September 13, 2018

Environmental Administrator
Hazardous Waste Program & Permitting
Florida Department of Environmental Protection
2600 Blair Stone Road, MS 4560
Tallahassee, Florida 32399-2400

RE: August 30, 2018 Implementation of Contingency Plan

Veolia ES Technical Solutions, L.L.C. (Veolia) is submitting this written report in accordance with Operating Condition 5 of the Mercury Recovery and Mercury Reclamation Facility Permit Number 0072959-HO-016, dated October 21, 2016. On August 30, 2018 a heating element within the retort oven failed and shorted to ground on the base of the oven. This created an arc flash burning a hole in the base of the oven. The arc flash scorched the oven insulation and the epoxy floor coating under the oven. There was not a sustained fire either inside or outside of the retort oven. The arc flash also caused an instantaneous pressurization of the oven. This pressurization caused the oven and the retort processing room to momentarily loose negative pressure and mercury levels outside of the retort room to exceed the OSHA PEL. The quantity of material released was estimated to be less than 3.4 grams of mercury or $<7.5 \times 10^{-3}$ pounds of mercury. The details are provided below.

Facility Operator:
Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305

Facility:
Veolia ES Technical Solutions, L.L.C.
342 Marpan Lane
Tallahassee, FL 32305
EPA ID: FL0000207449
Operating Permit 0071455-HO-016

Type of Incident: Arc flash incident within the Retort Oven

Date and Time of Incident: August 30, 2018 at 09:20

Name and Quantity of Material Involved: The incident occurred within the retort oven while conducting mercury recovery operations from three drums crushed capsules from HID lamps. Pre-retort analysis of this material indicates an average concentration in the range of 50 – 75 mg/kg. Assuming the high end of this range, the process batch contained a total 0.1125 pounds of mercury (51 grams of mercury). Based on air monitoring data and the size of the facility it is estimated that less than 3.4 grams of mercury was released from the retort room into the general facility.

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Injuries: None

Potential or Actual Hazard to Human Health or Environment: Minor, the arc flash incident caused the release of a small amount of mercury to the general facility area.

Quantity and Disposition of Materials: The drums of material that were in the retort at the time of the incident were removed from the oven, had covers replaced and returned to inventory for future reprocessing.

Narrative:

August 30, 2018

The shift began at 5:00 am. Khaliq Murray was the retort operator on duty. The oven was loaded with three drums of crushed capsules from HID lamps. The retort program was initiated at approximately 5:30 am. The oven temperature set point was 1120° F. After completing the routine tasks in the retort room, Khaliq moved to lamp line 2 to process biaxial lamps. At 9:20 he heard a bang within the retort room. Khaliq then went to investigate the source of the noise and saw smoke within the retort room. The retort oven was shut down and the Jerome meter was used to assess conditions in the facility. Elevated readings were detected at the entrance to the break room and at lamp line one. Based on these readings the facility was evacuated and all personnel were out of the facility as of 9:25 am.

Monitoring with the Jerome meter was performed periodically throughout the day and readings were highly variable but trended downward throughout the day. At 1:30 pm facility personnel, using Level C PPE, opened the retort oven. The containers were removed from the oven, closed and staged in the prep room. At 2:20 facility personnel began decontaminating floor surfaces outside the retort room using a mercury decontamination solution. At 5:30 pm readings in the storage areas within the facility were non-detect on the Jerome meter.

Incident Investigation

Initial monitoring on August 31, 2018, with the Jerome meter, indicated levels had returned to normal and lamp processing was resumed. Retort staff inspected the oven in an effort to determine the nature and cause of the incident. Initial inspection of the oven revealed that two heating elements in the lower bank of elements were damaged. A hole in the base of the oven was also found in the vicinity of the damaged heating elements. The hole was approximately 2 inches wide by 3 inches long. A picture of the hole was taken and forwarded to EH&S. Phillip Ditter and Wayne Bulsiewicz reviewed the picture and data with personnel from Veolia's other mercury retort facilities. Based on the review of the picture and the observations of facility staff, it was determined that the most likely cause of the incident was an arc flash occurring from a failed heating element shorting to ground on the housing of the oven.

The heating elements operate on a 480 volt circuit. The heating elements are on a dual fuse circuit. An arc flash on a 480 volt circuit will have sufficient energy to melt/burn stainless steel and will cause an instantaneous pressure wave. This instantaneous pressurization would exceed the capacity of the vacuum blower and would force vapors and fumes out of the newly created hole as well as forcing these vapors and fumes through the door seal. These vapors and fumes would be a combination of mercury

vapors from inside the oven as well as vaporized metals and metal fumes from the burning of the heating element and stainless steel housing of the oven.

The vacuum blower on the oven and the ventilation system on the retort room continued to operate throughout the event.

The material in the oven was crushed capsules from HID lamps which typically have a relatively low mercury concentration prior to retort. Over the past three years the average concentration is in the range of 50-75 mg/kg. Assuming 75 mg/kg, three drums, at 500 lb. each would equate to 0.0375 lb. (17 grams) per drum for a total of 0.1125 lb. (51 grams).

The Jerome meter readings showed a mercury concentration at the break room entrance of 0.442 mg/m3 and greater than 0.999 mg/m3 at the lamp line 1 feed station. Lamp line 1 feed station is adjacent to the north wall of the retort room. The Jerome meter operates using a gold foil sensor that amalgamates mercury in the air stream being sampled. This changes the resistance of the foil which is detected by the meter and converted to a concentration. Under normal circumstances there are no other metal vapors or fumes in the air that is being sampled that will react with the gold foil. Following an arc flash incident which has burned metal, there is the potential for other metals to react with the gold foil and cause the readings of the Jerome meter to be biased high. As such, the actual mercury concentration may have been lower than reported above.

Based on the results of our incident investigation we are unable to definitively determine the cause of the heating element failure. The two most likely scenarios are either a defect in the element that shorted to ground or the presence of dirt and debris on the element. The presence of dirt or debris on the element typically would not impact the performance of the element; however, it is possible that it created uneven heating and cooling of the element, stressing the element and causing a premature failure.

To address each of these possibilities Veolia is updating the retort procedures to include a documented inspection during the loading of each retort batch. This inspection will include visually inspecting the elements for signs of physical damage or defects and inspecting the oven for the presence of dirt and debris in the bottom of the oven or on the heating elements.

The above referenced pictures are included as Exhibit A.

Contingency Plan Amendments: A review of the contingency plan was completed and it was determined that the contingency plan was implemented in a timely and efficient manner and no further revisions are required as a result of this incident.

If you have any questions please call me at (262) 243-8908.

Sincerely,

VEOLIA ES TECHNICAL SOLUTIONS, L.L.C.

Matthew Melott
Operations Manager

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Cc: Heather Perkins, FL DEP
Phillip Ditter, Veolia
Wayne Bulsiewicz, Veolia

Enc.

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Exhibit A

Photo Documentation

Veolia North America
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Picture of hole burned through base of the oven

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