Message

From: Bill Winchester [bwinchester@scec.com]
Sent: 4/10/2013 6:59:25 PM
To: Kelly, Shaheerah [Kelly.Shaheerah@epa.gov]
CC: Rios, Gerardo [Rios.Gerardo@epa.gov]; Karl Lany [klany@scec.com]
Subject: RE: Municipal Waste Incineration Units
Attachments: ATT00001.txt

Thank you very much Shaheerah. At this time, our client is working with the vendor in the design stages of the proposed project, so for now we'll utilize your preliminary determination. I'll let you know if we decide to request a formal applicability determination.

Also, if you do happen to run across any examples of facilities subject to the CEMS requirements in Subpart AAAA or EEEE, which have received a waiver from CEMS, or otherwise were allowed to implement an alternative monitoring strategy, please let me know.

I have some follow-up questions for you...

We have noted a particular applicability determination for Subpart AAAA, from March 30, 2010. Fulcrum BioEnergy, Inc. (c/o Patrick D. Traylor of Hogan and Hartson, LLP) had requested such a determination for its proposed facility in McCarran, NV. The proposed plant was designed to convert post-sorted MSW feedstock into a synthetic gas, which would then be processed to produce ethanol and renewable power. More specifically, a portion of the syngas created in the gasification process would be burned in a combined cycle combustion turbine, with the remaining portion utilized to produce a commodity (ethanol).

In its determination, EPA stated that because the syngas production process was neither combustion nor pyrolysis, it was not considered a "pyrolysis/combustion unit" or "municipal waste combustion unit" as defined in Subpart AAAA. Furthermore, since the combined cycle combustion turbine was burning homogenous waste (i.e., the syngas only), it would be exempted from AAAA provisions as long as the system met the qualifications for a small power production facility or a cogeneration facility. There was also a flare associated with the process to burn any excess syngas, should there be excess production. This portion of the process was also deemed as not subject to Subpart AAAA, because it was air pollution control equipment.

So this raises some questions for me. First, EPA has determined that a gasification process is not necessarily a combustion or pyrolysis process. What distinguished Fulcrum's gasification process from the one we proposed, making Subpart AAAA non-applicable? Based on the general definition of pyrolysis, it sounds like our proposed process would fall into that category, but please clarify.

Furthermore, in Fulcrum's system, the syngas was burned directly in a combustion turbine to produce power. Our proposed system combusts the gas in a thermal oxidizer, which creates additional heat for a waste-heat recovery boiler driving a steam turbine generator to produce power. Does EPA distinguish between direct and indirect power production processes when it comes to the exemption criteria? Fulcrum's system combusts gas in a turbine, which directly drives a generator. Other examples would be reciprocating internal combustion engines or direct-fired boilers (i.e. those which burn syngas to produce steam). So what drives the EPA's position on this portion of the interpretation? Or is it the homogenous waste aspect? After all, our proposed system would also be burning the syngas, a homogenous waste stream based on EPAs interpretation, to produce power albeit through indirect means. That said, I have not looked into the criteria for qualification as a small power production facility or cogeneration facility, which is also a factor for exemption.

If the gasification process is not considered to be pyrolysis or combustion, and the syngas is combusted in a thermal oxidizer downstream of the gasification process, wouldn't that be considered air pollution control equipment (i.e. like the flare in Fulcrum's system)? Sure there is an element of waste heat recovery from the oxidization process, but

generally, it's burning off organics in the exhaust stream from the gasification unit. A direct-fired thermal oxidizer doesn't seem too far from a flare in comparison of technologies. I raise this issue because air pollution control equipment is excluded from the definition of "municipal waste combustion unit" as defined in Subpart AAAA. Is the waste heat recovery the deal-breaker with respect to classifying the thermal oxidization process as air pollution control equipment?

Finally, if there is no applicable NSPS, either because of applicability criteria or through exemption, then would a Title V permit still be required for the plant? I notice that Section 129 of the CAA specifies that if there is a promulgated NSPS for a particular category of unit, it would need a Title V permit notwithstanding other triggers, like being a major source. So if our process could be exempted from NSPS AAAA or EEEE, would it still require a Title V permit? Furthermore, would a gasification process which was not considered pyrolysis or combustion even be subject to Section 129?

Are there any other NSPS or NESHAP regulations which would apply to the proposed unit, should it be exempted from AAAA or EEEE?

Thank you very much.

Regards,

Bill Winchester, CPP
Project Manager

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From: Kelly, Shaheerah [mailto:Kelly.Shaheerah@epa.gov]
Sent: Thursday, April 04, 2013 11:15 AM
To: Bill Winchester
Cc: Rios, Gerardo
Subject: RE: Municipal Waste Incineration Units

Hi Bill,

Based on the preliminary information in your email, it appears that one of the Municipal Waste Combustor rules would apply. Please note that this is not a formal determination. If you would like a formal determination, you would have to send us a request in writing and provide sufficient details about the affected equipment. We would need more information than what is provided in the email. Please let me know if the company wants to pursue this.

The CO requirements in NSPS AAAA and EEEE are a surrogate for certain air toxics and is also a measure of good combustion. The units that are subject to these rules are required to comply with the CO monitoring requirements regardless of attainment status of the pollutant. I am not aware of any waivers from these requirements and I am checking on this.

****
Shaheerah Kelly

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Permits Office, Air Division
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From: Bill Winchester [mailto:bwinchester@scec.com]
Sent: Tuesday, April 02, 2013 12:27 PM
To: Kelly, Shaheerah
Cc: BECKHAM, LISA; Karl Lany; Wang, Tunde
Subject: RE: Municipal Waste Incineration Units
Importance: High

Good morning Shaheerah,

I wanted to follow up with you on any additional information you received regarding questions #3 and #4 (see previous email below), and per our telephone conversation.

Also, I need to get some clarification on NSPS applicability for our project. It seems that the project developers are hoping to refer to the process as something other than a municipal waste combustor, or incinerator. Instead, they wanted to categorize it as a "gasification" process. With the categorization aside, let me explain the process for you, and please let me know whether it would be subject to NSPS requirements, namely Subparts AAAA or EEEE:

The device is technically called a "Fluidized-Bed Staged Gasification" unit. It incorporates a fluidized bed at the bottom of a chamber, where refuse-derived fuel (RDF) is injected and exposed to a hot turbulent environment (1200-1400°F) and sub-stoichiometric conditions (30% of the O2 required for combustion). The constant abrasive contact of the hot sand with the RDF scrubs the ash from the fuel particles to continually expose a new fuel surface for this "gasification" process. As the RDF is exposed to the fluidized bed media, the heat generated drives off volatile gases and moisture within the fuel (devolatilization), creating a low-btu gas (LBG; typically 150-250 btu/cf). The LBG created in the fluidized bed, flows to the top of the chamber, into a thermal oxidation zone. In the fluidized bed, the remaining carbon, or char, is converted by the fluidizing gases into additional synthesis gas plus heat, which is utilized as the driving force to maintain the reaction. Air is introduced into the thermal oxidation zone as required for the complete combustion of the LBG, and temperatures are typically increased to the 1600-1800°F range. The exhaust gas from this oxidation process, consisting of primarily water vapor, air, carbon dioxide, and non-hazardous ash residue, would then be sent past a waste heat recovery device (i.e., boiler), then through a series of emission control devices before being expelled into the atmosphere from a stack. The waste-heat recovery boiler generates steam, which drives a steam turbine generator that produces about 1 MW of power to be used at the plant itself and another nearby facility.

With that explanation, can you please tell me if we're actually considered to be a solid waste incineration unit and/or a municipal waste combustion unit, and subject to the NSPS requirements of Subparts AAAA or EEEE? If not, is there another NSPS and/or NESHAP regulation that it *would* be subject to?

Next, I would like to ask about the CEMS requirements in the NSPS Subparts AAAA and EEEE. Assuming we are subject to one of these NSPS regulations, there is a requirement to install either a CO and O2 CEMS, or a CEMS that monitors CO, O2, and SO2. First of all, I'd like to understand why EPA is requiring CO to be monitored – is it considered a surrogate for toxics, or something else? Second, if we're in a remote portion of a CO attainment area (i.e., middle of the Mojave Desert, at least 25 miles away from any town), would EPA still require a CEMS on the unit?

I believe it was asked in the previous correspondence, below, but just to clarify; given the complete description of the process, it's location relative to potential receptors, and the CO attainment status of the area, is there any chance that EPA would waive the requirement for a CEMS on the unit (still assuming it is subject to NSPS Subparts that require CEMS)? Furthermore, has anyone petitioned EPA for an alternative to CEMS for this type of process?

I am needing clarification on these questions very quickly – today if at all possible. I'm sorry for the rush, but I'd really appreciate the guidance. Thank you very much for your time. FYI – I have copied Tunde Wang on this email also, given past involvement for AAAA applicability determinations.

Regards,

Bill Winchester, CPP
Project Manager

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From: Kelly, Shaheerah [mailto:Kelly.Shaheerah@epa.gov]
Sent: Thursday, March 21, 2013 12:58 PM
To: Bill Winchester
Cc: BECKHAM, LISA; Karl Lany
Subject: RE: Municipal Waste Incineration Units

Hi Bill,

Below are responses to your questions. I am checking on #3 below and would appreciate more information on #4 below. Feel free to call me if you want to discuss this message. Thanks.

1.) Am I correct that the EPA requires a title V permit on all MSW incineration units, even for "small" (35-250 tpd; subpart AAAA) or "very small" (<35 tpd; subpart EEEE) capacity units? It seems that Section 129 of the CAA (1990) obligates any category of solid waste incineration unit with a promulgated NSPS to obtain a title V operating permit. Are there any exceptions to this apparent across-the-board requirement?

   Yes, section 129 of the CAA requires any category of solid waste incineration unit with a promulgated NSPS to obtain a title V operating permit. So if the unit is subject to any of the incinerator rules in part 60 that was promulgated under section 129, it is also required to get a Title V permit.

2.) In 40 CFR Part 60, subparts AAAA and EEEE, there is a requirement for affected units to install and maintain CEMS. For subpart AAAA (class II units), the CEMS must monitor O2, CO, and SO2. For subpart EEEE, the CEMS must monitor O2 and CO. Are there any alternatives to (or exemptions from) installing CEMS on units subject to either regulation?

   Any compliance alternatives to the CEMS requirement would be contained in the applicable standard (either AAAA or EEEE). A facility can request alternatives to monitoring for operating limits that apply to controls such as wet scrubbers. However, the rules do not contain requirements that allow alternatives to emissions monitoring besides CEMS.

3.) In regards to the designed "capacity" of a particular municipal solid waste incineration unit, how does EPA expect this to be calculated? Is it in terms of wet (as received) or dry (treated) MSW?

In general, I think the capacity can be based on the amount of wet (as received) **or** dry (treated) MSW before it is combusted, as long as the facility documents how this calculation is made. I am checking on this and will get back to you.

4.) If I have a Fluidized Bed Staged Gasification unit, combusting municipal solid waste, including some wood-waste (like yard waste or fragments of wooden shipping pallets), and assuming it is subject to subpart AAAA, please specify to which equipment/fuel-specific CO emission limit it would be subject. Keep in mind that the proposed system is a "staged" system, which includes a sub-stoichiometric (starved-air) combustion zone (fluidized bed area), followed by a thermal oxidation zone, where excess-air combustion takes place:

a. **Fluidized bed; 100 ppmvd** @ 7% O2; 4-hour avg.;
b. **Fluidized bed, mixed fuel, (wood/refuse-derived fuel); 200 ppmvd** @ 7% O2; 24-hour avg.; or
c. **Modular starved-air and excess air; 50 ppmvd** @ 7% O2; 4-hour avg.

Can you clarify whether the MSW is being combusted, or whether the MSW is first gasified and the gasified stream is then being combusted?

****

Shaheerah Kelly
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From: Bill Winchester [mailto:bwinchester@scec.com]
Sent: Monday, March 18, 2013 12:46 PM
To: BECKHAM, LISA
Cc: Karl Lany; Kelly, Shaheerah
Subject: RE: Municipal Waste Incineration Units

Thank you very much Lisa! I'll be eagerly anticipating Shaheerah's reply.

Regards,

Bill Winchester, CPP
Project Manager

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From: BECKHAM, LISA [mailto:BECKHAM.LISA@EPA.GOV]
Sent: Monday, March 18, 2013 11:59 AM
To: Bill Winchester
Cc: Karl Lany; Kelly, Shaheerah
Subject: RE: Municipal Waste Incineration Units

Hi Bill,

I've copied Shaheerah Kelly from my office. She is our regional Section 129 contact and is familiar with these regulations. Hopefully, Shaheerah can't get back to you fairly soon since you aren't asking the dreaded "is this waste?" question.

Lisa Beckham
Environmental Engineer
EPA Region 9, Air Permits Office
(415) 972-3811

From: Bill Winchester [bwinchester@scec.com]
Sent: Monday, March 18, 2013 11:45 AM
To: BECKHAM, LISA
Cc: Karl Lany
Subject: RE: Municipal Waste Incineration Units

Lisa:

I hope all is going well up north!

I have a quick favor to ask of you... in the past, you have been very helpful with information regarding the RICE NESHAP regulation, and I was wondering who might be the best person to contact at Region 9 for questions on the Municipal Waste Incinerator NSPS regulations – specifically, I need assistance with some questions I have related to 40 CFR Part 60, subparts AAAA and EEEE. If you can answer my questions that would be great, but if not, can you please point me in the right direction? I'll go ahead and list my questions below:

1.) Am I correct that the EPA requires a title V permit on all MSW incineration units, even for "small" (35-250 tpd; subpart AAAA) or "very small" (<35 tpd; subpart EEEE) capacity units? It seems that Section 129 of the CAA (1990) obligates any category of solid waste incineration unit with a promulgated NSPS to obtain a title V operating permit. Are there any exceptions to this apparent across-the-board requirement?

2.) In 40 CFR Part 60, subparts AAAA and EEEE, there is a requirement for affected units to install and maintain CEMS. For subpart AAAA (class II units), the CEMS must monitor O2, CO, and SO2. For subpart EEEE, the CEMS must monitor O2 and CO. Are there any alternatives to (or exemptions from) installing CEMS on units subject to either regulation?

3.) In regards to the designed "capacity" of a particular municipal solid waste incineration unit, how does EPA expect this to be calculated? Is it in terms of wet (as received) or dry (treated) MSW?

4.) If I have a Fluidized Bed Staged Gasification unit, combusting municipal solid waste, including some wood-waste (like yard waste or fragments of wooden shipping pallets), and assuming it is subject to subpart AAAA, please specify to which equipment/fuel-specific CO emission limit it would be subject. Keep in mind that the proposed system is a "staged" system, which includes a sub-stoichiometric (starved-air) combustion zone (fluidized bed area), followed by a thermal oxidation zone, where excess-air combustion takes place:

   a. **Fluidized bed; 100 ppmvd** @ 7% O2; 4-hour avg.;
   b. **Fluidized bed, mixed fuel, (wood/refuse-derived fuel); 200 ppmvd** @ 7% O2; 24-hour avg.; or
   c. **Modular starved-air and excess air; 50 ppmvd** @ 7% O2; 4-hour avg.

I'm working within a very limited timeframe to receive the answers, so really I appreciate any effort to expedite EPA's response.

Thank you very much!

Best Regards,

Bill Winchester, CPP
Project Manager

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