Message

From: Julie Verissimo [Julie.Verissimo@tn.gov]
Sent: 7/13/2020 7:46:17 PM
To: Bloeth, Mark [Bloeth.Mark@epa.gov]
CC: john.fuss@tn.gov [John.Fuss@tn.gov]; James Johnston [james.johnston@tn.gov]
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Mark,

Good afternoon, I hope you are doing well.

We received a copy of your response letter to VES regarding applicability of 40 CFR part 60, Subpart Ec to the gasification unit located at the City of Covington Wastewater Treatment Plant (WWTP). We appreciate the all effort you have put into this determination request so far.

In the letter, Region 4 has requested from VES several pieces of additional information regarding the unit. VES has indicated that some of the information would not be available unless a trial burn is conducted. As John noted in his previous email, we are working to determine how we would address the trial burn internally, and I think your letter adds an additional layer of complexity to that issue.

One question we have for you – do you feel that you will need the results of a trial burn in order to make a final determination?

Thanks again for your assistance with this applicability determination. Have a good afternoon,
Julie

TN Department of Environment & Conservation

Julie Verissimo | Environmental Consultant 3
Air Pollution Control
Tennessee Tower, 15th Floor
312 Rosa L Parks Ave., Nashville, TN 37243
p. 615-532-0582
julie.verissimo@tn.gov

From: Bloeth, Mark <Bloeth.Mark@epa.gov>
Sent: Thursday, June 18, 2020 1:13 PM
To: John Fuss <John.Fuss@tn.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>; Lusky, Katy <Lusky.Kathleen@epa.gov>
Subject: [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Thanks John,

I'll email you the VES response letter once it is issued.

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013

From: John Fuss <John.Fuss@tn.gov>
Sent: Wednesday, June 17, 2020 3:14 PM
To: Bloeth, Mark <Bloeth.Mark@epa.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>; Lusky, Katy <Lusky.Kathleen@epa.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi Mark,

Just wanted to let you know, we are likely to allow a test burn, but need to confer internally about what such a request would need to look like, and decide if a permit modification would be needed.

We look forward to further discussion.

Thanks,

TN Department of Environment & Conservation

John Fuss | Environmental Manager 3
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243
Office: 615-532-0535

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From: Bloeth, Mark <Bloeth.Mark@epa.gov>
Sent: Monday, June 8, 2020 6:24 AM
To: John Fuss <John.Fuss@tn.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>; Lusky, Katy <Lusky.Kathleen@epa.gov>
Subject: [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Hey John,

We do have a draft letter in the works requesting even more information from VES in order for EPA to make an official determination regarding HMIWI applicability.

Once this letter is finalized we will certainly send TDEC a copy. As it stands right now, the concept of switching over from woody biomass / sewage sludge for the gasification of regulated medical waste at the City of Covington's GS-200 unit is more hypothetical in nature than real or demonstrated. There also does not appear to be any historic basis or discussion of success in this regard nor does it appear that the original unit from PHG Energy was ever designed or promoted for the gasification of medical waste. If they haven't already, I suspect VES may come to TDEC looking to conduct a small demonstration test or "trial burn" in order to obtain the operating parameters and conditions EPA would be seeking.

After we finalize and send out the response letter, I can set up a conf call with TDEC for more discussion.

Incidentally, what is TDEC's position with respect to allowing such a demonstration should VES request it?

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013

From: John Fuss <John.Fuss@tn.gov>
Sent: Friday, June 05, 2020 4:13 PM
To: Bloeth, Mark <Bloeth.Mark@epa.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Good afternoon, Mark,

Just touching base with you on the Covington situation. Have y'all been in any further conversations with the folks at VES? We've not heard from them directly since late early April. Has VES been able to answer all the questions y'all have had for them so far? In the event that they can't or don't respond to all requests for information, how would EPA handle that? When you have a chance, if you wouldn't mind giving us a brief status update on the progress toward making a determination, we'd greatly appreciate it. If there's anything we can do to assist, just let us know.

Thanks, and have a good weekend

TN Department of Environment & Conservation

John Fuss | Environmental Manager 3
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243
Office: 615-532-0535

Tell us how we're doing. Take our TDEC customer service survey.

From: Bloeth, Mark <Bloeth.Mark@epa.gov>
Sent: Tuesday, May 12, 2020 11:23 AM
To: John Fuss <John.Fuss@tn.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion

<Watson.Marion@epa.gov>
Subject: [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Okay, sounds good ... and thanks for the quick feedback.

Obviously, an overarching hurdle for me is that it seems VES wants to apply a "one size fits all" approach for a gasification unit that has never really been designed (to my knowledge) to receive medical waste; and I can find no historical support or any success stories for it ... plenty of studies and testing for biomass, sewage sludge and MSW out there but not medical waste.

We'll keep plugging away at this; take care.

Mark

From: John Fuss <John.Fuss@tn.gov>
Sent: Tuesday, May 12, 2020 11:42 AM
To: Bloeth, Mark <Bloeth.Mark@epa.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Mark,

To my knowledge the unit has not been modified to increase its physical capacity. I attributed the relatively larger input capacity for medical wastes on the assumption that perhaps the medical waste may be able to be processed at a faster rate than the currently permitted inputs of woody biomass and sewage sludge? I don't know that this assumption is a good one, and I'd not recognized that there was that drastic of an inconsistency either (60 tpd vs 12 tpd). My understanding is the Covington unit is one of the smaller units (< 10 MMBtu/hr) that PHG (Aries Energy) offered. This has not been an issue we'd raised with Mr. Scott and their application yet at this point, but will be something that we will also question as to how their stated 'design' input rate in the application is achievable, versus the rate in the published literature.

Thanks for that info, Mark. -John

TN Department of Environment & Conservation

John Fuss | Environmental Manager 3
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243
Office: 615-532-0535

Tell us how we're doing. Take our TDEC customer service survey.

From: Bloeth, Mark <Bloeth.Mark@epa.gov>
Sent: Tuesday, May 12, 2020 10:17 AM
To: John Fuss <John.Fuss@tn.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>; Watson, Marion <Watson.Marion@epa.gov>
Subject: [EXTERNAL] RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Hey John, Justin and Julie,

I have a quick question … I know that VES responded back to me regarding my question about the size model of the PHG unit from their literature (PHG-8, PHG-12 or PHG-LF) for the GS-200 gasifier capacity stating "we have the largest one" (which doesn't really answer my question). The VES permit application (signed 2/24/20) reflects an input rate for Regulated Medical Waste to be 64 tpd (5,333.34 pounds/hr) seemingly indicating a large capacity PHG gasifier system, but this doesn't match the internet history I've found about what was installed at Covington circa 2013 (see weblinks) … https://www.wastetodaymagazine.com/article/rew1215-phg-energy-biogas-gasification-technology/ and http://www.covingtontn.com/biomass-gasification.html which is that a standard PHG 12 tpd unit was installed; obviously a mismatch. The previous permit information relating to the inputs for combined woody biomass + sewage sludge appear to be more in sync with this 12 tpd capacity at around 13 tpd.

Has this been addressed with Mr. Scott from VES and has their been any other permit application amendments or changes submitted by VES to TDEC since the one from February?

I've copied Mr. Tracy Watson (EPA Region 4) who is also looking at some of the VES information as well as the gasification issue at large in order to keep him in the loop.

Thanks and I hope everyone is doing well.

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013

From: Bloeth, Mark
Sent: Monday, April 13, 2020 11:41 AM
To: 'John Fuss' <John.Fuss@tn.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi John,

I really haven't had any movement on it since all the Covid-19 ramped up and I have been wrapped up in other issues these last couple weeks. The biggest outlier was my question about any known oxygen concentrations during the

gasification process which Mr. Scott says he could obtain data if allowed to conduct a test. I plan to have another colleague look over the bulk of what has been conveyed by VES and to also get EPA Headquarters' official opinion before an ultimate applicability determination is made from my end. Sorry I do not have anything more definitive as yet; right now I do not think I have anything outstanding needed from VES but will be sure to copy TDEC on any additional requests from my end.

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013

From: John Fuss <John.Fuss@tn.gov>
Sent: Monday, April 13, 2020 10:09 AM
To: Bloeth, Mark <Bloeth.Mark@epa.gov>
Cc: Julie Verissimo <Julie.Verissimo@tn.gov>; Justin Dolzen <Justin.Dolzen@tn.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Good morning, Mark.

Us here at TDEC will be having a discussion with the Mayor of the City of Covington this week regarding their proposal to modify their gasification unit to process medical wastes...can you give a brief status update on Mr. Scott's determination request for Ec applicability? Are you still awaiting further information from Mr. Scott?

Thanks,
John

From: John Fuss
Sent: Friday, March 27, 2020 1:13 PM
To: Bloeth, Mark
Cc: Julie Verissimo; Justin Dolzen
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hello Mark,

We are getting along here at TDEC pretty well, almost business as usual. Thanks for keeping us in the loop. In that regard, please find a letter we sent to VES this week regarding their pending application.

As far as the fire(s) at the facility, that was information passed on to us from personnel with our Division of Water Resources (DWR) they obtained during a site visit. According to DWR person, a treatment plant operator offered the information when asked by DWR about the unit. It was conveyed from the operator that the unit would never work unless there was someone there to monitor the feed, as the feed tended to clog. It was noted that clogging issues in the unit caused the unit to catch fire. The nature, location, and extent of the fire(s) and any damage was not mentioned or discussed.

Also, as far as we know, the unit is property of the City of Covington. Covington is currently the permit holder, though PHG (now Aries) did assume responsibility for the permit for a brief period of time. I cannot speak to any contractual obligations the City of Covington may have with Aries regarding the unit.

I hope you and yours are well, Mark. We'll continue to provide information and updates as we get them.

Thanks,

Department of Environment & Conservation

John Fuss | Environmental Manager 3
Division of Air Pollution Control
William R. Snodgrass Tennessee Tower, 15th Floor
312 Rosa L. Parks Avenue, Nashville, TN 37243
Office: 615-532-0535

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From: Bloeth, Mark [mailto:Bloeth.Mark@epa.gov]
Sent: Friday, March 27, 2020 8:41 AM
To: John Fuss
Cc: Julie Verissimo; Justin Dolzen
Subject: [EXTERNAL] FW: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

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Hi John (and folks),

Not sure what your situation is there, but I hope everybody at TDEC is doing alright during all of this mess.

I'm just keeping you in the loop regarding VES (see below feedback / attachments he sent yesterday).

While Mr. Scott somewhat addressed my questions, he did not seem to have any knowledge of fire incident(s) at the Covington facility and also failed to address whether there are any updated process flow schematics for the Covington gasifier.

While I the third party response information from Aries Energy (Mr. Renus Kelfkens) did help a bit regarding their position about gasification -vs- combustion, I was a little confused from his note at the end of his 12/30/19 email to Mr. Lipman (see highlight) regarding "access to the technology license for the Covington plant". In our previous conversations, I believe TDEC said the City of Covington owns the gasifier unit, so would this whole licensing issue w/ Aries Energy potentially preclude the City of Covington from using something they own? … sounds a little weird to me, or am I out in left field on that?

If you have any clarifying answers about the above please advise and/or share any updates you may have received from VES so I can cross check what he's telling you all. Thanks much and stay safe.

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013

From: stephen scott <stephen.scott@res-ses.com>
Sent: Thursday, March 26, 2020 12:27 PM
To: Bloeth, Mark <Bloeth.Mark@epa.gov>

Cc: Lusky, Katy <Lusky.Kathleen@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>
Subject: RE: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hello Mark,

I could use your help on getting the answers to some of these questions.

- As per the original permit applications the construction started on this unit 03/15/2013 and was completed on 01/15/2015.
- From the information I have gathered so far, the differences between the units are size and we have the largest one.
- There is no historical data showing that this system has ever even been tested with medical waste and we are therefore requesting the testing of the unit to supply exact data needed for permitting.
- I cannot find where there have ever been any fires at the gasification plant. Can you give me more information on where you have obtained your information?
- As for the temperature in the gasifier, I have been told that it is greater than 1500 degrees up to approximately 1800 degrees.
- The biochar has value for farmers for soil amendment applications, a concrete component, and to use as graphite in pencils. https://ariescleanenergy.com/article-biochar-opportunities-knock-agricultural-research-may-open-tennessee-biochar-market/
- The only waste stream we are applying for is medical waste.
- As for the Oxygen level in the gasifier, this could be measured if we are allowed to perform a test with medical waste as the waste stream.

Also, could you reach out to Mr. Renus Kelfkens at Aries Energy for any additional verifications you might need? (see the body of the email here and the attachments referenced in the email attached to this email)

From: Renus Kelfkens <Renus.Kelfkens@ariesenergy.com>
To: Lloyd Lipman <Ex. 6 Personal Privacy (PP)
Sent: Mon, Dec 30, 2019 8:18 pm
Subject: RE: Covington

Dear Mr Lipman,

As you know, Aries own both the down draft (originally developed by PHG) and fluidized bed (acquired from MaxWest out of insolvency) gasification technologies. Both of these technologies were assessed and classified by EPA as non-combustion technologies and the Covington and Lebanon Plants were permitted as such. The key differentiators for a gasifier vs a combustor are that: (a) there is no open flame in a gasifier, (b) carbon conversion takes place in an oxygen deficient atmosphere through chemical reactions not excess oxygen required for combustion, and (c) the products are useable renewable reactants, i.e. syngas (CO and H2 small amount of CO2) tars and char) not CO2 and excess oxygen and ash.

Attached are two documents I could retrieve from our archives that references the EPA determinations:

- a presentation by PHG on June 10, 2014 to Memphis TDEC through the assistance of a consultant, Don Newell, Strategic Energy Analysts, LLC based in Nashville, Tennessee where the case was made and EPA Region 4 agreed with PHG, that the Covington unit was indeed permitted based on gasification characteristics and did not pertain at all to incineration criteria.

- A letter from the EPA resolving the "Request for Determination of Applicability under 40 CFR Part 60, Subpart MMMM - Emissions Guidelines and Compliance Timelines for Existing Sewage Sludge Incineration Units" The same function and principles apply to both gasifiers; the equipment is selected based on what best suits the particular feedstock characteristics

Your question and the only remaining issue should therefore be answered that the unit is evaluated as a gasifier not as a combustion technology similar to incineration.

So far, I have not been able to recover the actual letter or e-mail correspondence between EPA Region 4 and PHG for the Covington plant. Seeing it is a public document, the EPA correspondence should be available from EPA archives and directly off the EPA website or by request to them. I have not had time to research this route.

I hope this helps. Let me know any comments and we can explore from there.

I also wanted to let all of you know that Ex. 6 Personal Privacy (PP) as decided to explore other opportunities and is leaving Aries effective immediately. I would like to also get a full understanding what your needs and expectations are for Aries involvement. There are specific contractual and financial related matters pertaining to the access to the technology license for the Covington plant and any required services from Aries we need to discuss. I'll schedule a call for the January 7th at 10:30am CST.

Look forward to talking to you.

Regards

Renus Kelfkens

Office (615) 471-9304
Mobile(847) 714-7124

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Thank You,

Stephen Scott
President
Volunteer Environmental Services
901-666-9330

From: Bloeth, Mark <Bloeth.Mark@epa.gov>
Sent: Wednesday, March 4, 2020 1:26 PM
To: stephen scott <stephen.scott@res-ses.com>
Cc: Lusky, Katy <Lusky.Kathleen@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>
Subject: FW: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

sorry, there was a typo below ... the discussion with TDEC occurred on February 27th, not in January.

From: Bloeth, Mark
Sent: Monday, March 02, 2020 2:37 PM
To: 'stephen scott' <stephen.scott@res-ses.com>

Cc: Lusky, Katy <Lusky.Kathleen@epa.gov>; Davis, Amber <Davis.Amber@epa.gov>
Subject: Applicability Determination Review re: Gasification Unit at City of Covington WWTP for gasification of medical waste only to HMIWI rules (NSPS 40 CFR Part 60, Subpart Ec) - Volunteer Env. Services (VES) - Facility ID 84-0124

Hi Mr. Scott,

I received your voicemail from today and wanted to update you on my review activities and propose some additional questions to VES.

On ~~January~~ February 27, 2020 I had a discussion with the Tennessee Department of Env. and Conservation (TDEC) – Division of Air Pollution Control regarding the above subject for which VES was required to submit a new non-Title V Permit application involving the newly proposed gasification of medical waste (specific unit identified as Gasifier GS-200). There was some initial confusion on my part regarding the waste stream(s) since VES submitted a permit application (signed/dated 1/13/2020) to TDEC to include both medical waste and/or pharmaceutical wastes; this was contrary to what I understood from you last month. TDEC did forward to me a recent updated permit application (signed/dated 2/24/2020) which eliminated the pharmaceutical waste, now only indicating VES's intention to use "Regulated Medical Waste" as the only feedstock to the gasifier.

During the conversation with TDEC I posed some questions to them about the gasification process, flow schematics and other parameters for this facility; TDEC did not have detailed specifics and/or were not completely sure about some of the details to my questions.

As a start, I will need clarification from VES about the following points in order for EPA to move forward on an applicability determination specific to HMIWI:

- When was the date of initial installation of the PHG Gasifier System at the City of Covington WWTP?
    - Also, the Attachment IA document in the permit application(s) mentions three PHG gasifier models (PHG-8, PHG-12 and PHG-LF), which model is "GS-200" considered being and what are the differences between them?
- Attachment IA initially describes the PHG Gasifier System Design's potential waste streams as "organic biomass … such as urban wood waste, wood chips, and municipal solid waste" and a history of success with differing biomasses described as: "wood chips, urban wood waste, bark/hog fuel, tire derived fuel (blend), paper cubes, waste glycerol (blend) and cotton stalks." Now that VES is applying for a permit to completely change over the waste stream to regulated medical waste, is there any historical data showing that this PHG Gasifier System (or any particular PHG gasifier model) has also been proven effective or successfully demonstrated for the gasification of medical waste? Given the wide variety types and heterogenous nature of medical waste there are potential concerns for this type of waste stream being processed through a system what seems to have been primarily designed primarily for woody biomass, municipal waste, and at times sewage sludge?
    - I say this because the secondary submission of the Attachment IA document has been recently modified from the original PHG Gasifier System Design document (perhaps as old as 2005) to now reference the feedstock as "medical waste" (see comparative changes at 2nd paragraph) as though PHG is promoting it as a viable / demonstrated waste stream.
- There is a process flow schematic dated 07/23/12 referencing PHG Energy LLC; has there been any currently updated process flow schematics since the City of Covington acquired ownership of the gasification plant?
    - I ask this because there was mention of some apparent history of fires at the gasification plant and I would like to know when and to what extent any new installation and/or necessary repairs to damaged equipment from these fires occurred which could potentially change the process flow schematic in the current record. Do you have specifics about these fire incidents?

- What is the expected and/or observed maximum temperature (or temperature ranges) typically found in GS-200 during operation of the gasifier?

- Similarly, what are the Oxygen levels typically found in GS-200 during operation of the gasifier?

- After the gasification process, does the medical waste "biochar" have any commercial value and for what purpose? or is it the intention of VES to landfill the material?

- The previous TDEC permit application (signed 1/13/2020) contained a 2 page description relative to "Regulated Medical Waste" and a listing of "WASTE THAT WILL BE TREATED IN COVINGTON" (outlined A through D) ... this page was omitted after the secondary submission of the TDEC permit application (signed 2/24/2020); was this a deliberate omission or will there be an updated page submitted ? (obviously without the pharmaceutical waste references)

- Lastly, there appears to be some typos re the Emissions Calculations Tables (in the TDEC permit application signed 2/24/2020) where references are made to HMIWI ... Subpart "Ee" is being cited but I believe the correct citation VES is intending is Subpart "Ec".

While I am sure to have some additional questions as the review continues; any detailed responses to the above would be most appreciated.
Thanks so much.

Mark Bloeth
US EPA Region 4
Air and Radiation Division
Communities and Air Toxics Section
(404) 562-9013