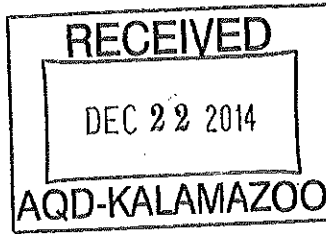


**H**ORIZON ENVIRONMENTAL



December 18, 2014

VIA ELECTRONIC MAIL

Mr. Matt Deskins  
Environmental Quality Analyst  
Michigan Department of Environmental Quality  
Air Quality Division  
Kalamazoo District Office  
7953 Adobe Road  
Kalamazoo, Michigan 49009-5025

**RE: RESPONSE TO THE NOVEMBER 25, 2014 VIOLATION NOTICE ISSUED TO TOEFCO ENGINEERED COATING SYSTEMS, INC.; SRN: N2610**

Dear Mr. Deskins:

Toefco Engineered Coating Systems, Inc. ("Toefco") is in receipt of the November 25, 2014 Violation Notice issued by the Kalamazoo District Office (the "District") of the Michigan Department of Environmental Quality, Air Quality Division ("AQD"). The Violation Notice cites Special Condition V.2 of Permit 225-07B (the "Permit"), which requires destruction efficiency testing of volatile organic compounds ("VOC") emissions from the regenerative thermal oxidizer ("RTO") within 180 days of Permit issuance. Because the Permit was issued on March 8, 2014, testing was to have been completed by August 29, 2014.

Please note that Toefco has not deliberately sought to avoid its testing obligations under the Permit. On August 5, 2014, Toefco attempted to perform stack testing to verify the VOC destruction efficiency of the RTO emission control system at the Toefco facility located in Niles, Michigan, as required under Special Condition V.2 of the Permit. Personnel from BT Environmental Consulting, Inc. ("BTEC") of Royal Oak, Michigan performed the testing, as outlined in their Emissions Test Plan, submitted to the AQD on June 3, 2014. Mr. Nathan Hude of AQD, Technical Programs Unit ("TPU") was present on site to observe the stack testing.

It is important to note that since the stack testing attempt and the discovery of mechanical deficiencies within the RTO described in a subsequent section, Toefco has been operating the SuperLine in "bypass mode", in accordance with Special Condition IV.3 of the Permit, and will continue to do so until the RTO has been repaired, put back into operation, and is prepared for stack testing. Toefco continues to perform all operations at their Niles facility in accordance with the requirements of the appropriate general air permits and air Permits to Install issued by AQD to the facility.

In addition, Toefco has kept AQD informed of the continuing RTO evaluation and repair activities and their related schedules since the stack testing attempt via regular email correspondence and telephone calls. These updates have included:

- The September 4, 2014 PTI Compliance Action Plan provided to the AQD District Office;
- The October 7, 2014 progress update email from the writer to Mr. Matt Deskins of the AQD District Office; and
- Telephone conversations during early November 2014 between the writer and Mr. Matt Deskins of the AQD District Office, during which Mr. Deskins advised that the Violation Notice was forthcoming and suggested that Toefco provide their next written progress update as part of the required response to the Violation Notice.

#### **DESTRUCTION EFFICIENCY TESTING ATTEMPT SUMMARY**

BTEC initiated testing on August 5, 2014 at approximately 3:30 PM, at the start of second shift production at Toefco. Testing personnel immediately noted that actual exhaust flow rate levels were less than anticipated for the RTO system, averaging on the order of 12,000 actual cubic feet per minute ("acfm") versus the expected 16,000 to 18,000 acfm from the variable frequency drive-controlled exhaust fan. In addition, BTEC testing personnel noted that the spike in VOC concentration in the exhaust stream during RTO thermal media bed-shift, typically noted in a two-can RTO system when shifting air flow directions through the ceramic media beds due to the release of untreated VOC, was unusually long-lived for this type of operation. Instead of spiking with the poppet valve shift around the ceramic media beds, followed by an immediate drop back to normal operating VOC exhaust levels, the VOC concentration after the valve change lingered at the higher level and slowly trailed back to the normal operating concentration.

This slow return to normal VOC concentration from the bed changeover spike concentration resulted in an elevated average outlet VOC concentration significantly above the VOC concentration seen during periods when the media beds were not in the process of changeover. Preliminary calculations by BTEC personnel indicated that based upon the elevated average outlet VOC levels, and the low VOC inlet concentrations anticipated due to Toefco's normal maximum production operations, the preliminary estimated destruction efficiency averaged 90 to 91 percent (by weight).

Toefco maintenance personnel immediately initiated a response to the RTO operational issues, working with BTEC to attempt adjustments to the RTO system while monitoring VOC emission levels from the RTO. Temperature within the combustion chamber was confirmed to be above the minimum 1,450 degrees Fahrenheit specified within the Permit, and the lower than anticipated exhaust flow rate indicated a minimum retention time within the combustion chamber in excess of the 0.5 second minimum specified within the Permit. Toefco personnel made changes to the RTO control system to increase the speed of the poppet valve cycle, and also to increase and decrease the poppet valve cycle frequency. Each of these changes had limited effect on reducing the VOC concentration spike duration associated with the ceramic media bed changeover.

Due to the abnormal RTO operational profile identified, the preliminary stack testing results not indicating the required destruction efficiency level, and the apparent lack of effect by the RTO trouble-shooting measures instigated by Toefco maintenance personnel, Toefco directed BTEC to suspend stack testing operations at approximately 7:00 PM. While Mr. Hude had been present during the preliminary testing and witnessed the trouble-shooting activities, Toefco and BTEC personnel presented a verbal summary of the difficulties encountered, the attempted adjustments to the RTO operational controls, and the preliminary results and findings of those attempted solutions. Testing equipment was subsequently dismantled and BTEC personnel demobilized from the site.

### **RTO INSPECTION AND TECHNICAL EVALUATION**

The RTO at the Toefco site was manufactured and installed by Met-Pro Environmental, which has recently merged into CECO Environmental ("CECO"). On August 6, 2014, Toefco initiated discussions with the sales and installation personnel at CECO who had been involved in the previous purchase and installation of the RTO. Following preliminary discussions and a description of the operational difficulties encountered while stack testing the RTO, Toefco was directed to CECO's Technical Services Department. Preliminary stack testing results and additional information was transmitted to CECO to assist in their evaluation of the potential RTO problems.

Following several discussions and the review of preliminary data by CECO personnel, and at considerable expense, Toefco contracted with Advest Technologies of Anaheim, California, a thermal control technologies technical support company and subsidiary of CECO, to schedule an RTO service technician site visit to the Toefco site. The technician traveled from California to Michigan on August 18, 2014, spending August 19 and 20, 2014 at the Toefco site. During the site visit, the technician worked with Toefco maintenance personnel to inspect, evaluate and diagnose potential issues with the RTO that may have resulted in decreased VOC control by the unit, guaranteed by Met-Pro to meet 98 percent destruction efficiency.

Issues identified during the inspection/evaluation of the RTO:

1. Poppet valve shafts showed surface scoring and carbon shaft bearings showed significant wear and could be affecting valve movement. This may be the result of a manufacturing defect during welding operations and will require the replacement of the poppet valve shafts and bearings.
2. The seating of the poppet valve on media Canister 1 appeared in satisfactory condition, but the outlet side of Canister 2 showed significant gaps. Further inspection showed that the throat of the poppet valve had not been finished with a machined surface. The inlet side of Canister 2 also had small gaps. This defect could be affecting internal flow patterns and causing VOC leakage to the exhaust and the elevated exhaust VOC concentrations noted during stack testing. This manufacturing defect will require replacement of this poppet valve.
3. Condensate buildup within the ID fan, supporting the possibility of leakage back through the poppet valve(s).
4. Lower than anticipated negative pressure developed by the ID fan when energized.
5. Inspection of the top of the ceramic media beds identified a light layer of powder on top of the media, initially identified as silica. An investigation of the coatings applied on EU-MetalCoat (the "SuperLine") following the installation of the RTO indicate that some coatings include silica

materials, and have been inadvertently exhausted to the RTO during the last year's operations. Use of these materials on the SuperLine when operating the RTO for emission control, while resulting in increased maintenance requirements for the ceramic media in the future, did not and will not constitute a violation the conditions of the Permit.

#### **CORRECTIVE ACTIONS TAKEN AND PROPOSED**

The RTO is currently idled at the Toefco plant, and coating operations on the SuperLine are limited to those coating applications that meet the requirements of "bypass mode" operations of the SuperLine as specified within the Permit.

Toefco, with CECO's assistance, is aggressively moving forward to perform the required repairs and component replacements to bring the RTO back online and to resume controlled operation of the SuperLine. Activities completed include:

- Toefco and CECO agreed upon a general plan to repair the RTO, replacing components as necessary, and to tune the RTO control systems' following restart.
- Toefco placed an order to CECO for the replacement of the ceramic media within the RTO. CECO expedited the delivery and installation of the replacement media for Toefco to occur in early December 2014.
- CECO finalized a detailed plan for replacing/repairing the poppet valve seats and bodies, shafts, and carbon shaft bearings. CECO presented the information to Toefco for final approval, which was issued so that the repairs could proceed as quickly as possible.
- Toefco utilized the RTO idle period to perform normal periodic maintenance, in accordance with its Malfunction Abatement Plan, including replacement and recalibration of the combustion chamber thermocouples.

Activities currently in progress include:

- Toefco is evaluating its existing coating review protocol and will implement changes as necessary to reduce the potential for exhausting coating components to the RTO that could result in increased maintenance requirements for the emission control system.
- Toefco is evaluating the need to reopen the Permit, if any equipment or operational modifications are deemed necessary to reduce the potential for exhausting coating components to the RTO that could result in increased maintenance requirements for the emission control system.
- Removal/replacement of the ceramic media within the RTO commenced on December 8, 2014 and has been completed.
- Mechanical repairs and replacement of the poppet valve assemblies commenced on December 8, 2014. During the initial mechanical match-up prior to poppet valve/shaft replacement, however, the valve seat rings provided with the replacement parts were determined to be incorrectly sized. Alternate rings have been ordered and are scheduled for delivery on or around December 29, 2014. Repairs to and replacement of the valve assemblies are anticipated to occur during early January 2015, but the schedule for the mechanical repair technician site visit is still being finalized.

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Once the poppet valve assemblies are replaced and repaired, a CECO operational service technician will assist with the restart, tuning, and operational certification of the RTO, tentatively scheduled to occur during mid- to late-January 2015. Toefco and CECO are also in discussions regarding the presence of a CECO service technician during the rescheduled stack testing event to adjust RTO poppet valve cycle time and speed, adjust combustion chamber temperature, etc., if necessary to support the stack testing.

#### **RESCHEDULED DESTRUCTION EFFICIENCY TESTING**

Toefco will reschedule the RTO stack testing as quickly as possible after completion of the required RTO repair and component replacement activities, and certification of proper operational status by CECO personnel. In addition, Toefco will consider the results of their evaluation of the need for equipment or operational modifications to the SuperLine emission capture and control system deemed necessary for proper operation of the RTO.

If modification(s) (and potentially a corresponding Permit revision) is required, Toefco and AQD may also need to agree upon a revised destruction efficiency testing protocol before stack testing can proceed. The rescheduled stack testing is anticipated to occur as early as possible during the first quarter of 2015, but is dependent on completion of the mechanical repairs to the RTO, the results of the system evaluation, and Toefco's and BTEC's schedules/availability. A proposed testing schedule (and revised protocol, if required) will be provided to the AQD District Office and TPU personnel when finalized, to allow for AQD review and field oversight scheduling for the second round of stack testing.

Submittal of a complete report of the destruction efficiency test results will be submitted to the AQD's TPU and District Offices within 60 days following the last day of the testing period.

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Should you have any questions or need additional information, please feel free to contact Mr. Artie McElwee of Toefco at (800) 555-6495, or me at (616) 554-3210, at your convenience.

Sincerely,

**HORIZON ENVIRONMENTAL CORPORATION**



Brian P. Greenwald, P.E.  
Senior Project Engineer

c: Mr. Artie McElwee, Toefco  
Mr. Brian Leahy, Horizon