DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N594869257

FACILITY: Cleanlites Recycling		**SRN / ID:** N5948
LOCATION: 665 HULL RD, MASON		**DISTRICT:** Lansing
CITY: MASON		**COUNTY:** INGHAM
CONTACT: Kevin Webb , Facility Manager		**ACTIVITY DATE:** 08/22/2023
STAFF: Michelle Luplow	**COMPLIANCE STATUS:** Compliance	**SOURCE CLASS:** MINOR
SUBJECT: Onsite compliance inspection to determine compliance with PTI 329-96A		
RESOLVED COMPLAINTS:		

Personnel Present at inspection: Mike Kimmel, Senior VP (mikek@cleanlites.com)

Kevin Webb, Facility Manager (kevin.webb@cleanlites.com)

Purpose

Conduct an unannounced, on-site compliance inspection to determine compliance with PTI 329-96A for a fluorescent lamp processing system.

This facility was last inspected in September 2016.

Facility Background/Regulatory Overview

Cleanlites (Parent Company: USA Lamp and Ballast Recycling) is a universal waste recycler: all light bulbs, batteries, electronics, and lighting ballasts are processed here, with the exception of LED light bulbs.

Cleanlites bulb crusher (lamp processing system) is operated daily until ~ 2 p.m.

In 2020, Cleanlites had a fire, where parts of the bulb crusher were impacted and needed to be replaced (conveyor belts and electronic components). The actual crusher and trommel remained intact, but were refurbished (sandblasted and repainted).

In November 2021, M. Kimmel informed me that they were in the process of rebuilding the entire building and had not reinstalled the bulb crusher at that time.

When the bulb crusher was reinstalled, M Kimmel said they replaced the baghouse filters with new filters and installed new carbon in the carbon bed as well. With the reinstallation of the emission unit, M. Kimmel said they installed it in the same room, but not in the same spot.

Cleanlites started running samples the week of January 2, 2023. Samples of the bulb end caps, powder and bulb glass are taken and tested to determine if they are hazardous or not. M. Kimmel said most of the bulbs they receive are "eco green" and contain less mercury than previous versions of the mercury fluorescent bulbs.

Post-fire, full operation of the bulb crusher began in February 2023.

Inspection

This was an unannounced, on-site compliance inspection. I arrived at the site at approximately 2:11 p.m. on August 22, 2023, and met with M. Kimmel and K. Webb.

M. Kimmel said that the processing of Hg bulbs through the crusher has dramatically decreased over the years. He said 5 years ago or so they used to process 100,000 bulbs per week. With the advent of LED light bulbs, however, processing of these bulbs has decreased: they now process 30,000 – 40,000 Hg bulbs per week.

The TK100 Lamp Processing System is a unit that was designed by Cleanlites owner, Tom Kimmel. The TK100 has the ability to process 5,000 bulbs per hour.

PTI 329-96A: EULAMPSYSTEM

EULAMPSYSTEM represents the TK100 Lamp Processing System which consists of a crushing unit and a separation unit for recycling fluorescent, mercury-containing lamps. Lamps enter a negative pressure crushing chamber where themaps is crushed and separated into 3 components: 1) aluminum end caps (eventually recycled at Omnisource), 2) crushed glass (which is landfilled), and 3) calcium phosphate powder-containing mercury (sent to Cincinnati to retort the powder). Emissions are controlled by a baghouse and activated carbon. "Retort" is a process where the mercury-containing powder is heated to 1400F to turn the Hg into a fume, condenses to liquid, and then is sent to a disposal facility or solidified.

A DonaldsonTorit Downflow dust collector is used to collect the dust particulate. Carbon is used to capture mercury vapor.

EULAMPSYSTEM was not crushing bulbs during the inspection; however, I had asked that they turn the unit on so that I could review several compliance items.

Material Limits & Monitoring/Recordkeeping

Cleanlites is limited to processing 3,960,000 lamps per calendar month. Monthly records are required to be kept. The unit was not operated from 2020 when the fire occurred through early January 2023. As such, I requested records from January 2023 – August 28, 2023.

K. Webb provided me with the records, however, they contained customer names, which he said are proprietary. Additionally, records were separated out by fluorescent lamp type. I reviewed the records and the data is shown below in Table 1.

I have informed K. Webb that in the future, Cleanlites must provide these records without confidential information attached to them. Cleanlites must also total all bulbs crushed, across all types for each month, rather than have separate records for each type, in an effort to streamline the records, and in order to meet the PTI 329-96A requirement to keep these records in a "satisfactory manner." Based on the records supplied, Cleanlites appears to be meeting their monthly limit.

Table 1. Bulbs crushed per month, January – August 2023.

Month (2023)	Bulbs Crushed
January	102,553
February	108,802

March	**229,991**
April	**110,037**
May	**137,258**
June	**115,558**
July	**127,788**
August	**170,021**
Total	**1,102,008**

Process/Operational Restrictions & Monitoring/Recordkeeping

EULAMPSYSTEM is required to be installed, maintained and operated in a satisfactory manner to minimize emission to the ambient air, including maintaining a negative pressure in the crushing unit and separation unit. Although the unit was not crushing during the inspection, I had asked that they turn the unit on so that I could confirm that there is negative pressure, pulling air into the crushing and separation units. We utilized a sheet of paper in front of the crusher opening to confirm that the unit was under negative pressure – the paper was pulled towards the crusher opening.

EULAMPSYSTEM is required to be maintained and operated according to the manufacturer's specifications and procedures, including operating according to their malfunction abatement plan (MAP). Page 1 of Cleanlites' MAP states that visual observations of the feed conveyor, elevated conveyor belt, gear reducers and motors, and carbon filters, among other bulb crusher components are conducted on a daily basis. The MAP states that in the event there are any deficiencies, they will log them on their monthly log sheet and immediately correct the issues. Page 2 states that whenever the monitored value for the pressure drop deviates from the limit or range, they will maintain records of the deviation and how it was fixed.

K. Webb provided their monthly log sheet for January 2023 – September 2023. He said that any issues observed during the daily checks will be logged on the monthly checklist. The monthly checklist also appears to serve as monthly documentation for the status of the various bulb crusher components. K. Webb stated that they haven't had any pressure drop deviations to log. Based on a review of these records, it appears that the equipment is being maintained according to the MAP.

Upon review of the MAP in preparation for this inspection, I requested that Cleanlites update the MAP to include a caveat for pressure drop: when the pressure drop is outside the specified operating range, Cleanlites will shut the equipment down immediately in order to address the pressure drop deviation. Attached is the revised MAP.

The carbon bed is required to be replaced every 45,000,000 lamps or every 6 years, whichever comes first and records of the carbon bed replacement are required to be kept, as well as records for the number of lamps processed in EULAMPSYSTEM since the last activated carbon replacement. The carbon was installed in the unit on December 1, 2022 (as noted in the monthly checklist). Cleanlites will be required to replace the carbon again by December 1, 2028 or every 45,000,000 lamps, whichever occurs first. To-date, Cleanlites has processed a total of 1,102,008 lamps.

All mercury-containing materials produced in EULAMPSYSTEM, including spent filters and spent carbon, are required to be properly handled, transported, and disposed of according to applicable State rules and federal regulations. M. Kimmel explained that the mercury-containing phosphate goes directly into a 55-gallon drum that is shipped out for disposal. The door of the carbon bed is opened and the carbon is transferred into 55-gallon drums. The carbon is shipped out to be retorted.

Additional Monitoring/Recordkeeping

The pressure drop across the baghouse is required to be monitored and maintained within 1-5" H2O. During the inspection, the equipment was not processing bulbs, however I requested they turn on the unit so I could collect the pressure drop operating parameters. The pressure drop across the baghouse, without bulbs processed in it, was 3.8" H2O. Future inspections while operational will be necessary to ensure pressure drop is maintained within the acceptable operating range.

A light at the top of the PLC tower is used as a visual "alarm" any time the system detects operational issues. If any component in the lamp crushing system goes down, the PLC will shut down the entire system. M. Kimmel explained that the system has to run through the follow checks and sequence before the conveyor into the crusher is activated. If at any point in this sequence there is an error detected, the system will not start up: 1) baghouse 2) compressor, 3) outshoot 4) crusher conveyor.

Stack/Vent Restrictions

The EULAMPSYSTEM stack is required to be at least 38' above ground level and discharged unobstructed vertically upwards. I used AQD's Nikon Forestry Pro II Rangefinder to evaluate the stack height. There was no angle at which I could get a clear reading for the stack height. Multiple obstructions were in the way; however, I took 2 readings that measured 33.5' and 34.2'. Because of my concern about the accuracy of the readings due to the obstructions, I requested that Cleanlites conduct their own stack height measurements.

On September 18, 2023, K. Webb stated that they were unable to determine the stack height, so rather than confirm my measurements, they ordered and installed an extra 5 feet of stack. K. Webb provided photos of pre- and post- extension installation. Using the readings I took during the inspection, the stack height, with 5' of extension, ranges from 38.5' – 39.2', and would therefore meet the stack height requirement.

Compliance Statement

Cleanlites appears to be in compliance with PTI 329-96A at this time.

Image 1(Pre-Install Stack) : Photo Credit: Cleanlites. Stack height is pre-installation of extender

Image 2(Stack Extender) : Photo Credit: Cleanlites. 5' stack extender

Image 3(Post-Install) : Photo Credit: Cleanlites. Stack height is post-install of the 5' extender.

NAME Michelle Luplow DATE 9/29/23 SUPERVISOR RB

MONTHLY LAMP MACHINE MAINTENANCE

DATE:	INSPECTED BY:			
	Good	**Change**	**Replacement Date**	**NOTES**
Feed Conveyer				
Elevated Conveyer				
Gear Reducers & Motors				
Carbon & Filters				
Air Filtration System				
Air Compressor				
Air Lines				
PLC Monitoring System				

DATE:	INSPECTED BY:			
	Good	**Change**	**Replacement Date**	**NOTES**
Feed Conveyer				
Elevated Conveyer				
Gear Reducers & Motors				
Carbon & Filters				
Air Filtration System				
Air Compressor				
Air Lines				
PLC Monitoring System				

DATE:	INSPECTED BY:			
	Good	**Change**	**Replacement Date**	**NOTES**
Feed Conveyer				
Elevated Conveyer				
Gear Reducers & Motors				
Carbon & Filters				
Air Filtration System				
Air Compressor				
Air Lines				
PLC Monitoring System				

DATE:	INSPECTED BY:			
	Good	**Change**	**Replacement Date**	**NOTES**
Feed Conveyer				
Elevated Conveyer				
Gear Reducers & Motors				
Carbon & Filters				
Air Filtration System				
Air Compressor				
Air Lines				
PLC Monitoring System				

DATE: 12-1-22	INSPECTED BY: Kevin WEBB			
	Good	**Change**	**Replacement Date**	**NOTES**
Feed Conveyer				preparing machine to start
Elevated Conveyer				Running.
Gear Reducers & Motors				We Have ADDED New
Carbon & Filters				Carbon to the machine.
Air Filtration System				The Dust Collector will
Air Compressor				Be fully installed By month
Air Lines				end, filters are Here &
PLC Monitoring System				will Be installed Befor

running.

MONTHLY LAMP MACHINE MAINTENANCE

DATE: 1-3-23	INSPECTED BY: Kevin WEBB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 2-1-23	INSPECTED BY: Kevin WEBB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 3-1-23	INSPECTED BY: Kevin WEBB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 4-1-23	INSPECTED BY: Kevin WEBB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 5-1-23	INSPECTED BY: Kevin WEBB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			

MONTHLY LAMP MACHINE MAINTENANCE

DATE: 6-1-23	INSPECTED BY: Kevin WBTB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	X			
Elevated Conveyer	X			
Gear Reducers & Motors	X			
Carbon & Filters	X			
Air Filtration System	X			
Air Compressor	X			
Air Lines	X			
PLC Monitoring System	X			
DATE: 7-3-23	INSPECTED BY: Kevin WBTB			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 8-1-23	INSPECTED BY: KW			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE: 9-11-23	INSPECTED BY: KW			
	Good	Change	Replacement Date	NOTES
Feed Conveyer	✓			
Elevated Conveyer	✓			
Gear Reducers & Motors	✓			
Carbon & Filters	✓			
Air Filtration System	✓			
Air Compressor	✓			
Air Lines	✓			
PLC Monitoring System	✓			
DATE:	INSPECTED BY:			
	Good	Change	Replacement Date	NOTES
Feed Conveyer				
Elevated Conveyer				
Gear Reducers & Motors				
Carbon & Filters				
Air Filtration System				
Air Compressor				
Air Lines				
PLC Monitoring System				

USA LAMP & BALLAST RECYCLING

Mason, MI • Lakeville, MN • Cincinnati, OH • Spartanburg, SC

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Malfunction Abatement Plan (MAP)

1) Key Employees:
   a) Thomas M Kimmel - President
   b) Michael T Kimmel – SR Vice President
   c) Kevin Webb- Facility Manager
   d) Joshua Blom – Shop Foreman

2) Preventative Maintenance:
   a) Feed Conveyor – Inspect for tracking, wear and tension, replace as needed.
   b) Elevated Conveyor Belt – Inspect the belt for wear, replace if wear is excessive.
   c) Gear Reducers and Motors - Check seals as well as for visual damage. Replace as needed.
   d) Carbon & Filters – Replace the activated carbon sulfur bed every 45,000,000 lamps or every 6 year, whichever comes first. Change filters when PLC recommends, every 6 years, or 45,000,000 lamps; whichever comes first.
   e) Air Compressors – Check oil level; add lubricating oil as required, check drain to insure moisture is removed from tank.
   f) Air Lines – Check connection for air leaks.
   g) Air Filtrations System – Check for leaks as well as low or high pressure readings.
   h) PLC Monitoring Systems – Check for alarms or warnings immediately log and fix deficiencies.

These items will be visually checked daily. If there are any deficiencies, they will be noted in the monthly log sheet and immediately corrected. See attachment #1

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Malfunction Abatement Plan (MAP)

3) Major Replacement Parts

The following major replacement parts will be maintained in inventory for quick replacement.

a) Filters for the filtration system
b) Gear reducers and motors
c) Spare belts

4) Identification and Source of Air-Cleaning Device

The source and air cleaning device is a Donaldson Torit Filtration System – please see attachment #2.

a) In order to maintain compliance with the applicable emission limitation(s), the acceptable range established for the pressure drop across the air filtration system is between 1 to 5 inches of water. USA will maintain a PLC to continuously monitor the pressure drop, in inches of water, across the air filtration system when the controlled emissions unit(s) is/are in operation, including periods of startup and shutdown.

b) Whenever the monitored value for the pressure drop deviates from the limit or range established in accordance with this permit, the permittee shall promptly shut down the TK100 lamp machine and investigate the cause of the deviation. The permittee shall maintain records of the following information for each investigation:

i. The date and time the deviation began;
ii. The magnitude of the deviation at that time;
iii. The date the investigation was conducted;
iv. The name(s) of the personnel who conducted the investigation; and
v. The findings and recommendations.

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Malfunction Abatement Plan (MAP)

5) Description of Corrective Procedures

In response to each required investigation to determine the cause of a deviation, the permittee shall take prompt corrective action to bring the operation of the control equipment within the acceptable range specified in this permit, unless the permittee determines that the corrective action is not necessary and documents the reason for that determination and the date and time the deviation ended. The permittee shall maintain records of the following information for each corrective action taken:

a) Description of the corrective action;
b) The date corrective action was completed;
c) The date and time the deviation ended;
d) The total period of time (in minutes) during which there was a deviation;
e) The pressure drop readings immediately after the corrective action was implemented; and
f) The name(s) of the personnel who performed the work.