



## REGION 9

SAN FRANCISCO, CA 94105

January 9, 2024

David Blankenhorn, PG  
Director of Client Services  
Catalyst Environmental Solutions  
315 Montana Ave, Suite 311  
Santa Monica, California 90403

Via electronic mail

Re: Request for 40 CFR Part 60, Subpart EEEE Applicability Determination for Sitos Group, LLC

Dear David Blankenhorn:

This letter is in response to a letter from Catalyst Environmental Solutions on behalf of Sitos Group, LLC ("Sitos") to the United States Environmental Protection Agency ("EPA"), dated March 29, 2023, regarding the applicability of Title 40, Code of Federal Regulations (CFR) Part 60, Subpart EEEE (Standards of Performance for Other Solid Waste Incinerators) ("OSWI rule") to the Applied Gaia B3 Continuous Pyrolysis Machine ("Biochar Reactor"). The Biochar Reactor will be installed at the Monterey Regional Waste Management District (doing business as "ReGen Monterey") facility located at 14201 Del Monte Boulevard in Monterey County, California. Sitos has requested a determination from the EPA regarding applicability of 40 CFR Part 60, Subpart EEEE to the Biochar Reactor. Based upon the EPA's review, the Biochar Reactor is considered a very small municipal waste combustion unit and is therefore subject to the provisions of the OSWI rule. Details regarding the equipment and the basis for the EPA's conclusion are provided in the remainder of this letter.

### **Proposed Biochar Reactor**

The letter from Catalyst Environmental Solutions ("the request letter") included the following information about the proposed Biochar Reactor in the introductory section:

The proposed Biochar Reactor consists of an Applied Gaia B3 Continuous Pyrolysis Machine which converts waste biomass into biochar through heating of the biomass in a low oxygen environment. The woody biomass is not combusted, but, rather, is converted via pyrolysis (the thermal decomposition) to gases and biochar in a chamber at approximately 550°C (1,022°F). None of the biomass is combusted; it is all pyrolyzed to biochar and gases. The gases released through the thermal decomposition are not contained, they are burnt within the chamber

directly after release to provide the energy source to sustain the pyrolysis temperatures avoiding the need for alternative fuels to be utilized. After clean combustion of the released gases during the pyrolysis process, the exhaust gases are vented through the chimney. The biomass travels through the pyrolysis chamber via a variable speed paddle auger, the paddle auger rotates the biomass so it is evenly heated, with a retention time of approximately 12-15 minutes, allowing time for heat to penetrate to the center of the biomass particles and thermal decomposition to occur. The Biochar Reactor has 16 thermocouples measuring temperatures throughout the chamber and ancillary equipment. The Programmable Logic Controller (PLC) and operator read and interpret the temperatures in order to control the process. The Biochar Reactor is controlled by varying auger speeds, fan speeds, solenoid activation temperatures, air valves, and the chimney damper. The controls and the unit design limit air [including oxygen] input to prevent contact and combustion of the biomass feedstock.

## **Regulatory Background**

The OSWI rule applies to new OSWI units. *See* 40 CFR 60.2885 and 60.2886. The following definitions in 40 CFR 60.2977 are relevant to this request:

- An OSWI unit means “...a very small municipal waste combustion unit or an institutional waste incineration unit, as defined in this subpart...”
- A very small municipal waste combustion unit means “any municipal waste combustion unit that has the capacity to combust less than 35 tons per day of municipal solid waste...”
- An institutional waste incineration unit means “any combustion unit that combusts institutional waste (as defined in this subpart) and is a distinct operating unit of the institutional facility that generated the waste...”
- Municipal waste combustion unit is “...any setting or equipment that combusts municipal solid waste (as defined in this subpart) including, but not limited to, field-erected, modular, cyclonic burn barrel, and custom built incineration units (with or without energy recovery) operating with starved or excess air, boilers, furnaces, pyrolysis/combustion units, and air curtain incinerators (except those air curtain incinerators listed in § 60.2888(b)).”

The request letter referenced the EPA’s August 31, 2020, proposed updates to the OSWI rule. *See* 85 FR 54178. The request letter also referenced the EPA’s September 8, 2021, advance notice of proposed rulemaking on the potential development of regulations for pyrolysis and gasification units. *See* 86 FR 50296. As of the transmittal date of this letter, both aforementioned EPA actions are proposals that sought public comment and have yet to be finalized. These proposals should not be referenced as a basis for regulatory decisions, as the EPA is still considering public comments and has not yet taken final action on either proposal.

Additionally, on June 5, 2023, the EPA withdrew the proposal to remove pyrolysis/combustion units from the OSWI rule and explained that the OSWI definition of “municipal waste combustion unit” will continue to include pyrolysis/combustion units. *See* 88 FR 36524.

## EPA Analysis and Determination

- I. The Biochar Reactor does not meet the definition of “an institutional waste incineration unit.”

As discussed in the Regulatory Background section of this letter, an institutional waste incineration unit must be a distinct operating unit of the institutional facility that generated the waste. The request letter states that “[t]he feedstock is classified as Municipal Solid Waste pursuant to §60.2977 (i.e., collected from the general public and from residential, commercial, institutional, and industrial sources consisting of wood and yard wastes).” Since the waste is collected from these sources, rather than generated at the facility where the unit is located, the Biochar Reactor does not meet the definition of an institutional waste incineration unit.

- II. The Biochar Reactor meets the definition of a “municipal waste combustion unit.”

Based on the information provided in the request letter, it is the EPA’s understanding that the municipal solid waste enters the Biochar Reactor and is converted to gases and biochar through thermal decomposition. The gases are combusted in the same chamber. Therefore, all processes (thermal decomposition and combustion) take place in a single chamber. Thus, the Biochar Reactor meets the definition of municipal waste combustion unit which is “...any setting or equipment that combusts municipal solid waste....”

- III. The Biochar Reactor meets the definition of “a very small municipal waste combustion unit.”

Based on the reported design capacity of 300 kg/hr and 24-hour operations, the Biochar Reactor is capable of processing approximately 7.9 tons of biomass per day. One of the defining characteristics of a “very small municipal waste combustion unit” is its capacity to combust less than 35 tons per day of municipal waste or refuse-derived fuel. 40 CFR §60.2977.<sup>1</sup> Therefore, the EPA has determined that the Biochar Reactor is a very small municipal waste combustion unit subject to the provisions of 40 CFR 60, Subpart EEEE.

This determination was coordinated with the EPA’s Office of Air Quality Planning and Standards, the EPA’s Office of Enforcement and Compliance Assurance, the EPA’s Office of General Counsel, the EPA’s Office of Resource Conservation and Recovery, and Region 9’s Office of Regional Counsel. If you have any questions regarding this matter, please contact Amber Batchelder of my staff at EPA Region 9 at (415) 947-4174 or [batchelder.amber@epa.gov](mailto:batchelder.amber@epa.gov).

Sincerely,

**MATTHEW  
LAKIN**

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Matthew Lakin  
Acting Director, Air and Radiation Division

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<sup>1</sup>  $\frac{300\text{kg}}{\text{hr}} * \frac{1\text{ton}}{907\text{kg}} * \frac{24\text{hr}}{\text{day}} = 7.9 \text{ tons per day}$ , the EPA notes this is the steady state operation.

cc: Paden Voget, Catalyst Environmental Solutions  
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