	
4/20/2023	Average	12.59	5.48	69.91	1100.27	1065.45	6.03	35.40	54.25	18.85	43.09	9.57	8.96	7.51	0.10	41.57	0.00	Normal(ON)
	Min	9.61	0.00	-0.57	1026.09	975.38	6.00	29.80	52.88	15.58	40.85	9.50	8.73	7.44	0.10	41.20	0.00	
	Max	14.55	713.44	180.91	1153.26	1153.20	6.06	39.00	54.61	23.08	44.30	9.65	9.13	7.60	0.10	42.17	0.00	
4/21/2023	Average	12.84	3.28	57.90	1121.11	1054.89	6.37	35.06	54.38	19.32	44.00	9.69	8.96	7.53	0.10	42.01	0.00	Normal(ON)/Shutdown/Off/Preheat/Normal(ON)
	Min	11.45	0.00	0.00	1034.73	781.22	6.01	28.06	53.09	13.26	40.19	9.62	8.88	7.43	0.10	41.83	0.00	
	Max	20.36	702.31	173.76	1189.73	1087.16	7.12	42.11	55.42	25.06	47.17	9.85	9.17	7.67	0.10	42.15	0.00	
4/22/2023	Average	12.92	0.66	45.79	1067.34	1052.34	6.27	38.83	55.41	16.59	45.87	9.71	8.69	7.54	0.10	42.09	0.00	Normal(ON)
	Min	10.40	0.00	11.39	709.94	915.39	6.01	28.04	52.78	11.37	40.18	9.50	8.34	7.50	0.10	41.70	0.00	
	Max	15.12	209.10	140.93	1130.62	1094.37	6.66	47.90	59.32	25.12	51.70	10.14	9.43	7.58	0.10	42.36	0.00	
4/23/2023	Average	12.58	3.37	55.69	1080.81	1057.27	6.06	38.95	55.16	16.21	45.79	9.78	8.23	7.53	0.10	41.83	0.00	Normal(ON)
	Min	11.31	0.00	18.00	702.47	1001.83	6.00	30.22	54.45	13.00	42.87	9.66	7.93	7.49	0.10	41.52	0.00	
	Max	14.85	902.10	116.01	1173.10	1091.86	6.17	42.87	56.29	24.24	48.03	10.14	9.42	7.58	0.10	42.14	0.00	
4/24/2023	Average	13.40	2.52	63.35	996.00	981.65	6.02	37.54	54.75	17.21	43.92	9.63	8.55	7.44	0.10	41.54	0.00	Normal(ON)/Shutdown/Off/Preheat/Normal(ON)
	Min	7.50	0.00	0.00	571.98	72.79	5.90	20.40	51.07	12.86	37.29	9.29	7.66	7.27	0.10	41.40	0.00	
	Max	20.37	3046.01	185.57	1131.02	1089.84	6.09	43.01	56.15	30.84	47.07	11.16	11.34	7.61	0.12	41.64	0.00	
4/25/2023	Average	13.31	0.21	67.80	957.26	1014.92	6.10	39.27	53.63	14.37	42.19	9.62	8.24	7.42	0.10	38.38	0.00	Normal(ON)/Shutdown/Off/Preheat/Normal(ON)
	Min	10.01	0.00	0.00	662.19	380.88	5.90	28.86	36.16	-25.82	21.48	9.41	7.49	7.23	0.10	6.74	0.00	
	Max	20.37	146.33	152.17	1058.21	1090.16	6.76	62.11	56.66	25.56	47.66	10.42	10.16	7.93	0.10	41.99	0.00	
4/26/2023	Average	12.77	3.73	70.10	1060.17	1062.48	6.05	37.85	54.53	16.68	44.48	9.36	8.04	7.43	0.10	41.45	0.35	Normal(ON)
	Min	9.60	0.00	-0.43	1005.63	1037.82	6.00	26.98	48.69	11.61	39.48	9.07	7.40	7.36	0.10	41.25	0.00	
	Max	18.94	706.56	219.44	1110.05	1091.40	6.20	45.71	57.78	23.69	48.82	9.55	8.50	7.52	0.10	41.74	1.00	
4/27/2023	Average	13.56	7.00	47.33	1013.90	1019.66	6.05	34.35	54.90	20.56	44.68	9.25	8.15	7.43	0.10	41.47	0.00	Normal(ON)
	Min	8.65	0.00	0.00	736.81	489.36	5.99	23.75	54.04	13.57	39.64	9.10	7.20	7.27	0.10	41.27	0.00	
	Max	20.37	817.95	173.79	1116.94	1095.19	6.14	42.11	55.93	30.64	48.24	9.46	9.27	7.68	0.10	41.87	0.00	
4/28/2023	Average	12.58	3.25	86.65	1070.67	1064.77	6.37	38.10	56.04	17.94	46.21	9.32	7.72	7.52	0.10	40.70	0.30	Normal(ON)/Shutdown/Off
	Min	9.35	0.00	0.00	980.95	972.70	5.96	23.91	52.78	13.45	39.90	8.83	7.02	7.40	0.10	39.57	0.00	
	Max	17.92	819.25	180.65	1176.58	1121.31	6.79	44.32	58.52	30.63	49.87	9.59	9.27	7.67	0.10	41.92	1.00	
4/29/2023	Average	17.66	2.01	24.22	564.88	508.88	6.46	53.04	41.74	-11.30	27.52	9.39	8.92	7.64	0.06	18.98	0.00	Off/Preheat/Normal(ON)/Shutdown/Off
	Min	10.70	0.00	0.00	138.00	66.86	6.00	24.08	27.89	-50.72	13.88	8.90	7.87	7.44	0.00	0.00	0.00	
	Max	20.41	790.22	142.67	1164.52	1079.78	7.10	79.63	54.92	30.67	41.91	10.00	9.40	7.80	0.10	40.36	0.00	
4/30/2023	Average	16.78	1.04	18.42	300.27	426.19	6.93	66.53	40.11	-26.42	25.01	9.98	9.18	7.66	0.05	12.66	0.23	Off/Preheat/Normal(ON)
	Min	4.77	0.00	-6.60	57.80	39.44	5.99	17.22	28.93	-52.25	15.40	9.03	7.19	6.90	0.00	0.00	0.00	
	Max	20.42	289.24	135.47	1031.60	1060.74	7.30	86.53	58.89	41.67	46.45	11.71	10.61	7.80	0.10	39.29	1.00	



O2 6 minute average < 7.5

O2 < 7.5

	Start	Stop		Op.	Stack		Actions
Date	Time	Time	Duration	Mode	O2 %	Explanation	Taken
4/3/2023	13:44	13:45	0:01	Shutdown	7.3	Low O2% occurred during shutdown.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

Carbon Monoxide > 8ppm 12 hour alarm



Carbon Monoxide > 8ppm 12 hour alarm

	Start	Stop		Op.	Stack CO	Stack CO		Actions
Date	Time	Time	Duration	Mode	@ 11% O2	as mg/m ³	Explanation	Taken
4/1/2023	16:00	20:00	4:00	Shutdown	20	23.1	High CO average caused by CO spikes that resulted from low secondary chamber temperatures during shut down as a result of upper chamber burner failure.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

Carbon Monoxide > 8ppm 4 hour alarm



Carbon Monoxide > 8ppm 4 hour alarm

Date	Start Time	Stop Time	Duration	Op. Mode	Stack CO @ 11% O2	Stack CO as mg/m ³	Explanation	Actions Taken
4/1/2023	17:00	21:00	4:00	Normal/Shutdown	43.5	50.2	High CO levels caused by upper chamber burner failure.	No waste was fed at this time. The incinerator was brought to a controlled shut-down.
4/4/2023	8:30	13:00	4:30	Normal	12.8	14.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/4/2023	16:00	21:00	5:00	Normal	19.2	22.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/5/2023	16:30	21:00	4:30	Normal	15.8	18.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/6/2023	5:30	11:00	5:30	Normal	15.4	17.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/7/2023	19:30	23:00	3:30	Normal	10.5	12.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/12/2023	15:00	16:00	1:00	Normal	10.1	11.7	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/13/2023	9:12	10:00	0:48	Normal	10.3	11.9	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Carbon Monoxide > 8ppm 4 hour alarm

4/14/2023	11:00	21:00	10:00	Normal	11.7	13.5	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/15/2023	17:00	21:00	4:00	Normal	13.1	15.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/17/2023	0:00	4:00	4:00	Normal	11	12.7	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/17/2023	11:30	16:00	4:30	Normal	17.6	20.3	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/19/2023	22:58	1:00	2:02	Normal	10.5	12.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/20/2023	11:00	14:00	3:00	Normal	11	12.7	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/20/2023	17:30	22:00	4:30	Normal	20.2	23.3	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/21/2023	4:00	8:00	4:00	Normal	13.3	15.3	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/21/2023	14:30	19:00	4:30	Normal	10.9	12.6	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Carbon Monoxide > 8ppm 4 hour alarm

4/23/2023	14:00	18:00	4:00	Normal	12	13.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/26/2023	17:30	1:00	7:30	Normal	11.1	12.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
4/28/2023	15:30	20:00	4:30	Normal	12.1	14.0	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.



Secondary Chamber Temperature < 1000°C

Date	Start Time	Stop Time	Duration	Op. Mode	Temp. °C	Explanation	Actions Taken
4/1/2023	15:36	18:57	3:21	Shutdown	717	Burner failure combined with an incorrect flameport air setting caused low upper chamber temperatures during shutdown.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
4/3/2023	10:00	13:47	3:47	Shutdown	570	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
4/4/2023	17:47	18:35	0:48	Normal	990	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed until the upper chamber temperature returned to the normal operating range.
4/27/2023	20:27	22:45	2:18	Normal	682	Low upper chamber temperature was caused by a failure of the upper chamber burner.	The burner error was corrected. No waste was fed until the upper chamber temperature returned to the normal operating range.
4/29/2023	9:48	13:35	3:47	Shutdown	273	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.



Atomizer Amps < 36

	Start	Stop		Op.	Atom. A	Atom. B		Action
4/29/2023	10:08:00	13:35:00	3:27:00	Shutdown		13.9	Low atomizer amperage was caused by a stoppage of the atomizer during the shutdown sequence.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.



O2 6 minute average < 7.5

O2 < 7.5

	Start	Stop		Op.	Stack		Actions
Date	Time	Time	Duration	Mode	O2 %	Explanation	Taken
5/10/2023	11:40	11:46	0:06	Normal	3.5	Low O2% reaing to to error on O2/NOx monitor.	No waste was fed until the repair to the O2/NOx monitor was complete.

Carbon Monoxide > 8ppm 12 hour alarm



Carbon Monoxide > 8ppm 12 hour alarm

	Start	Stop		Op.	Stack CO	Stack CO		Actions
Date	Time	Time	Duration	Mode	@ 11% O2	as mg/m ³	Explanation	Taken
5/10/2023	21:01	2:00	4:59	Nomal	9	10.4	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Carbon Monoxide > 8ppm 4 hour alarm



Carbon Monoxide > 8ppm 4 hour alarm

Date	Start Time	Stop Time	Duration	Op. Mode	Stack CO @ 11% O2	Stack CO as mg/m ³	Explanation	Actions Taken
5/1/2023	18:30	0:00	5:30	Normal	14.4	16.6	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/4/2023	18:30	23:00	4:30	Normal	21	24.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/7/2023	15:00	19:00	4:00	Normal	15.4	17.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/10/2023	21:00	2:00	5:00	Normal	23.3	26.9	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/11/2023	22:07	2:00	3:53	Normal	25	28.9	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/12/2023	4:00	7:00	3:00	Shutdown	10.5	12.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	No waste was fed at this time. The incinerator was brought to a controlled shut-down.
5/12/2023	19:00	20:00	1:00	Normal	16	18.5	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/12/2023	21:00	1:00	4:00	Normal	8.1	9.3	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Carbon Monoxide > 8ppm 4 hour alarm

5/13/2023	10:00	11:00	1:00	Normal	8.8	10.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	12:00	16:00	4:00	Normal	28.8	33.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	17:00	19:00	2:00	Normal	21.7	25.0	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	23:00	0:00	1:00	Normal	29.8	34.4	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/14/2023	2:00	10:00	8:00	Normal	24.4	28.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/14/2023	20:00	0:00	4:00	Normal	14.7	17.0	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/30/2023	16:30	21:00	4:30	Normal	13.1	15.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/31/2023	1:00	5:00	4:00	Normal	16.2	18.7	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.



Oxides of Nitrogen > 98ppm 24 hr average

	Start	Stop		Op.	Stack NOx	Stack NOx		Actions
Date	Time	Time	Duration	Mode	@ 11% O2	as mg/m ³	Explanation	Taken
5/21/2023	5:01	13:00	7:59	Normal	106.2	191.2	High NOx levels were caused by a plugged ammonia line on the SNCR system.	No waste was fed at this time. Stericycle maintenance cleared the plugged ammonia line.
			0:00			0.0		

Secondary Chamber Temperature < 1000°C

Date	Start Time	Stop Time	Duration	Op. Mode	Temp. °C	Explanation	Actions Taken
5/5/2023	17:21	18:29	1:08	Shutdown	879	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
5/7/2023	10:58	12:13	1:15	Shutdown	974	Low upper chamber temperature was caused by a failure of the upper chamber burner.	The burner error was corrected. No waste was fed until the upper chamber temperature returned to the normal operating range.
5/22/2023	8:54	12:05	3:11	Shutdown	961	Burner failure combined with an incorrect flameport air setting caused low upper chamber temperatures during shutdown.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
5/29/2023	17:20	17:58	0:38	Normal	957	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
5/30/2023	2:53	6:50	3:57	Normal	945	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
5/30/2023	7:01	8:02	1:01	Normal	977	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
5/31/2023	6:05	8:06	2:01	Normal	964	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

Quench pH out of Range (<6.4pH / >10.4pH)



Quench pH out of Range (<6.4pH / >10.4pH)

	Start	Stop		Op.	Quench		Action
Date	Time	Time	Duration	Mode	pH	Explanation	Taken
5/28/2023	14:05	18:53	4:48	Normal	3.5	Low pH levels were due to the caustic pump losing its prime.	Stericycle maintenance reprimed the caustic deliver system.

Atomizer Amps < 36

	Start	Stop		Op.	Atom. A	Atom. B		Action
5/5/2023	14:59:00	18:30:00	3:31:00	Shutdown		11.1	Low atomizer amperage was caused by a stoppage of the atomizer during the shutdown sequence.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

Carbon Bed Inlet Temperature <57C

	Start	Stop		Op.	Carbon bed		Actions
Date	Time	Time	Duration	Mode	inlet °C	Explanation	Taken
5/12/2023	10:00	13:48	3:48	Shutdown	58.6	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.
5/13/2023	12:49	0:06	11:17	Normal	58.9	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.
5/18/2023	21:02	1:30	4:28	Normal	66.8	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.
5/19/2023	7:27	21:33	14:06	Normal/Shutdown	83.8	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.

Differential from Demister < 10 C



Differential from Demister < 10°C

	Start	Stop		Op.	Differential Temp		Actions
Date	Time	Time	Duration	Mode	Outlet °C	Explanation	Taken
5/5/2023	15:02	18:30	3:28	Shutdown	0	low differential temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted. The incinerator was brought to a controlled shutdown.



June 2023 Incineration Averages and Ranges

TheDate	OX6min	COmin	NOXmin	PrimTemp°C	SecTemp°C	SNCR	DemTemp°C	CarbTemp°C	DiffTemp°C	IDFanTemp°C	QuenchPH	CondPH	AtomPH	AtomA	AtomB	HEPADP	OpMode	
6/19/2023	Average	12.94	2.32	52.82	1007.51	1045.78	6.85	40.55	58.24	17.69	45.84	7.73	7.63	7.80	0.10	39.94	1.98	Normal(ON)
	Min	8.62	0.00	17.59	698.35	988.79	6.43	31.09	54.71	14.72	39.70	7.34	7.32	7.60	0.10	39.65	1.00	
	Max	15.27	1113.45	218.72	1182.61	1092.78	7.14	45.00	60.43	24.08	49.20	8.52	8.79	7.93	0.10	40.24	3.00	
6/20/2023	Average	12.70	3.05	49.54	1130.61	1058.03	6.93	42.37	58.51	16.14	46.43	7.32	7.47	7.87	0.10	39.84	1.60	Normal(ON)
	Min	9.89	0.00	9.04	1027.73	1005.22	6.75	32.57	54.72	13.67	41.72	7.16	7.12	7.75	0.10	39.67	0.00	
	Max	15.10	779.13	155.77	1188.08	1105.56	7.10	48.67	62.41	22.28	49.44	7.55	7.73	8.09	0.10	40.17	3.00	
6/21/2023	Average	13.07	1.82	41.70	1033.37	1050.68	6.94	41.36	58.60	17.25	45.96	7.37	7.53	8.13	0.10	39.65	1.78	Normal(ON)
	Min	9.00	0.00	-6.51	777.83	755.31	6.62	31.04	54.32	14.79	39.71	7.24	7.34	7.96	0.10	39.53	1.00	
	Max	20.36	779.13	155.77	1188.08	1105.56	7.32	48.67	62.41	23.31	49.44	8.05	8.12	8.31	0.10	40.17	3.00	
6/22/2023	Average	14.80	0.90	33.77	878.50	961.53	6.60	42.43	52.12	9.70	40.10	7.88	7.89	8.23	0.10	29.90	1.33	Normal(ON)/Shutd own/Off/Preheat/ Normal(ON)
	Min	8.96	0.00	0.00	530.95	307.66	6.09	27.78	33.67	-32.73	28.09	6.82	7.39	8.06	0.10	0.09	0.00	
	Max	20.41	549.15	190.14	1084.09	1094.16	7.02	67.49	59.12	24.75	46.79	10.86	10.14	8.42	0.10	40.97	3.00	
6/23/2023	Average	12.75	1.21	65.99	1052.50	1051.54	7.30	42.84	59.57	16.73	47.18	7.25	7.56	8.14	0.10	39.47	1.99	Normal(ON)/Shutd own/Off/Preheat
	Min	10.63	0.00	-2.89	820.05	768.57	6.75	37.39	56.61	14.88	43.52	7.21	7.26	8.05	0.10	37.93	1.00	
	Max	20.30	803.21	205.90	1167.69	1095.88	7.52	46.45	61.72	20.20	50.16	7.47	9.07	8.29	0.10	40.66	3.00	
6/24/2023	Average	12.51	8.62	41.99	1018.83	1051.61	7.52	42.10	60.46	18.36	47.01	7.34	7.58	8.41	0.10	39.11	1.96	Normal(ON)/Shutd own/Off/Preheat/ Normal(ON)
	Min	9.88	0.00	0.00	747.78	758.56	7.30	34.44	56.99	15.12	43.19	7.24	7.30	8.29	0.10	37.01	1.00	
	Max	20.36	5379.57	257.09	1168.15	1089.40	7.70	46.17	62.31	23.24	49.26	7.62	8.11	8.64	0.10	40.23	3.00	
6/25/2023	Average	12.54	0.75	42.36	1083.29	1062.20	7.39	43.14	60.42	17.28	47.75	7.34	7.59	8.55	0.10	39.89	2.34	Normal(ON)/Shutd own
	Min	10.46	0.00	11.03	775.04	1002.09	7.14	35.55	57.97	12.41	43.99	7.00	6.96	8.39	0.10	39.02	1.00	
	Max	14.59	524.77	130.35	1147.24	1148.79	7.70	49.44	63.12	22.42	51.67	7.62	8.43	8.68	0.10	40.67	4.00	
6/26/2023	Average	17.56	0.97	12.23	740.91	815.74	7.29	39.81	46.54	6.73	35.50	8.45	8.88	8.78	0.10	13.78	1.12	Shutdown/Off/Pre heat/Normal(ON)/S hutdown
	Min	9.68	0.00	0.00	473.62	231.02	6.84	21.21	29.51	-30.34	23.98	7.29	7.53	7.89	0.10	0.00	0.00	
	Max	20.41	656.30	114.08	1146.20	1087.01	7.75	60.89	59.92	29.48	48.14	9.60	10.01	9.11	0.10	40.30	3.00	
6/27/2023	Average	14.52	2.55	40.38	774.71	865.25	7.19	40.74	50.66	9.92	40.01	7.83	8.03	7.86	0.10	31.85	1.08	Shutdown/Off/Pre heat/Normal(ON)
	Min	8.79	0.00	0.00	365.35	174.57	6.74	26.87	27.72	-20.94	24.02	7.11	7.04	7.31	0.10	0.00	0.00	
	Max	20.39	873.38	168.42	1043.44	1104.39	7.60	59.33	67.15	27.22	49.44	9.29	9.70	8.20	0.10	40.22	3.00	
6/28/2023	Average	12.56	0.16	61.33	976.29	1051.92	6.75	39.47	55.77	16.30	43.25	7.25	7.54	8.18	0.10	39.44	1.37	Normal(ON)/Shutd own/Off/Preheat/ Normal(ON)
	Min	10.98	0.00	15.81	876.81	984.72	6.60	35.97	54.31	14.51	41.47	7.18	7.46	8.08	0.10	39.26	0.00	
	Max	14.65	35.54	193.05	1056.20	1088.31	7.01	42.74	57.46	18.68	45.44	7.37	7.67	8.26	0.10	39.71	3.00	
6/29/2023	Average	14.07	0.68	49.32	892.79	979.95	6.78	40.34	52.79	12.45	41.07	7.41	7.62	7.90	0.10	34.35	1.16	Normal(ON)/Shutd own/Off/Preheat/ Normal(ON)
	Min	8.79	0.00	-15.40	365.35	174.57	6.44	26.87	27.72	-20.94	24.02	7.11	7.04	7.30	0.10	0.00	0.00	
	Max	20.39	873.38	193.05	1072.31	1104.39	7.60	59.33	67.15	27.22	49.44	9.29	9.70	8.26	0.10	40.69	3.00	
6/30/2023	Average	13.30	0.89	67.57	974.04	1043.71	7.09	37.82	54.48	16.66	41.68	7.31	7.77	7.68	0.10	38.94	0.00	Normal(ON)/Shutd own/Off/Preheat/ Normal(ON)
	Min	9.23	0.00	-3.84	688.32	698.57	6.69	30.98	50.83	14.28	36.78	6.06	7.35	7.39	0.10	38.23	0.00	
	Max	20.30	624.16	202.98	1051.23	1098.14	7.39	44.01	58.29	19.91	45.19	8.10	9.10	8.27	0.10	39.64	0.00	



O2 6 minute average < 7.5

O2 < 7.5

	Start	Stop		Op.	Stack		Actions
Date	Time	Time	Duration	Mode	O2 %	Explanation	Taken
6/2/2023	20:05	20:07	0:02	Normal	7.4	O2% dropped due to high CO levels.	No waste was fed until the O2 level returned to the normal operating range
6/6/2023	21:18	21:19	0:01	Normal	7.3	O2% dropped due to high CO levels.	No waste was fed until the O2 level returned to the normal operating range

Carbon Monoxide > 8ppm 4 hour alarm



Carbon Monoxide > 8ppm 4 hour alarm

Date	Start Time	Stop Time	Duration	Op. Mode	Stack CO @ 11% O2	Stack CO as mg/m ³	Explanation	Actions Taken
5/1/2023	18:30	0:00	5:30	Normal	14.4	16.6	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/4/2023	18:30	23:00	4:30	Normal	21	24.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/7/2023	15:00	19:00	4:00	Normal	15.4	17.8	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/10/2023	21:00	2:00	5:00	Normal	23.3	26.9	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/11/2023	22:07	2:00	3:53	Normal	25	28.9	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/12/2023	4:00	7:00	3:00	Shutdown	10.5	12.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	No waste was fed at this time. The incinerator was brought to a controlled shut-down.
5/12/2023	19:00	20:00	1:00	Normal	16	18.5	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/12/2023	21:00	1:00	4:00	Normal	8.1	9.3	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Carbon Monoxide > 8ppm 4 hour alarm

5/13/2023	10:00	11:00	1:00	Normal	8.8	10.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	12:00	16:00	4:00	Normal	28.8	33.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	17:00	19:00	2:00	Normal	21.7	25.0	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/13/2023	23:00	0:00	1:00	Normal	29.8	34.4	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/14/2023	2:00	10:00	8:00	Normal	24.4	28.2	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/14/2023	20:00	0:00	4:00	Normal	14.7	17.0	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/30/2023	16:30	21:00	4:30	Normal	13.1	15.1	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.
5/31/2023	1:00	5:00	4:00	Normal	16.2	18.7	High CO levels were caused by turbulence in the primary chamber during ram cycles.	The operator monitored the CO level and suspended feed until they returned to the normal operating range.

Secondary Chamber Temperature < 1000°C

Date	Start Time	Stop Time	Duration	Op. Mode	Temp. °C	Explanation	Actions Taken
6/1/2023	13:58	14:46	0:48	Shutdown	827	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/2/2023	19:23	19:53	0:30	Normal	984	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed until the upper chamber temperature returned to the normal operating range.
6/3/2023	22:26	23:30	1:04	Shutdown	981	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/4/2023	6:47	8:22	1:35	Normal	973	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed until the upper chamber temperature returned to the normal operating range.
6/5/2023	20:38	21:56	1:18	Shutdown	983	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/7/2023	18:09	20:24	2:15	Shutdown	986	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/13/2023	16:01	16:43	0:42	Shutdown	822	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

6/22/2023	10:39	12:54	2:15	Shutdown	935	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/26/2023	22:53	1:40	2:47	Shutdown	974	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/29/2023	15:23	20:43	5:20	Normal/Shutdown	701	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/30/2023	20:58	23:03	2:05	Normal	949	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed until the upper chamber temperature returned to the normal operating range.
6/30/2023	23:23	23:53	0:30	Normal	983	Low upper chamber temperature was caused by and incorrect flameport air setting.	No waste was fed until the upper chamber temperature returned to the normal operating range.

Quench pH out of Range (<6.4pH / >10.4pH)



Quench pH out of Range (<6.4pH / >10.4pH)

	Start	Stop		Op.	Quench		Action
Date	Time	Time	Duration	Mode	pH	Explanation	Taken
6/4/2023	3:15	9:35	6:20	Normal	5	Low pH levels were due to the caustic pump losing its prime.	Stericycle maintenance reprimed the caustic deliver system.

Atomizer Amps < 36

	Start	Stop		Op.	Atom. A	Atom. B		Action
6/22/2023	9:51:00	12:55:00	3:04:00	Shutdown		15.7	Low atomizer amperage was caused by a stoppage of the atomizer during the shutdown sequence. Unit shut down due to lube oil leak.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/26/2023	22:27:00	1:43:00	3:16:00	Shutdown		29.8	Low atomizer amperage was caused by a stoppage of the atomizer during the shutdown sequence.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.
6/29/2023	15:49:00	20:48:00	4:59:00	Normal/Shutdown		13.7	Low atomizer amperage was caused by a stoppage of the atomizer during the shutdown sequence. Unit shut down due to lube oil leak.	No waste was fed at this time. The incinerator was brought to a controlled shutdown.

Carbon Bed Inlet Temperature <57C

	Start	Stop		Op.	Carbon bed		Actions
Date	Time	Time	Duration	Mode	inlet °C	Explanation	Taken
6/24/2023	22:58	0:16	25:30:00	Normal	59.9	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.
6/27/2023	13:12	19:33	6:21	Normal	58.1	High temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted.

Differential from Demister < 10 C



Differential from Demister < 10°C

	Start	Stop		Op.	Differential Temp		Actions
Date	Time	Time	Duration	Mode	Outlet °C	Explanation	Taken
6/29/2023	16:50	20:48	3:58	Shutdown	0	low differential temperatures were caused by an incorrect reheat steam setting	The reheat steam valve setpoints were adjusted. The incinerator was brought to a controlled shutdown.