west virginia department of environmental protection

Division of Air Quality
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Harold D. Ward, Cabinet Secretary
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March 6, 2023

Ms. Christina Fernandez
Director
U.S. EPA - Region 3
Air and Radiation Division
Four Penn Center
1600 John F. Kennedy Boulevard
Philadelphia, PA 19103-2852

Re: Regulatory Interpretation Request
Empire Green Generation LLC
Facility ID: 009-00141
Permit No.: R13-3555A
Follansebee, WV

Dear Director:

The West Virginia Department of Environmental Protection - Division of Air Quality (DAQ) respectfully requests an regulatory interpretation from the Administrator regarding Empire Green Generation's (EGG) proposed modification of their Follanbee, West Virginia Facility to any regulation developed under Section 129 of the Clean Air Act.

Specifically, the DAQ is requesting an regulatory interpretation as to whether all streams, or only the liquid and solid streams, exiting the pyrolysis process need to be evaluated under 40 CFR 241 to determine applicability under 40 CFR 60, Subpart CCCC, if the plastic feedstock to the pyrolysis process has been determined to be a fuel or raw material under 40 CFR 241.

The DAQ does not believe that EGG pyrolysis trains or downstream emission units (e.g., engines, dryer, and vitrifier) would be affected sources under Subpart AAAA and EEEE because the plastic feedstock does not meet the definition of municipal solid waste and the Follansbee Facility is not an institutional facility.

Background Information

In 2022, Empire Green Generation LLC (EGG) proposed to the DAQ to construct and operate two pyrolysis trains with gas cleaning sections to process and convert up to 70 tons per day of medical waste into tar (liquids), char (solids) and synthetic gas.

The DAQ issued Permit R13-3555 to EGG on March 2, 2023. During the DAQ review of the Application, the DAQ determined that EGG's proposed pyrolysis trains meet the criteria of a "pyrolysis unit" as defined in 40 CFR 60.51c and therefore the proposed pyrolysis trains are excluded emission units from Subpart Ec.

Proposed Modification

On December 1, 2023, EGG filed a modification application with the DAQ. EGG proposed to replace the medical waste feedstock with plastic feedstock. In a revised application (January 23, 2024, Submission), EGG noted that the feedstock will be sourced from recyclers, manufacturing, and plastic producers. This pre-processed plastic feedstock will be shipped to EGG's Follansbee, WV facility as feedstock for the pyrolysis trains.

EGG noted that this modification only requires the addition of a hydrochloric acid truck loading facility with associated scrubber system. This feedstock change will allow the pyrolysis trains to generate hydrochloric acid in addition to other products (tars, char, and synthetic gas).

The processing capacity of these pyrolysis trains will remain the same at 35 tons of plastic feedstock per day per pyrolysis train (70 Tons per day total).

Regulatory Considerations

EGG commenced construction of the pyrolysis trains in 2023, which is after the applicability date of Subparts AAAA (August 30, 1999); CCCC (June 4, 2010); and EEEE (December 9, 2004). Therefore, EGG's pyrolysis trains meet the definition of new affected units.

Given the design capacity of the two pyrolysis trains, these units do not meet the capacity criteria of a large municipal waste combustion unit as defined under Subpart Eb and therefore, the units are not subject to Subpart Ec.

The DAQ determined that the four spark ignition engines are affected sources with regard to Subpart JJJJ during the review of Permit R13-3555. However, the DAQ was unable to determine the applicable emission standard to which the permit engines were subject. Condition 5.1.1. of Permit R13-3555 required EGG to seek a determination from the EPA to determine which emission standard would be applicable for these four engines.

The vitrifiers (process heaters) for the pyrolysis trains may be affected sources under Subpart Dc of Part 60 and Subpart JJJJJJ of Part 63. Applicability status for these process heaters would be affected by the outcome of this determination. These units are designed to fire gaseous fuel (synthetic gas), liquid fuel (tars), propane for startup operations only, or a combination of synthetic gas and tars with a maximum heat input of 100 MMBtu/hr.

Past Determinations and Other Permitting Actions

Prior to submitting this determination, the DAQ searched the Applicability Determination Index (ADI) for similar determinations, and identified the following:

Table 1 - Similar Applicability Determinations

EPA Office	Control Number	Date	Reference
Region 5	9700062	10/11/1996	60.14, 60.15, 60.5, 60.51b,
Region 6	NR06	02/07/1985	52.21(b), 60.50, 60.51(b)
Region 7	9600096	12/02/1996	60.50b
Region 10	E010	04/12/1977	60.50, 60.51
DSSE	E009	01/19/1977	60.50
Region 1	M140002	12/04/2012	40 CFR 60, Subpart EEEE
Region 9	1000019	03/30/2010	40 CFR 60, Subpart AAAA
Region 10	1500025	08/31/2010	40 CFR 60, Subpart AAAA
Region 4	1700010	03/02/2017	40 CFR 60, Subpart CCCC
Region 5	1800003	01/22/2018	40 CFR 60, Subpart CCCC

The DAQ is aware of several determinations by other State Agencies, listed below:

Table 2 - List of Similar State Actions

State Agency	Company/Permittee Name	Permit No.	Date	Outcome
Indiana Department of Environmental Management	Fulcrum Centerpoint LLC	089-44042-00660	08/16/2022	Meet exemption under 60.1020(h)
North Carolina Environmental Quality	Braven Environmental LLC	10672R00	9/25/2020	No Reference
Indiana Department of Environmental Management	Brightmark Plastics Renewal Indiana 2 LLC	151-45294-00067	06/29/2022	Meet exemption under 60.1020(h)
Ohio Environmental Protection Agency	SOBE Thermal Energy Systems, LLC	P0132799	02/14/2024	Scrap Tires are classified as non-waste per 40CFR241. Not Applicable to any incinerator rules

The DAQ is aware of EPA's decision to not remove the phrase “pyrolysis/combustion unit” for the definition of *municipal waste combustion unit* in Subparts AAAA and EEEE of Part 60.[1]

The DAQ is working under the assumption that EGG’s plastic feedstock is non-hazardous per 40 CFR 262.

First Question: *Should EGG’s plastic feedstock be viewed as waste or non-waste?*

The DAQ believes that the proper way to answer this question is for EGG/EGG’s plastic feedstock provider to make a waste/non-waste determination of this plastic feedstock in accordance with 40 CFR 241. Based on EGG’s application and additional responses regarding this question, EGG may have determined or believe that the plastic feedstock is a non-waste. EGG has not provided any information that DAQ would view as an official determination in accordance with 40 CFR 241.

[1] Standards of Performance for New Stationary Sources and Emission Guidelines for Existing Sources: Other Solid Waste Incineration Units Review; Withdrawal of Proposed Provision Removing Pyrolysis/Combustion Units, 88 Fed. Reg. 36524 (June 5, 2023).

DAQ looked at the definitions that pertain to waste under potentially applicable subparts, which are as follows:

"Solid waste" is defined under Subpart EEEE as

"means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, agricultural operations, and from community activities, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1342), or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. 2014)."

Subpart CCCC refers to "solid waste" as defined in 40 CFR 241.2, which refers to 40 CFR 258.2. 40 CFR 258.2 defines to *"means any garbage, or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 U.S.C. 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923)."*

Subparts AAAA do not define *"solid waste"* or reference waste as determined under 40 CFR 241. This subpart defines *"municipal solid waste or municipal-type solid waste"*

"means household, commercial/retail, or institutional waste. Household waste includes material discarded by residential dwellings, hotels, motels, and other similar permanent or temporary housing. Commercial/retail waste includes material discarded by stores, offices, restaurants, warehouses, nonmanufacturing activities at industrial facilities, and other similar establishments or facilities. Institutional waste includes materials discarded by schools, by hospitals (nonmedical), by nonmanufacturing activities at prisons and government facilities, and other similar establishments or facilities. Household, commercial/retail, and institutional waste does include yard waste and refuse-derived fuel. Household, commercial/retail, and institutional waste does not include used oil; sewage sludge; wood pallets; construction, renovation, and demolition wastes (which include railroad ties and telephone poles); clean wood; industrial process or manufacturing wastes; medical waste; or motor vehicles (including motor vehicle parts or vehicle fluff)."

Both of these definitions, “solid waste” and “municipal solid waste”, contain the phrase *“other discarded materials”.* Therefore, a waste determination must be conducted on the plastic feedstock to be introduced into the pyrolysis trains in accordance with 40 CFR 241.3.

The concern the DAQ has with the plastic feedstock is that EGG did not generate the plastic feedstock and thus, the original end user and/or generator had discarded this plastic material at some point.

Second Question: If the plastic feedstock is determined to be fuel or ingredients in accordance with 40 CFR 241.3, then would the EGG pyrolysis trains be exempt from Section 129 of the CAA (e.g. subject to Subpart AAAA, CCCC, or Subpart EEEE)?

Initially, the DAQ does not believe the pyrolysis trains, (e.g., engines and process heaters) would be subject to Section 129 and therefore Subparts AAAA, CCCC and EEEE would not be applicable to EGG’s emission units.

Given the plastic material was discarded by the original end user or generator, the initial waste determination only pertains to the cracking/decomposition of plastic feedstock from the pyrolysis trains and all streams exiting the pyrolysis train should be re-evaluated in accordance with 40 CFR 241.3.

This is the real question: Would EGG need to conduct a waste determination for each of the exiting streams from the pyrolysis trains (e.g., “tars”, “oil”, “ash and char”, and “synthetic gas”) in accordance with 40 CFR 241.3?

The definition of *“solid waste”* at 40 CFR 258.a states,

“Solid waste means any garbage, or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or <u>contained gaseous material</u> resulting from industrial, commercial, mining, and agricultural operations, and from community activities, but does not include solid or dissolved materials in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges that are point sources subject to permit under 33 U.S.C. 1342, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended (68 Stat. 923).”

Thus, the DAQ does not believe that EGG’s cleaned synthetic gas would need to be evaluated because the gas is not stored in a container. EGG’s process consumes the synthetic gas as fuel to provide process heat for their process and generates electricity for the facility.

Third Question: EGG plans to route the ash and char stream to the vitrifier (process heater) to be oxidized into products of combustion. Would the vitrifier be subject to Subpart CCCC or EEEE?

The raw synthetic gas generated will exit the pyrolysis train through off-take with the ash and fixed carbon being collected in a deceleration chamber. The ash and fixed carbon, which is also referred to as "char", will be injected into the vitrifier. The vitrifier is best described as a retort or process heater with the purpose of providing process heat for the respective pyrolysis train. In the process description in EGG's modification application, the high temperatures in the vitrifier should be above the eutectic temperature of the ash and char to be combusted into CO_2 and H_2O.

The DAQ believes the synthetic gas stream and tar stream should be considered a fuel and the chlorine/chloride stream a raw ingredient for the production of hydrochloric acid. However, the injection of the ash and char into the vitrifiers should be viewed as incineration. The question is: because EGG generated the ash and char, would the vitrifiers be subject to Subpart CCCC as a CISWI unit.

The DAQ does not believe that the vitrifiers could be classified as an OWSI unit because the Follansbee facility is not an institutional facility generating this waste and the initial plastic feedstock does not meet the definition of "municipal solid waste." Therefore, based on the definitions under 40 CFR 60.2977 the vitrifier(s) is not an "other solid waste incineration unit".

Furthermore, the DAQ does not believe that EGG's vitrifiers qualify for any of the exclusions in Subpart CCCC (e.g. cogeneration facilities, small power production facilities).

Fourth Question, Would the vitrifiers be considered an "energy recovery unit" or a "commercial and industrial solid waste incineration unit" under Subpart CCCC?

The vitrifiers are required to provide process heat for the pyrolysis units with the exhaust used to dry the incoming plastic feedstock of excess moisture in the dryer section. EGG plans to use the generated "tars" and "cleaned synthetic gas" as fuels for the vitrifiers.

If EGG elected not to oxidize the ash and char stream in the vitrifiers (i.e, send the ash & char off-site for proper disposal), then would the vitrifiers be subject to Subpart CCCC?

To aid you and your staff in this determination, a redacted copy of EGG's modification application is attached. The DAQ's permit file for R13-3555, EGG's application on processing medical waste using pyrolysis, can be viewed in our Application Xtender at: https://documents.dep.wv.gov/AppXtender/DataSources/DEPAX16/account/login?ret=Lw==.

Instructions on using our Application Xtender are located at: https://dep.wv.gov/Data/Documents/AX-Instructions.pdf.

Should you need to discuss this matter further, please do not hesitate to contact me by email at edward.s.andrews@wv.gov or phone at 304-926-0499 extension 41244..

Sincerely,

Edward S. Andrews, P.E.

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