South Coast Air Quality Management District

Determination of Non-Applicability under NSPS Subpart Ec—Standards of Performance for New Stationary Sources: Hospital/Medical/Infectious Waste Incinerators

Medical Waste Services, Inc.

7321 Quimby Street, Paramount CA 90723

Application No. 583623, Facility ID 164820

This document sets forth the legal and factual basis for a determination pertaining to the applicability of a source to 40 CFR Part 60, Subpart Ec—Standards of Performance for New Stationary Sources: Hospital/Medical/Infectious Waste Incinerators and pursuant to Sections 111 and 128 of the Clean Air Act. The South Coast Air Quality Management District is authorized to make determinations on whether Subpart Ec applies to a source pursuant to a delegation of authority by the Administrator of the U.S. Environmental Protection Agency under Section 111(c) of the Clean Air Act.[1] Certain authorities retained by the EPA and not transferred to the District are specified at 40 CFR 60.50c(i), but these authorities that can only be performed by EPA are not pertinent to this applicability determination. "Applicability determination" as used here refers to this written decision as to whether certain activities by a specific source--i.e. the unit at Medical Waste Service's facility located in Paramount, California and subject to air permit requirements—would trigger applicability of the regulation in question. Consistent with an expectation set by EPA Guidance, this applicability determination is issued in the form of a memorandum and is signed by a person to whom the authority has been delegated.[2] This applicability determination solely pertains to this specific source and is not binding on the EPA.[3]

The question of Subpart Ec applicability centers on whether Medical Waste Services operates a pyrolysis unit. From the time of initial 1997 promulgation (62 Fed. Reg. 48,382, Sept. 15, 1997) of the Subpart Ec regulations for hospital/medical/infectious waste incinerators (HMIWI), 40 CFR § 60.50c has specified: "Any pyrolysis unit (defined in §60.51c) is not subject to this subpart." By the definitions stated in §60.51(c), this would mean a unit for "endothermic gasification of hospital waste and/or medical/infectious waste using external energy." The technical record for the proposed permit convincingly establishes that the pyrolysis component of the unit is both designed for and accomplishes endothermic gasification of waste without aid of conventional combustion. The pyrolysis component heats the chamber with exhaust gases from natural gas burners that have a manufacturer set, non-

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[1] *See* 40 CFR § 60.4(d)(2)(viii).

[2] U.S. EPA, *How to Review and Issue Clean Air Act Applicability Determinations and Alternative Monitoring for New Source Performance Standards, National Emission Standards for Hazardous Air Pollutants*, at 4 (February 1999)

[3] The permit is issued to a minor source, and the permit is not a Title V operating permit which would give potential direct and formal avenues for EPA to review and act on the permit. Even so, EPA has an acknowledged oversight capacity for delegations of the implementation and enforcement of Subpart Ec.

resettable sub-stoichiometric (air lean) air to fuel ratio to ensure that air is not introduced into the chamber. Further, by design as well as permit restrictions, it does not operate under oxygen rich conditions,[4] and we see no valid technical basis to conclude that exothermic reactions (traditional combustion) meaningfully contribute to the gasification process.

We note the terminology of Subpart Ec cannot logically or validly apply to the pyrolysis component, further demonstrating that Subpart Ec does not apply. Subpart Ec assumes a "primary chamber" in which waste is "ignited," a term which can only be fairly read to encompass exothermic combustion. The unit does not have a primary chamber in the meaning of Subpart Ec.

Subpart Ec also assumes a secondary chamber, i.e., a component of an incinerator that "receives combustion gases from the primary chamber and in which the combustion process is completed." The unit has second and third chambers to control emissions from the first chamber and ensure reactions are completed, but the Subpart Ec definition is not fitting: these chambers do not "receive[] combustion gases" from ignited waste or complete a combustion process. The unit's second chamber uses energetic plasma to destroy complex, already-gasified molecules, but this process does not, when properly understood, make the component into a "primary chamber" in the meaning of Subpart Ec. The component does not generate ash, and no ash is removed from it, as is a defined characteristic of a primary chamber under §60.51c.

Assuming that processes in the second or third chambers could be validly described as *combustion* or *incineration*, we could not conclude this makes the unit a solid waste incineration unit subject to Subpart Ec. CAA Section 129(a)(1)(C) required EPA to promulgate standards, including Subpart Ec, for solid waste incineration units combusting hospital, waste, medical waste and infectious waste. Clean Air Act section 129(g)(1) defines, in relevant part, a "solid waste incineration unit" to mean a distinct operating unit of any facility which "combusts any solid waste material." Section 129's use of the term "solid waste" has the meaning established by the Administrator pursuant to the Solid Waste Disposal Act, also known as the Resource Conservation and Recovery Act (or RCRA). *See* CAA section 129(g)(6). Under RCRA, the term solid waste is not necessarily or invariably "solid" so as to exclude waste that is liquid or gaseous in form. We evaluated how RCRA section 1004(27) provides a statutory definition of solid waste that includes so-called "contained gaseous material" resulting from commercial and industrial operations. We cannot conclude, however, that processes in the second or third chambers

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[4] EPA's position that endothermic gasification is distinct and does not count as "incineration" predates the adoption of Clean Air Act section 129. *See* Applicability Determination Index entries under Control Number: E010, Starved Air Gasifier (4/12/1977), Control Number: E009, NSPS Determination of Applicability (1/19/1977), and Control Number: E016 (10/30/1981). EPA has evidently not updated the Applicability Determination Index for we are separately aware of several signed determinations of arguable relevance. A Dec. 22, 2015 determination memo signed by an EPA Director of the Monitoring, Assistance and Media Programs Division in the Office of Enforcement and Compliance Assurance evidently dealt with a predecessor version of pyrolytic technology that is presently at issue. Although the "CoronaLux" trademark name applied to that technology, this permitting action features design changes and different operational parameters, and applicability is determined on a case-by-case basis. This past applicability determination was based on temperature profile evidence that does not transfer to this case and evaluation. We have also reviewed an applicability determination for Aemerge RedPak Services Southern California, LLC, signed by the EPA Region 9 acting Regional Administrator on April 7, 2017, and a July 7, 2017 applicability determination for Monarch Waste Technologies signed by the EPA Region 6 Air Enforcement Branch Chief. By our evaluation, the applicability discussions in those cases are not determinative of our applicability discussion and determination here.

would qualify as combustion of solid waste in the form of contained gaseous material. This is in keeping with EPA's long-held interpretation that burning of gaseous material in a combustion unit—"including air pollution control devices that may combust gaseous material"—does not involve the treatment or management of solid waste.[5] Thus, Subpart Ec would not apply even if one assumed that the second and third chambers processes included the exothermic combustion of gases received from endothermic gasification in the first chamber.[6]

Moreover, the emission limits in Subpart Ec do not logically or validly fit the unit under evaluation. The second chamber uses a plasma component of the unit that promotes a free radical oxidation process that breaks down molecules, including reactions that are capable of producing oxygen. This is evidenced by the stack test results which indicate higher oxygen content in the unit's exhaust than found in the byproducts of conventional combustion. The oxygen content values are close to or greater than regular atmospheric composition (approximately 20.9%). In other words, the pyrolytic component begins gasification under oxygen starved conditions but ultimately produces a high-oxygen exhaust.[7] Because of these circumstances, the hypothetical application of Subpart Ec emission limits to the exhaust stream of the unit would not obtain valid results to show the limits of Subpart Ec are satisfied. To explain, Table 1B to Subpart Ec designates emissions limits for various pollutants, and it indicates the requirement to apply a "7 percent oxygen" correction to all test results, a correction that is logical only for incineration by a HMIWI. In this case, applying a 7 percent oxygen correction, would produce illogical results such as negative emission concentrations. These numeric results do not capably demonstrate the pyrolytic device could be compliant or non-compliant with the Subpart Ec emission limits (notwithstanding measurably low pollutant levels); instead, they demonstrate that Subpart Ec was not developed to apply—and cannot appropriately apply--to this unit at issue.[8]

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[5] *See* EPA Response to Comment Regarding Contained Gas in the Non-Hazardous Secondary Materials Final Rule, RCRA Online Number 14857 (May 13, 2011).

[6] The pyrolysis chamber of the unit only processes medical waste that is *non-hazardous* solid waste under RCRA, by permit condition no. 9 the unit "shall only process/treat the following medical waste types: biohazardous (red bag) waste, sharps waste, non-hazardous (non-RCRA) pharmaceutical waste, trace chemotherapy waste, and pathology (tissues) waste as defined in California Health and Safety Code, Division 104, Part 14, Chapter 2."

[7] 40 CFR §60.12 prohibits the "concealment"-based use of gaseous diluents to achieve compliance with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere. The creation of excess oxygen by the plasma component has a valid and beneficial purpose in controlling pollutants, so circumvention considerations are in no way implicated by this result.

[8] 40 CFR 60.56c(j) provides an avenue for the approval of "other site-specific operational parameters," but we do not construe this provision to allow changes to Subpart Ec emission limits, including the applicable 7% percent oxygen correction requirement. Even assuming such adjustments would be permissible, existing protocols for sources with high stack oxygen content rely on an assumed "stoichiometric relationship between oxygen and carbon dioxide from combusting fuels of known composition." *See* South Coast Air Quality Management District, "Source Test Protocol for Determining Oxygen Corrected Pollutant Concentrations From Combustion Sources with High Stack Oxygen Content Based on Carbon Dioxide Emissions," (March 3, 2001) at 2, available at http://www.aqmd.gov/docs/default-source/laboratory-procedures/methods-procedures/higho2protoco.pdf .In this case, the pyrolysis unit is not stoichiometric, nor is it combusting, nor is combustion-based fuel content known for the medical waste that undergoes pyrolysis. Therefore, the oxygen concentration correction calculation cannot be used with this pyrolysis unit's emissions. Even test calculations using SCAQMD's protocols for high stack oxygen content returned unusable results.

This conclusion is consistent with the record established with EPA's proposals and initial adoption of Subpart Ec. In its proposal, EPA stated it was "inclined to adopt separate regulations for pyrolysis treatment technologies," noting "pyrolysis systems appear to be very different than incinerators." 61 Fed. Reg. 31,736, 31,753 (June 20, 1996). On the adoption of Subpart Ec, EPA was unequivocal in its position:

> *...the EPA considered modifying the HMIWI regulations to include pyrolysis units. However, nearly all aspects of the HMIWI regulations would have to be altered to accommodate pyrolysis units including the format of the emission limits, the operator training requirements, siting requirements, the testing and monitoring requirements, and the reporting and recordkeeping requirements. Furthermore, the HMIWI subcategories and MACT floors would not be appropriate for pyrolysis units. Due to variations in the operating characteristics of pyrolysis technologies and the differences between HMIWI and pyrolysis technologies, it is unclear how the HMIWI regulations could be modified to feasibly cover pyrolysis technologies as well as HMIWI.*
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> *Section 129 requires EPA to develop NSPS and [emission guidelines] for "solid waste incineration units * * * combusting hospital waste, medical waste, and infectious waste." As discussed above, pyrolysis and conventional incineration are not the same. Because regulations developed for HMIWI are not appropriate for pyrolysis technologies, pyrolysis treatment technologies have specifically been excluded from coverage under the final HMIWI standards and guidelines. The EPA may consider these devices in future regulatory development.*

62 Fed. Reg. at 48359. We agree with these points, and the above technical and legal discussion thoroughly demonstrates that the HMIWI regulations are not appropriate for the pyrolysis technology used by Medical Waste Services. To present, regulations for pyrolysis technology have not been adopted, and Subpart Ec continues to exclude "any pyrolysis unit." Still, under the rules of the South Coast Air Quality Management District, the unit requires a permit. The issuance of a permit will produce operational data that will conceivably contribute to the body of information available for EPA's consideration in future regulatory development.

As a final note, we believe the unit shows correctness in EPA's past observation that pyrolysis systems "appear to be inherently clean technologies." 61 Fed. Reg. at 31753.[9] Based on validated source test results, the emissions are well below applicable rules and regulations, and these results are entirely consistent with the issuance of a minor source permit.

In conclusion, Subpart Ec is not applicable to this particular unit under evaluation for Medical Waste Services, Inc.

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[9] Source test results indicate total emissions of hazardous pollutants would be less than a small fraction of a ton per year, even assuming constant operations. This is not remotely close to the 10 and 25 tons per year statutory thresholds for a major source of hazardous air pollution.